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The Gardeners' chronicle :a weekly illustrated journal of horticulture and allied subjects

London, [Gardeners Chronicle], 1874-1955

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n.s.:v.8 (1877): <https://www.biodiversitylibrary.org/item/89004>

Article/Chapter Title: Rothamsted Experimental Station

Subject(s): Gardeners Chronicle nsV8 1877

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at a very low rate, but owing to the labour attending its transport in a country destitute of means of communication, it comes to cost too much for speculative purposes to bring it down to the ports of shipment. Some good specimens of this valuable excrescence were notwithstanding brought down last season to Enzelee. The best marked samples of this wood are sent to England, *via* Tiflis, while the ordinary qualities suit best the French market. Some *loupes* are to be found weighing upwards of a ton, but, owing to the want of means of transport, they have to be reduced in size. "It would repay curiosity to witness the process by which these hard blocks of timber are cut up into sheets almost as thin as writing-paper for veneering purposes. The *loupe* is introduced into a large receptacle and steamed for several days consecutively, until from the adamantine hardness it naturally possesses it assumes the consistency of cheese; it is then placed under a machine, which, with a large blade, slices it off into sheets, which harden by exposure, and are sold in the market according to size and beauty of design. Some *loupes* in Paris have fetched as much as £800."

From these notes it will be seen that the forest produce of the districts under consideration are of a very valuable description. 7.

THE ROTHAMSTED AGRICULTURAL EXPERIMENTAL STATION.*

MR. LAWES was the founder of the Rothamsted Experimental Station, and commenced experiments with different manuring substances, first with plants in pots, and afterwards in the field, soon after entering into possession of his hereditary property at Rothamsted† in 1834. The researches of De Saussure on vegetation were the chief subjects of his study to this end. Of all the experiments so made, those in which the neutral phosphate of lime, in bones, bone-ash, and apatite, was rendered soluble by means of sulphuric acid, and the mixture applied for root-crops, gave the most striking results. The results obtained on a small scale in 1837, 1838, and 1839, were such as to lead to more extensive trials in the field in 1840 and 1841, and subsequently.

In 1843 more systematic field experiments were commenced, and a barn, which had previously been partially applied to laboratory purposes, became almost exclusively devoted to agricultural investigations. The foundation of the Rothamsted Experimental Station may be said to date from that time (1843).

The Rothamsted station has up to the present time been entirely disconnected from any external organisation, and has been maintained entirely by Mr. Lawes. He has further set apart a sum of £100,000, and certain areas of land, for the continuance of the investigations after his death.

In 1854-5 a new laboratory was built, by public subscription of agriculturists, and presented to Mr. Lawes, in July, 1855, from which date the old barn-laboratory was abandoned, and the new one has been occupied.

From June, 1843, up to the present time, Dr. J. H. Gilbert has been associated with Mr. Lawes, and has had the direction of the laboratory.

The number of assistants and other helps has increased from time to time. At first only one laboratory man was employed, but very soon a chemical assistant was necessary, and next a computer and record-keeper. During the last twenty-five years the staff has consisted of one or two, and sometimes three, chemists, and two or three general assistants. One of these is usually employed in routine chemical work, but sometimes in more general work. The chief occupation of the general assistants is to superintend the field experiments—that is, the making of the manures, the measurement of the plots, the application of the manures, and the harvesting of the crops, also the taking of samples, the preparation of them for preservation or analysis, and the determinations of dry matter, ash, &c. These assistants also superintend any experiments made with animals. There are now about 25,000 bottles of samples of experiment-

* Drawn up March—April, 1877, in answer to Circular in connection with the commemoration of the twenty-fifth anniversary of the establishment of the first experimental station in Germany (Mockern), to be held in Leipzig in September, 1877.

† Rothamsted is in Hertfordshire, twenty-five miles from London, on the Midland Railway; station, Harpenden.

ally-grown vegetable produce, of animal products, of ashes, or of soils, stored in the laboratory.

A botanical assistant is also occasionally employed, with from three to six boys under him, and with him is generally associated one of the permanent general assistants, who at other times undertakes the botanical work.

Two or three (for some time past three) computers and record-keepers have been occupied in calculating and tabulating field, feeding, and laboratory results, copying, &c.

One, and sometimes two, laboratory men are employed.

Besides the permanent laboratory staff, chemical assistance is frequently engaged in London or elsewhere, and in this way, for some years past, Mr. R. Richter, of Berlin, has been almost constantly occupied with analytical work sent from Rothamsted.

The field experiments, and occasionally feeding experiments, also employ a considerable but a very variable number of agricultural labourers.

On different descriptions of Wheat, nine years, 7 acres (each year in a different field), about 20 plots.

On Beans, thirty-one years (including one year Wheat and five years fallow), 1½ acre, 10 plots.

On Beans, alternated with Wheat, twenty-eight years, 1 acre, 10 plots.

On Clover, with fallow or a corn crop intervening, twenty-eight years, 3 acres, 18 plots.

On Turnips, twenty-five years, about 8 acres, 40 plots.

On Sugar Beet, five years, about 8 acres, 40 plots.

On Mangel Wurzel, 1 year (in progress), about 8 acres, 40 plots.

On Potatos, one year (in progress), 2 acres, 10 plots.

On rotation, thirty years, about 2½ acres, twelve plots.

On permanent grass land, twenty-two years, about 7 acres, twenty plots.

Comparative experiments with different manures have also been made on other descriptions of soil in other localities.

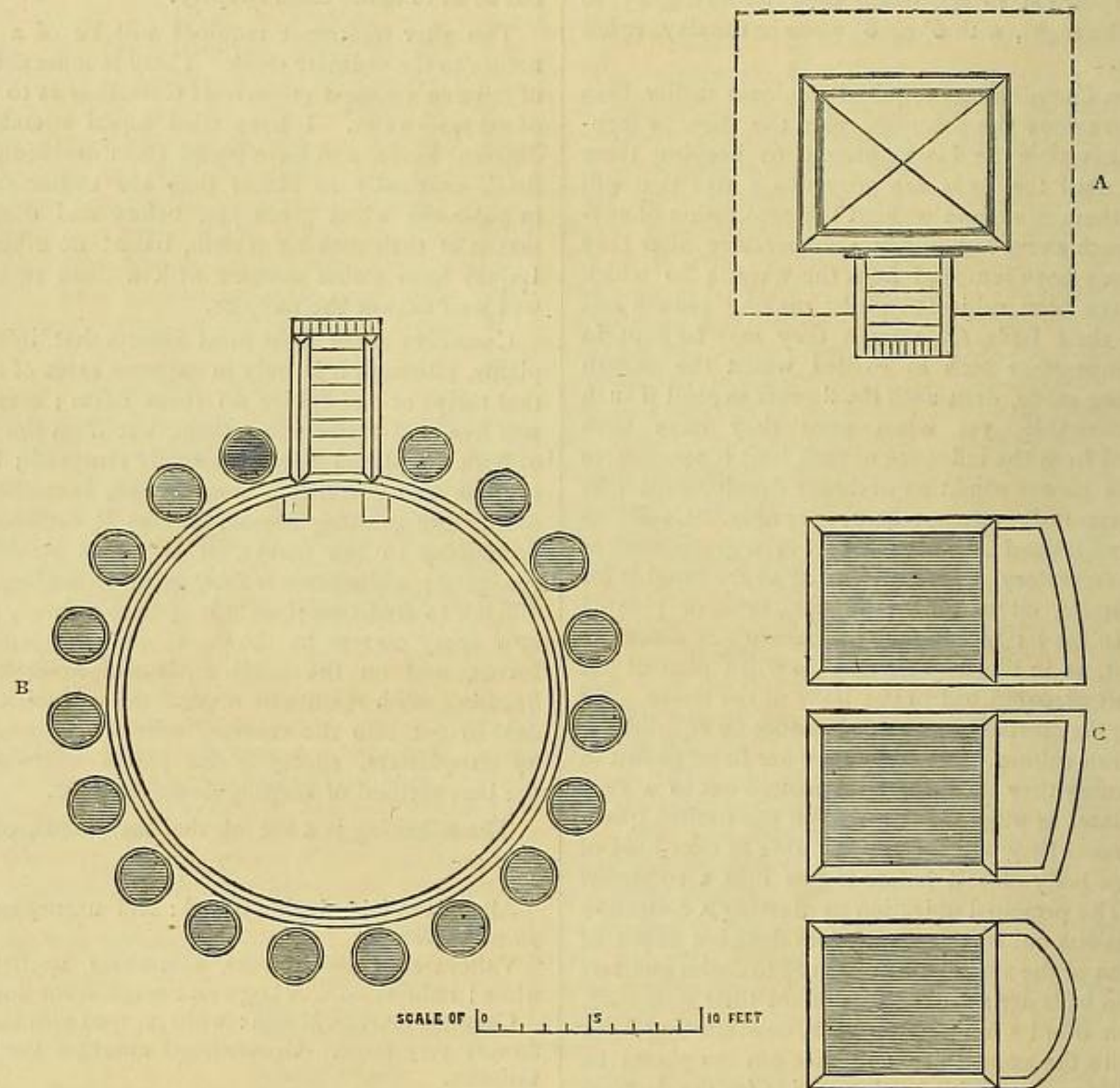


FIG. 71.—A, RAIN-GAUGE; B, SMALLER DRAIN-GAUGES; C, LARGER DRAIN-GAUGE.

Nothing has been done at Rothamsted in the way of manure-feeding stuff or seed control.

The investigations may be classed under two heads:—

I.—FIELD EXPERIMENTS, EXPERIMENTS ON VEGETATION, &C.

The general scope and plan of the field experiments has been:—

To grow some of the most important crops of rotation, each separately, year after year, for many years in succession on the same land, without manure, with farmyard manure, and with a great variety of chemical manures; the same description of manure being, as a rule, applied year after year on the same plot. Experiments on an actual course of rotation with different manures have also been made. In this way field experiments have been conducted as follows:—

On Wheat, thirty-four years in succession, 13 acres, 35 plots, many of which are duplicates of others.

On Barley, twenty-six years in succession, 4½ acres, 23 (or 29) plots.

On Oats, nine years in succession, ¾ acre, 6 plots.

On Wheat, alternated with fallow, twenty-six years, 1 acre, 2 plots.

Samples of all the experimental crops are taken, and brought to the laboratory. Weighed portions of each are partially dried, and preserved for future reference or analysis. Duplicate weighed portions of each are dried at 100° C., the dry matter determined, and then burnt to ash on platinum sheets in cast-iron muffles. The quantities of ash are determined and recorded, and the ashes themselves are preserved for reference or analysis.

In a large proportion of the samples the nitrogen is determined.

In selected cases, illustrating the influence of season, manures, exhaustion, &c., complete ash analyses have been made, numbering in all about 500.

Also in selected cases, illustrating the influence of season and manuring, quantities of the experimentally-grown Wheat grain have been sent to the mill, and the proportion and composition of the different mill products determined.

In the case of Sugar Beet the sugar, by polariscope, has in most cases been determined.

In the case of the experiments on the mixed herbage of permanent grass land, besides the samples taken for the determination of chemical composition (dry matter, ash, nitrogen, woody fibre, fatty matter,

and composition of ash), carefully averaged samples have frequently been taken for the determination of the botanical composition. In this way on three occasions, at intervals of five years—viz., in 1862, 1867, and 1872—a sample of the produce of each plot was taken, and submitted to careful botanical separation, and the percentage by weight of each species in the mixed herbage determined. Partial separations have also been made in other years.

ANALYSIS OF SOILS.

Samples of the soils of most of the experimental plots have been taken from time to time, generally to the depth of 9, 18, and 27 inches, but sometimes to

RAINFALL.

Almost from the commencement of the experiments the rainfall has been measured—for twenty-four years in a gauge of one-thousandth of an acre area, as well as in an ordinary small funnel-gauge of 5 inches diameter. From time to time the nitrogen, as ammonia and as nitric acid, has been determined in the rain waters.

Three "drain gauges," also of one-thousandth of an acre each, for the determination of the quantity and composition of the water percolating respectively through 20 inches, 40 inches, and 60 inches depth of soil (with its subsoil in natural state of consolidation) have also been constructed. A more numerous series of smaller "drain gauges," arranged for the investiga-

plants, including representatives of the gramineous, the leguminous, and other families, have been experimented upon. Similar experiments have also been made with various trees.

BOTANICAL CHARACTERISTICS.

Having regard to the difference in the character and amount of the constituents assimilated by plants of different botanical relationships, under equal external conditions, or by the same description of plants, under varying conditions, observations have been made on the character and range of the roots of different plants, and on their relative development of stem, leaf, &c. In the case of various crops, but

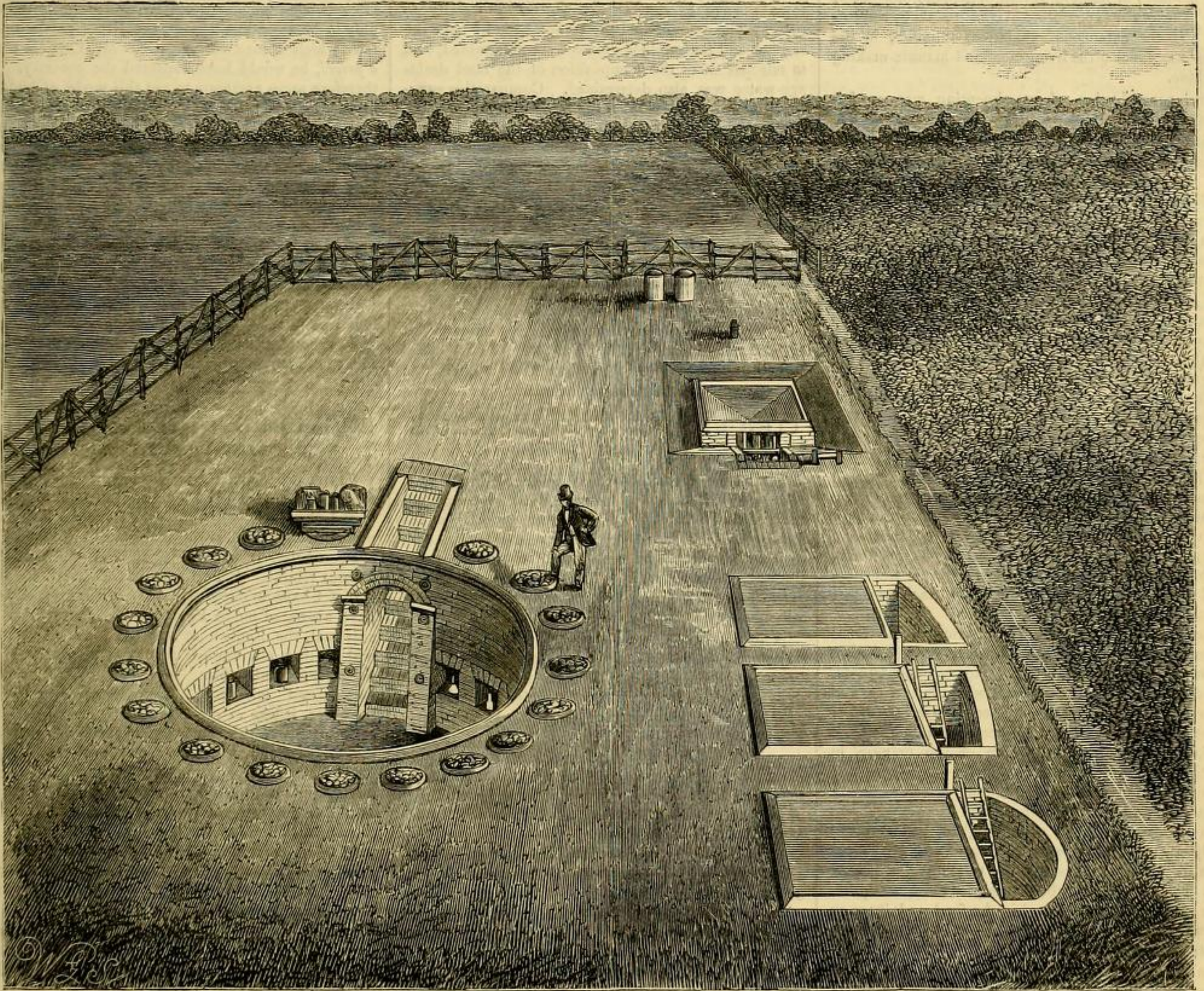


FIG. 72.—DIFFERENTIAL DRAIN-GAUGES AT ROTHAMSTED.

twice this depth. In this way nearly 600 samples have been taken, submitted to partial mechanical separation, and portions of the mould have been carefully prepared and preserved for analysis. In a large proportion of the samples the loss on drying at different temperatures and at ignition has been determined. In most the nitrogen determinable by burning with soda-lime has been estimated. In some the carbon, and in some the nitrogen as nitric acid, have been determined. Some experiments have also been made on the comparative absorptive capacity (for water and ammonia) of different soils and subsoils. The systematic investigation of the amount and condition of the nitrogen, and of some of the more important mineral constituents of the soils of the different plots and from different depths, is now in progress or contemplated.

tion of the influence of different crops and of different manures, are in course of construction. Each of the differently manured plots of the permanent experimental Wheat field having a separate pipe-drain; the drainage-waters have frequently been collected and analysed. Professor Frankland has determined the nitrogen, as ammonia, as nitric acid, and as organic nitrogen, and also some other constituents, in many samples both of the rain and of the various drainage waters collected at Rothamsted; and Dr. Voelcker has determined the combined nitrogen, and also the incombustible constituents, in many of the drainage waters.

AMOUNT OF WATER TRANSPIRED.

For several years in succession, experiments were made to determine the amount of water given off by plants during their growth. In this way various

more especially with Wheat, samples have been taken at different stages of growth, and the composition determined in more or less detail, sometimes of the entire plant, and sometimes of the separated parts. In a few cases the amounts of dry matter, ash, nitrogen, &c., in the above-ground growth of a given area, at different stages of development, have been determined. The amounts of stubble of different crops have also occasionally been estimated.

ASSIMILATION OF NITROGEN.

Experiments were made for several years in succession to determine whether plants assimilate free or uncombined nitrogen, and also various collateral points. Plants of the gramineous, the leguminous, and of other families were operated upon. The late Dr. Pugh took a prominent part in this inquiry.

II.—EXPERIMENTS ON ANIMALS, &C.

Experiments with the animals of the farm were commenced early in 1847, and have been continued, at intervals, up to the present time.

The following points have been investigated:—

1. The amount of food and of its several constituents consumed in relation to a given live weight of animal within a given time.
2. The amount of food and of its several constituents consumed to produce a given amount of increase in live weight.
3. The proportion and relative development of the different organs or parts of different animals.
4. The proximate and ultimate composition of the animals in different conditions as to age and fatness, and the probable composition of their increase in live weight during the fattening process.
5. The composition of the solid and liquid excreta (the manure) in relation to that of the food consumed.
6. The loss or expenditure of constituents by respiration and the cutaneous exhalations—that is, in the mere sustenance of the living meat-and-manure-making machine.

The general plan of experimenting was as follows:—

To provide data as to the amount of food or its several constituents consumed in relation to a given live weight of animal within a given time, and to produce a given amount of increase in live weight, several hundred animals—oxen, sheep, and pigs—have been experimented upon. Selected lots of the animals were supplied for many weeks, or for months consecutively, with weighed quantities of foods, selected and allotted according to the special point under enquiry. The composition of the foods was determined by analysis. The weights of the animals were taken at the commencement, at intervals during the progress, and at the conclusion of the experiment.

The amount and relative development of the different organs and parts were determined in two calves, two heifers, fourteen bullocks, one lamb, 249 sheep, and fifty-nine pigs.

The percentages of water, mineral matter, fat and nitrogenous substance, was determined in certain separated parts, and in the entire bodies of ten animals—namely, one calf, two oxen, one lamb, four sheep and two pigs. Complete analyses of the ashes respectively, of the entire carcasses, of the mixed internal and other offal parts, and of the entire bodies of each of these ten animals, have also been made.

From the data provided, as just described, as to the chemical composition of the different descriptions of animal in different conditions as to age and fatness, the composition of the increase whilst fattening, and the relation of the constituents stored up in increase to those consumed in food, have been estimated.

To ascertain the composition of the manure in relation to that of the food consumed, oxen, sheep and pigs have been experimented upon.

In the case of oxen, the food and litter, sometimes with an acid absorbent, were weighed, sampled and analysed, the animals were fed in boxes for periods of from five to nine weeks, and the total dung produced was well mixed, weighed, sampled and analysed. The constituents determined in the food and litter on the one hand and in the dung in the other, were dry matter, ash and nitrogen.

In the case of sheep no litter was used; the animals were kept, in lots of five, on rafters, through which (but with some little loss) the solid and liquid excreta passed on to a sheet-zinc flooring at such an incline that the liquid drained off at once into carboys containing acid, and the solid matter was removed two or three times daily, and also mixed with acid. The constituents determined in the food and manure were dry matter, mineral matter, sometimes woody fibre, and nitrogen.

In the case of pigs individual male animals were experimented upon, each for periods of three, five, or ten days only. Each animal was kept in a frame preventing it from turning round, and having a zinc bottom, with an outlet for the liquid to run into a bottle, and it was watched night and day, and the voidings carefully collected as soon as passed, which could easily be done, as the animal never passed either fæces or urine without getting up, and in getting up he rang a bell, and so attracted the notice of the attendant. The constituents determined were, in the food and fæces, dry matter, ash and nitrogen, and in the urine, dry matter, ash, nitrogen, and urea.

The loss or expenditure of constituents by respira-

tion and the cutaneous exhalations has not been determined directly, that is by means of a respiration-apparatus, but only by difference, that is, by calculation founded on the amounts of dry matter, ash, and nitrogen in the food and in the fæces and urine.

Independently of the points of inquiry above enumerated the results obtained have supplied data for the consideration of the following questions:—

1. The characteristic demands of the animal body (for nitrogenous or non-nitrogenous constituents of food) in the exercise of muscular power.
2. The sources in the food of the fat produced in the animal body.
3. The comparative characters of animal and vegetable food in human dietaries.

SUPPLEMENTARY INVESTIGATIONS.

In conjunction with Professor Way, an extensive investigation was undertaken on the application of town sewage to different crops, but especially to grass. The amount and the composition of both the sewage and the produce grown were determined, and in selected cases the composition of the land drainage-water was also determined. Comparative experiments were also made on the feeding qualities of the differently grown produce, the amount of increase yielded by oxen, and the amount and composition of the milk yielded by cows being determined. In this inquiry part of the analytical work was performed at Rothamsted, but most of it by Professor Way in London.

The chemistry of the malting process, the loss of food constituents during its progress, and the comparative feeding value of barley and malt, have been investigated.

Although many of the results of the investigations above enumerated have already been published, a large proportion as yet remains unpublished.

CONCERNING GOOSEBERRIES AND CURRANTS.

THERE are Peas which are called double-blossomed, somewhat inaccurately, because their blossoms are not double. Each flower-stalk that starts from the Pea-haulm bears two blossoms, and that is all. Can a more correct name be found for them?—twin-flowering?—or what? “Double-bearing” would seem to indicate that they bore two crops a-year, which is equally untrue.

A like difficulty occurs with Gooseberries, which occasionally give two fruits hanging from the same branched footstalk. M. Carrière overcomes it by designating the varieties which manifest this tendency as “biferous,” although the term is not sufficiently precise, and gives only an imperfect idea of the fact so pointed out. The essential point is, that it should denote the varieties whose fructification differs from that peculiar to the typical form of Gooseberry, *Ribes grossularia*, whose fruits are solitary, whereas these have a tendency to imitate Currants in their formation of bunches, by producing two, or even three, associated fruits, through a biferous or a multiferous effort. M. Carrière asks if the fact is exceptional—if it is capable of continued reproduction? He does not know; the future will tell; it is at least important to point it out. The occurrence, at any rate, is not unique; for in the sowing which produced the plant that attracted M. Carrière's attention, there were several other seedlings possessing the same character. Is it the beginning of the development of a new type? The thing is possible, but cannot of course be certified. This biferous seedling is moderately vigorous and much less thorny than Gooseberries in general; which, however, is not surprising, since it comes from the variety Billiard, which is almost thornless. The fruits have no particularly distinctive quality. They are of average size, slightly coloured, and of agreeable flavour, resembling that of other good varieties. Even if the biferous Gooseberry present no great interest in a horticultural point of view, the case is different when regarded botanically. By modifying the type to which it belongs, its inflorescence assimilates it to another type, a kindred species, the bunch-bearing Currant. Perhaps one of these days horticulture may succeed in making bunches of Gooseberries as familiar as bunches of Currants.

M. Carrière also recommends in the *Revue Horticole* the propagation of Gooseberries and Currants by budding, although they are usually multiplied by cuttings. The operation is performed in the same

way as with other fruit trees, and at the same season when the bark is sufficiently matured and is easily raised from the wood. The same stock can be made to bear one or several varieties. In the latter case, the effect is sometimes very singular, especially if different kinds are associated; for instance, Gooseberries and Currants of various colours, white, yellow, pink, green, red, and even black. At the beginning of last summer the nurseries of MM. Croux et Fils, Vallée d'Aulnay, à Sceaux (Seine), contained a certain number of *Ribes palmatum*, which had been trained in single upright stems and budded as above described. Not only was their ornamental effect very striking, but they also possessed considerable interest. There seemed to be such a complete identity of constitution between the stock and the scion that in many cases the point where the bud had been inserted was hardly distinguishable. This was especially noticeable with the Gooseberries, which seemed to make one with, and only to be a continuation of, the *Ribes palmatum*—a fact which somewhat surprised M. Carrière; for, *à priori*, he would have expected the contrary. He therefore urges amateurs to put this mode of budding in practice; and, for that purpose, to rear as tall as possible single stems of *Ribes palmatum*, so as to produce tree Gooseberries and Currants, which will make remarkable rarities, especially the former. Nevertheless, it should be observed that as *R. palmatum*, *aureum*, *tenuifolium*, and others, have naturally a great tendency to throw up suckers, especially when grafted or budded, care must be taken to remove all such suckers immediately that they show themselves. Another ornamental way of growing Gooseberries and Currants is to train them over a low arcade or bower. The ripe fruit, of various colours, hanging overhead, makes both a novel and pleasing addition to the foliage of such an arbour or covered walk. *E. S. D.*

ENGLISH NAMES OF WILD FLOWERS AND PLANTS.*

EIGHT years ago I was piloting a famous botanist from the east of England among the fields and lanes round Taunton, when he asked me the name of a plant which he did not at the moment recognise. I answered that it was the Gipsy-wort, and received a prompt rebuke. “This is the third time,” he said, “that I have inquired the name of a flower, and you have answered me in English. The Latin names are universal, the English at best are local. It is to be wished that all English names of plants could be forgotten, and their scientific names become popularised instead.” Unquestionably a foolish utterance, it was of great service to myself, for it set me to consider the real value of these names which my pedantic guest despised, and from that time to this I have never encountered the popular name of any English wild flower without questioning it closely as to its etymological history and meaning, and noting the passages in our literature where it occurs. It would be a great pleasure to me to believe that the knowledge gained by these inquiries, put together to the best of my power, could interest you to-night as much as it has interested myself.

It is no new thing to infer from the terms in use at the beginning of a nation's history the arts and customs of the nation using them. Thus the fact that in all or nearly all the Aryan languages the words for the Supreme Being, for the king, for brother and sister, for ploughing, grinding, building, closely resemble one another, is admitted to show that our common forefathers in times when they were still one people, and had not yet scattered into India, Persia, Europe, had the beginnings of religion and government, possessed the family life, knew the simple arts which are most needed for the comfort of home life. Let us see what light will be thrown upon the habits of our Teutonic forefathers if we apply their method of investigation to the popular names of plants.

TEUTONIC NAMES.

The following words are common to all the Teutonic languages—must have been known, that is, to the race from which we ourselves, with the Germans, Danes, Swedes, and Norwegians, are descended, on their first settlement in Europe, and before they broke up into sub-divided nations. The first I will take is Birch, the rind of which must, we

* Lecture by Rev. W. Tuckwell before the Somersetshire Archaeological and Natural History Society.

find, have been used for boat-building and for roofing houses; for boat-building, since the word "bark," from the same root as Birch, stands for ship in English, Dutch, Icelandic, Danish; for roofing houses, since the old English *beorgan* and the German *bergen*, also from the same root, mean to cover, protect, or shelter. From this simple word, then, we gather that our ancestors possessed the arts of building boats and of roofing or thatching houses. Houses could not be built without timber, and we find the word "tree" in almost every Aryan language standing for three things—for a tree, for timber, and for an Oak, extending the use of Oak wood for building purposes back to the first formation in Asia of our mother language, and presenting us with the additional facts that our European ancestors built of Oak timber the houses which they roofed with Birch. In Hazel a fresh fact lies buried. It is in all Germanic dialects the instrumental form of *haz*, command or behest, a Hazel stick having been used, as Jacob Grimm informs us, in the earliest times as a sceptre or baton to keep order among slaves and cattle. Without dwelling on the fact that the old word *halsian*, to foretell, indicates the use of the Hazel rod for purposes of divination, we have the additional probability revealed in a single word that our remote ancestors possessed slaves and cattle. In Hawthorn, common to Swedish, German, and English, we have testimony to the use of a haw, *hæg*, hedge, or fence, "honouring the holy bounds of property," and consequently to the division and appropriation of land, in the earliest Teutonic time. My next word makes some demand upon your etymological credulity. Without tracing particulars, I will ask you to believe that the Sanskrit *Kshi*, to dwell, passes through various forms in one direction to the English "home," in another to the word "heath"; now meaning the plant which grows wild on open land, standing originally for the land itself. "My foot," says Rob Roy, "is on my native heath;" and the same idea was enshrined in the same word to the first Teuton settlers. In the forest he fought his enemies, hunted his prey, hewed timber for his fences, and peeled timber for his roof; his home was in the open land, or heath, from which, again, when ages had passed away and Christianity possessed the towns, he still worshipped his father's gods upon his father's heath, and gained, as Trench thinks, his ancient name of heathen. A sixth word lifts him higher than all the rest. The word Beech, in Gothic, old High-German, modern German, Norse, Danish, Dutch, English, is identical with *book*, the Runic tablets of our ancestors having been carved upon this wood. In Sloe, the wild Plum, we have the root of "slay," its tough wood having been used for bludgeons; Dog-wood is dagger-wood, from *dag*, to strike; from Ash, whose wood was therefore used for spear-shafts, came the old English *æsc*, a spear; sedge is allied to *sæg*, a sharp small iron sword. And let us observe that while all these plants, bearing purely Teutonic names, extend far into Northern Asia, trees which stop short at a more southern limit—the Elm, Chestnut, Holly, Sycamore, Plum, Pear, Peach, Cherry—all have Latin names, showing that the Teuton squatters came from a colder country than that in which they are supposed to have settled near the Roman provincials on the Lower Rhine. The knowledge that Wheat, Barley, Oats, Corn, Rye, are all Teutonic words, completes the historical picture given by the first list of names. They show us a race of men coming from a northern to a southern region, dwelling in timber houses, roofed and thatched, launching boats upon the rivers, possessing cattle and slaves, recognising the rights of property and the sacredness of home, fighting with cudgels, swords, and spears, familiar with cereal agriculture, in some way not ignorant of letters. All these facts, just hinted at here, but challenging minute investigation, we owe to a dozen common names of English plants, whose Latin equivalents teach and commemorate nothing of any national interest to ourselves.

GREEK AND LATIN NAMES.

These names, and a few more, are as old as the English language; but from the conquest to the sixteenth century botanical enquiry ceased in England, and the rest of our popular names are little more than 300 years old. Most of these come to us from the Greek and Latin. Any scholar will detect in Acacia the Greek word for guilelessness; in the Amaranth, with which Milton's worshipping archangels wreathed their brows, the Greek for

unfading; in the Periwinkle the *pervinca* used to bind about the head; in Lettuce, the meaning of milky; in Geranium, the descriptive name, crane's bill. In the Plane he will see the *platanus* of the poets; in the Rose, the *rhodon* of Homer and the *rosa* of Virgil; in the Sycamore, the wild Fig of the Bible, transferred in mediæval miracle-plays to the tree which now bears the name; in the Vine, the *oinon* and *vinum*, whose Sanskrit root is still present in our words twine and twist. He will understand that the Basil, which poor simple Isabel planted in the pot which held her murdered lover's head, was the regal plant, used perhaps of old in some royal bath or unguent; that the Angelica, which now flavours our soups, and was once a specific against the plague, was given to mankind by angels; that the Belladonna was applied as a cosmetic to make ladies beautiful for ever; that the Cyclamen, which still grows wild in Devonshire, owes its name to its prominent circular tuber. He will not so readily discover that the Tansy of our cottage gardens is the Greek *athanasia*—immortality, administered to Ganymede that he might become fit for his life in heaven; that the common Milfoil Yarrow is the *hier*, or holy herb, pledged to heal all herbs with its fragrant leaves; that Nasturtium means nose-twister, from its pungent smell; that our Quince Whortle-berry is a corruption of *myrtillus*, Myrtle-berry; that Eglantine is *aculenta*, the prickly Rose, or Sweet Brier; that the Herb Bennett or *avens*, is the *benedicta*, blessed herb, kept in houses to prevent the entrance of the Devil; that the hip of the Dog Rose is a form of the Greek and Latin words which people afflicted with sore throats know as jujubes; that Liquorice is an Anglicism of the Greek *Glycyrriza*, sweet-root; that the Larch is from the Latin *lar*, a house, in consequence of its use in building; that Lavender, from the Latin *lavare*, to wash, was in the twelfth century Scotch and northern English for washerwoman, because then as now its sweet spikes were laid amongst fresh linen; that the Service-tree is the Latin *cerevisium*, beer—its leaves having been used to flavour ale before the virtues of the Hop were known; that the little Squinancy-wort was the ancient remedy for the disease *kynanche* or dog-choker, which we know in its modern sound as quinsy; that the Mushroom is the *Muscarius* or Fly-bane, because a particular *Agaricus*, pulverised and mixed with milk, was used in Southern Europe as we now use the poison called "Keating's Insect Powder." Least of all will our scholar be quick to admit that the Narcissus owes nothing to the love-sick youth over whom Ovid sung and Bacon moralised, but is connected with the Greek *narkodes*, sluggish, a derivative from *narke*, the torpedo, itself sprung from the Sanskrit *nark*, hell; cited by Sophocles (Ed., Col., 682), as crowning the gods of Hades; gathered by Proserpine before her wedding tour into the same dark region, because its heavy odour (for by it the ancients meant the Hyacinth) blunts the nerves and makes men sleepy and torpid.

FRENCH NAMES.

I can find comparatively few names which we have borrowed from the French. Dandelion is, of course, the lion's-tooth. Mignonette is applied by us to a very different plant from that which bears the name in France. Woodruffe, known to travellers in Germany as flavouring the pleasant drink called *maitrank*, takes its last syllable from *roue*, a wheel, its verticillate leaves being set like a wheel or rowell on the stem. Pansy is *pensée*, thought, from its significance in the language of flowers: "There's Pansy," says Ophelia—"that's for thoughts." Gilliflower is *giroflée*, from *caryophyllum*, a Clove, a name originally given to the Carnation, but now transferred to the Wall-flower. Tutsan is *toute-saine*, the oil in its leaves having made it a remedy for wounds. Most curious of all is Apricot, from *abricot*, which at one time I contentedly referred to the Latin *apricus*, sunny, ripening as it does on sunny walls. It is, in fact, traceable to the Latin *præcox*, early, the fruit being supposed by the Romans to be an early Peach. The Arabs took the Latin name and twisted it into *al burquq*; the Spaniards altered its Moorish name into *albaricogue*; the Italians reproduced it as *albicocco* the French as *abricot*, and we get it next in England curiously enough as Apricock, so spelt in Shakespeare's time, and finally as Apricot.

LEGENDARY NAMES.

Many curious bits of myth and history reveal themselves as we excavate down to these old meanings. The Pæony, or healing-plant, commemorates the

Homeric god Pæon, the first physician of the gods, who tended the bellowing Ares when smarting from the spear of Diomed. The Centaury is the plant with which the centaur Chiron salved the wound inflicted by the poisoned arrow of Hercules. The Ambross, or Wormwood, is the immortal food which Venus gave to Æneas, and Jupiter to Psyche—the Sanskrit *amrita* which Kehama and Kailyal quaff in Southey's splendid poem. The Anemone, or Wind-flower, sprang from the tears wept by Venus over the body of Adonis, as the Rose sprang from his blood—

αἶμα ῥόδου τικτεῖ, τὰ δὲ δάκρυα τῶν ἀνεμόνων.

The Daphne, Syringa, and Andromeda tell their own tales: the last, which you may find in the peat-bogs round Shapwick station, is due to the delicate fancy of Linnæus, who first discovered and named it, blooming lonely on a barren, rocky isle, like the daughter of Cepheus, chained to her sea-washed cliff. The Juno Rose, or tall white Lily, was blanched by milk which fell from the bosom of Juno, the tale being transferred in Roman Catholic mythology to the Virgin Mary and the Milk-Thistle. The yellow Carline Thistle is named after Carl the Great (in Mr. Freeman's county I must not call him Charlemagne), who, praying earnestly for the removal of a pestilence which had broken out in his army, saw in vision an angel pointing out this plant as a heaven-sent cure. The Herb Robert healed a disease endured by Robert, Duke of Normandy, still known in Germany as *Ruprecht's-plage*. The Filbert, though this is disputed, commemorates the horticultural skill of one King Philibert. The Treacle Mustard, a showy crucifer resembling Wallflower, was an ingredient in the famous Venice treacle, compounded, as you will remember, by Wayland Smith to treat the poison sickness of the Duke of Sussex. The word treacle is corrupted from the Greek *theriacum*, connected with wild beasts, whose blood formed part of the antidote. It was at first made up by the physician to Mithridates, king of Pontus, and is still in many parts of England known as Mithridate Mustard. The Flower-de-luce, or *fleur-de-lys*, is the flower of King Louis, having been assumed as a royal device by Louis VII. of France, though legend figures it on a shield brought down from Heaven to Clovis, when fighting against the Saracens. It is probably a white Iris.

Not a few strange superstitions and beliefs are embalmed in well-known names. The Celandine, from *chelidon*, the swallow, exudes a yellow juice, which, applied by the old birds to the eyes of young swallows, who are born blind, or have lost their sight, at once restores it. The Hawk-weed has the same virtue in the case of hawks. The Fumitory, *fume-terre*, was produced without seed by smoke or vapour rising from the ground. The Devil's-bit is a common Scabious, with a premorse or shortened root, which was used so successfully for all manner of diseases, that the Devil spitefully bit it off, and for ever checked its growth. The Eyebright, or *euphrasy*, was given to cure ophthalmia.

"Michael from Adam's eyes the film removed,
Then purged with euphrasy and rue
The visual nerve, for he had much to see."

The Judas-tree, with its thorns and pink blossoms, was the tree on which Judas hanged himself. The Mandrake gathered round itself a host of wild credulities. It was the Atropa Mandragora, a plant nearly allied to the deadly Nightshade, but with a large forked tuber resembling the human form. Hence it was held to remove sterility, a belief shared by Rachel in the Book of Genesis, and was sold for high prices in the middle ages with this idea. In fact, the demand being greater than the supply, the dealer used to cut the large roots of the White Bryony into the figure of a man, and insert grains of Wheat or Millet in the head and face, which soon sprouted and grew, producing the semblance of hair and beard. These monstrosities fetched in Italy as much as thirty gold ducats, and were sold largely, as Sir T. Brown tells us, in our own country. It was thought that the plant would only grow beneath a murderer's gibbet, being nursed by the fat which fell from his decaying body: hence it formed an ingredient in the love-philtres and other hell-broths of witches, and, as it was believed that the root, when torn from the earth, emitted a shriek which brought death to those who heard it, all manner of terrible devices were invented to obtain it. The readers of Thalaba will remember the fine scene in which the witch Khawla procures the plant to form part of the waxen figure of the Destroyer. I have seen the plant growing in the Cambridge Botanical Gardens; it is not uncommon in Crete and Southern Italy; its fruit is narcotic, and its name is probably derived from *mandra*, an enclosed, over-grown place, such as forms its usual home. *Nature*.

(To be continued.)

DUTCH BULBS.

THROUGH the kindness of Messrs. Byvoet, of Haarlem, we are enabled to give a list of the Hyacinths and Tulips which formed part of their prize collections at the Amsterdam International Horticultural Exhibition in the spring of the present year. The list may be of some interest to those who are about purchasing bulbs. The varieties marked * formed also part of the smaller collections, and may therefore be looked on as superior varieties for exhibition purposes.

COLLECTION OF 100 FLOWERING HYACINTHS IN POTS IN 100 VARIETIES, SIXTY SINGLE AND FORTY DOUBLE.

Single Red.	Single Blue.	Double Red.
Fabiola, or Florence Nightingale	Czar Peter	Princess Royal
Romeo*	Lord Derby*	Belle Alliance
Lord Derby	Mary of Scotland	La jeune Christine
Macaulay	General Havelock	Louis Napoleon
Reine des Jacinthes*	Pieneman	Milton
Von Schiller*	Grand Lilac	
Vuurbaak	De Candolle	Double White.
Solfatara	Lord Palmerston	Anna Bianca
Gigantea	Marie	Miss Nightingale*
Incomparable	Mimosa	Sir Lytton Bulwer*
Cavaignac	Baron van Tuyll	Sphæra Mundi
Milton	Charles Dickens	La Virginité
Garibaldi	Gladstone	Ne Plus Ultra
Cynthia	Sir John Laurence	Jenny Lind
Pelissière	Prince Albert	Rosa de Vries
Agnes	Feruck Khan	Duchess of Bedford
	Nimrod	Prince of Waterloo
	Baron von Humboldt	Venus
Single White.	Blondin	
Snowball*	Grande Vedette	Double Blue.
La Grandesse*		Bloksberg*
Lady Franklin		Laurens Koster*
Alba maxima	Single Yellow.	Garrick
„ superbissima	Ida	Van Speyk*
Maria Cornelia	Oblique*	Albion
Paix de l'Europe	Bird of Paradise	Karel Kroonprins
Mont Blanc	Duke of Malakoff	van Zweden
La Franchise		Koning der Nederlanden
Mina	Single Mauve.	Hélicon
Madame Van der Hoop	Hadyn	Comte de St. Priest
Koning der Nederlanden	Charles Dickens	Eendracht*
Grand Alexandre		Madame Marmont
Baroness van Tuyll	Double Red.	Shakespeare
Elfride	Lord Wellington*	Rembrandt
Anna Paulowna	Grand Conquéant*	
	Noble par mérite*	Double Yellow.
	Grootvoorst	Göethe*
	Koh-i-noor	Taune suprême
Starlight*	Prince of Orange*	Willem III.
King of the Blues*	Susanna Maria	
	Bouquet Royal	

COLLECTION OF 100 POTS OF FINE EARLY TULIPS, IN FLOWER, IN 100 VARIETIES (THREE BULBS TO A POT).

La Charmante	Cerise rectifié	Bacchus
Francoiscus Primus	Globe de Régaut	Alida Maria
Susanna	Rose tendre	Keizerskroon
Bizard Pronkert	Canarie-vogel	(broken)
Le Matelas	Triomphe des	Wouverman
Queen Victoria	Roses	Yellow Pottebakker
Feu éclatante	Couleur ponceau	Commandant
Correggio	Red Prince	Zoost van Vondel
Comte de Melbourne	La Cour de France	Molière
Maria de Medicis	Reine des Cerises	Marianne
Belle Lisette	Roi Pepin	Rose brillante
Marquis de West-Feu rouge	Grootmeister (red and white)	Eleonora
Queen of Violets	La Plaisante	La Remarquable
Constantine	Rouge luisante	Proserpine
De Keizer	Yacht van Rotterdam	Bride of Haarlem
Rose de Provence	Drapeau rouge	Belle Alliance
Mianlus	Garibaldi	(broken)
Pronkjuweel	Zoost van Vondel	Waterloo
Cramoisie Royale	(pure white)	Alpheus
Comte de Vergennes	Van der Neer	Brutus (broken)
Couronne pourpre	Alida	Molière (pure white)
Rose Aplati	Standard Gold	Pierrot
Rosa Mundi	Vermillon brillant	Epaminondas
Grootmeister van Maltha (pure white)	Cerise grisdelon	Rembrandt
Morgenzon	Washington	Little Dorritt
Ferdinand Bol	White Pottebakker	Intendant
Johanna	Cerise de France	Donna Maria
Non's Wit	Rose grisdelon	Parragon Everswyn
Standard Royal	Brutus	Chrysolora
Perle blanche	Flamboyante	Red Pottebakker
Keizerskroon	Rouge luisante	President Grant
Belle Laura		Grand Duc major
		Holophernes
		Duchesse d'Angoulême
		La Favorite

AUTUMN ROSES.

BEFORE the season for purchasing comes round, a few words about the most valuable of all Roses—those which bloom freely in the autumn—will not be without benefit to the large class of amateurs who have little opportunity of making observations for themselves. An authentic list of such varieties will not only form a basis for additions to collections, but also serve to correct notes taken at the summer shows, which afford no criterion of the perpetuality of the kinds staged on such occasion. For these reasons the kinds here given are chiefly those which have already appeared, and which have again occupied a noteworthy position in the stands where Roses have formed a portion of the exhibitions in the later part of the year. It is surprising how many of the so-called perpetuals are in actual culture, virtually only summer Roses, their second crop being either nothing, or of

such inferior quality as to be scarcely worth growing at all except for the earlier exhibitions. It is unfortunate also that fragrance appears to be as little valued by many of the raisers of modern Roses as true perpetuality. Some of the most attractive Roses of modern date, Baroness Rothschild for instance, are destitute of that property which is, so to speak, almost the very soul of the Rose. We may almost exclude the "Teas" from comment, as they are always late bloomers, some perhaps a little more freely so than others, but all worth cultivating are essentially autumn bloomers, the difference being that some display that invaluable function out-of-doors and with greater perfection in colour and substance than when grown under glass. The whole of the Gloire de Dijon family, which bid fair to become a distinct race, are remarkable for this faculty. Madame Berard* and Belle Lyonnaise with the Gloire itself are never so rich and so fine as late in the year.

The following were well shown at the Alexandra on September 13, though the boxes were much less numerous than they otherwise would have been but for the heavy rains in the earlier part of the week. They may, therefore, be taken as representing good autumn bloomers, and consequently worth the particular attention of those wishing to add to or remodel their collections. We shall give them alphabetically, for the sake of convenient reference:—

Abel Grand, H.P.	Madame la Baronne Rothschild, H.P. ; one of the most numerous illustrated, and in fine condition.
Adrienne Christophle, T.	Madame Bellenden Kerr, H.P.
Alba rosea or Madame Bravy, T.	Madame Marie Finger, H.P.
Alfred Colomb, H.P. ; frequently, and in fine form.	Madame Trifle, T.
Antoine Ducher, H.P. ; a bloom or two.	Mdlle. Annie Wood, H.P. ; several good.
Auguste Rigotard, H.P. ; ditto.	Madame Victor Verdier, H.P. ; most excellent.
Beauty of Waltham, H.P. ; several, in fine order. It is remarkable how frequently this fine old Rose appeared in the prize boxes at the great summer shows, incontestably proving its superior merit.	Mdlle. E. Verdier, H.P. ; good.
Belle Lyonnaise, T. ; very frequently.	Marie Rady, H.P. ; good.
Bessie Johnson, H.P. ; more than once.	Maréchal Niel, T. or N. ; not particularly fine.
Bouquet d'Or, T.	Marie Baumann, H.P. ; frequently shown, and well.
Captain Christy, H.P. ; whatever other faults it may have it must certainly be admitted a free bloomer in the autumn.	Marie Van Houtte, T.
Céline Forestier, N. ; some blooms of this.	Marquise de Ligneris, H.P.
Charles Lefebvre, H.P. ; not so fine as some.	Marquise de Castellane, H.P.
Cheshunt Hybrid, T.	Miss Hassard, H.P. ; good.
Comtesse d'Oxford, H.P. ; several times.	Maurice Bernardin, H.P. ; a fine bloom or two.
Dr. Andry, H.P.	Paul Néron, H.P. ; more double and symmetrical than usual, in consequence of not being overdone. The writer cut a bloom of this in Mr. John Fraser's nursery a few days before the show, almost equal in globular form to Felix Genero.
Duke of Edinburgh, H.P. ; frequently and fine.	Mons E. Y. Teas, H.P.
Dupuy Jamain, H.P.	Narcisse, T. ; always a good autumn bloomer.
Emile Hausberg, H.P. ; fine and globular.	Niphetos, T. ; some good specimens appeared.
Etienne Levet, H.P. ; many times and good.	Pêrle des Jardins, T. ; a nice yellow Tea.
Ferdinand de Lesseps, H.P.	Prince C. de Rohan, H.P. ; a bloom or two.
Fisher Holmes, H.P.	Princess Beatrice, H.P. ; several very fine examples.
François Michelin, H.P. ; good.	Sir Garnet Wolseley, H.P. ; in Mr. Cranston's stand were some good flowers.
Général Jacqueminot, H.P. ; one of the most floriferous and continuous of all the H.P.'s.	Malmaison, B. ; always a fine late Rose.
Gloire de Dijon, T. ; plentiful and good.	Rev. J. B. M. Camm, H.P. ; good.
John Hopper, H.P.	Star of Waltham, H.P. ; many fine examples, proving amongst other excellencies that it is a reliable late Rose.
La France, H.P. ; most numerous of any kind.	We cut some much finer specimens at the Waltham Cross Nurseries, however, than were seen at the Palace.
Louis Van Houtte, H.P. ; plentiful and good—far before Reynolds Hole, the few blooms of which, together with the Duke of Connaught, presented a burnt and foxy appearance at the petal points—anything but attractive.	Victor Verdier, H.P. ; a well-known autumnal bloomer.
Madame Berard, T. ; many superb examples.	Von Moltke, H.P. ; not often exhibited, though small, of a brilliant colour.
Madame Charles Wood ; good.	Xavier Olibo, H.P. ; very rich, but scarcely a Rose for amateurs unless under exceptionally favourable conditions.
Madame Falcot, T.	
Madame George Schwartz, H.P.	

It must not be supposed that these names exhaust the list of good autumnal Roses, or that others could not be found to accompany them at the nurseries or in large collections. There are hosts of old favourites of well established repute that have been and will be in flower till cut off by the frost. There is another reason given as an illustration derived from the last public displays, which have had everything against them from unfavourable atmospheric conditions—the feasibility of establishing autumnal Rose shows. Under ordinary circumstances the list would have been multiplied fourfold, but exhibitors are notoriously at the mercy of the weather.

Speaking generally the present can scarcely be termed "a Roseless autumn." In this respect the

writer has met with few complaints. The writer's personal observation at several large nurseries, as well as at private collections, corroborates this view. There has been no lack of fine flowers, with promise of plenty more to come, Jupiter Pluvius and rude Boreas—"blustering railer," as the song says—permitting. *W. D. Prior.*

FOREST TREES OF CANADA.

(Concluded from p. 299.)

Acerineæ.—Two of these trees are very common all over Canada, the Rock Maple (*Acer saccharinum*), and the White Maple (*A. dasycarpum*). These are the most beautiful trees in the Canadian forest. Their tall rugged trunks are crowned with a mass of foliage, beautiful in summer, but doubly beautiful when turned by the early frosts of the fall into twenty gorgeous colours and shades of colours. My pen is quite unable to describe the beauties of the Canadian forest at this season of the year. No painter has ever done justice to it. The Rock Maple is a very tough, close-grained, and hard wood. It is highly prized for axe-handles, sleigh-runners, shafts, poles, machinery, and any purpose for which strength and elasticity are required. The Bird's-eye Maple that we see in furniture and ornaments is merely a variety of the Rock Maple, so is the Curly Maple. The woodsman never knows before he strikes his axe into the tree whether it is bird's-eye, curly, or plain.

The Rock Maple is the tree from which the maple sugar is made. Early in the month of April, in Lower Canada, when the snow is still deep in the wood, the inhabitants, the Indians, and many of the back settlers hie into their sugar camps ; sometimes accompanied by their wives and families, who enjoy the picnic immensely. The sugar-maker provides himself with a large quantity of Birch-bark sheets in the summer, which he makes up into troughs or pails to hold the sap. Some hundred of these are required in a large "sugary." The Maple tree is tapped by cutting the letter V in the bark. At the angle a little peg of wood is stuck in, to act as a spout, and convey the sap into the trough which is placed below it. A good tree will yield 3 gallons of this sap in a day. The sap only runs in warm sunny days after frosty nights ; 4 gallons of this sap are required to make 1 lb. of sugar. It is boiled down in a cauldron over a hot fire until the syrup on being dropped into the snow turns hard. When it is sufficiently boiled it is strained through a blanket (let us hope a clean one), and poured into bark dishes, when it soon hardens. The boiling and straining is the work of the women ; the men are kept very busy in attending to the trees and collecting the sap. One man will sometimes tap 200 or 300 trees. An Indian, with his wife and little child, can make 600 lb. of maple sugar in one spring. A very good Maple tree in one season will yield 8 lb. of sugar. Some springs the sap runs better than others. Strange to say, this great depletion—8 lb. of sugar represents about 32 gallons of sap—does not seem to hurt the tree, which is tapped season after season without any bad result to its health. The average run of large trees is about 20 gallons in the season.

The stranger is astonished to see this very ornamental and useful timber used as firewood. Rock Maple is the best of fuel, and constitutes the staple firing of Lower Canada, New Brunswick, and Nova Scotia. Hundreds of thousands of trees are burned every winter. Many thousand stoves in Lower Canada alone glow all winter with red-hot Maple brands, and yet they make no perceptible difference in the Maple forests. With fair play the Maple and the other valuable woods in the Canadian forests will suffice not only to warm and to shelter many generations of Canadians yet unborn, but also to adorn and beautify their country for ages to come. Detestable forest fires, the result of gross carelessness, do more harm to the forests in twelve hours than all the stoves in Canada do in a year. The Rock Maple indicates good dry soil, and is generally found growing with Beech, Black Birch, and White Maple. The White Maple is an equally ornamental tree, but the wood is inferior both as timber and as fuel. There are also two or three other varieties of the Maple, one of which, *A. pennsylvanicum*, is the favourite food of the moose.

Cupulifera.—The White Oak (*Quercus alba*) occurs here and there in the lower provinces, but is abundant in Canada West. It is a large and valuable tree, indi-

cating the best quality of land. The wood is made into staves, and is used for carriage building and other purposes. The bark is used in the tanneries. The Swamp Oak (*Q. prinus*), a variety of the above, so called from its growing in swampy places, is also an excellent and very tough wood. The Red Oak (*Q. rubra*) is a somewhat inferior wood to both of these.

The Beech (*Fagus sylvestris*) is common all over Canada, and is generally found in company with the Maple and the Birch. It is a hard and excellent timber, but not much lumbered. Together with Maple and Birch it is cut up in 4-foot lengths, split, and piled in little heaps 8 feet long by 4 every other way. In this shape it is called cordwood, and is sold

Black Ash (*F. sambucifolia*) grows in swamps. It is chiefly used by the Indians for basket making. A tree is cut down, and after having been macerated in water it is beaten with the poll of an axe until the wood peels off in narrow ribbons, which the Indians dye and weave into baskets. Ash trees of both kinds indicate a poor soil.

Ulmaceæ.—The White Elm (*Ulmus americana*), a magnificent tree, that grows in rich intervale lands, generally near the banks of rivers or creeks.

The Rock Elm (*Ulmus racemosa*) grows chiefly in Canada West, in the same sort of land as the foregoing. Both these Elms are very valuable wood.

Tiliaceæ.—Basswood (*Tilia americana*). A very

more open in the grain, but makes very pretty furniture. The nuts are like Walnuts in shape, only much harder in the shell and the fruit more oily, not unlike the Brazil nuts in flavour. A very pretty tree; grows in poorer soil than the Walnut.

The Hickory (*Carya alba*) is the heaviest of all Canadian woods. Used for tool-handles, carriage-spokes and shafts, fishing-rods, &c. There are two varieties of this tree, the rough-bark and smooth-bark. Grows only in Canada West. The nuts of the rough-barked variety are very good eating.

Anacardiaceæ.—Sumac (*Rhus typhina*). A small and very pretty tree, that grows chiefly in succession to the first forest crop. Indicates bad land. The

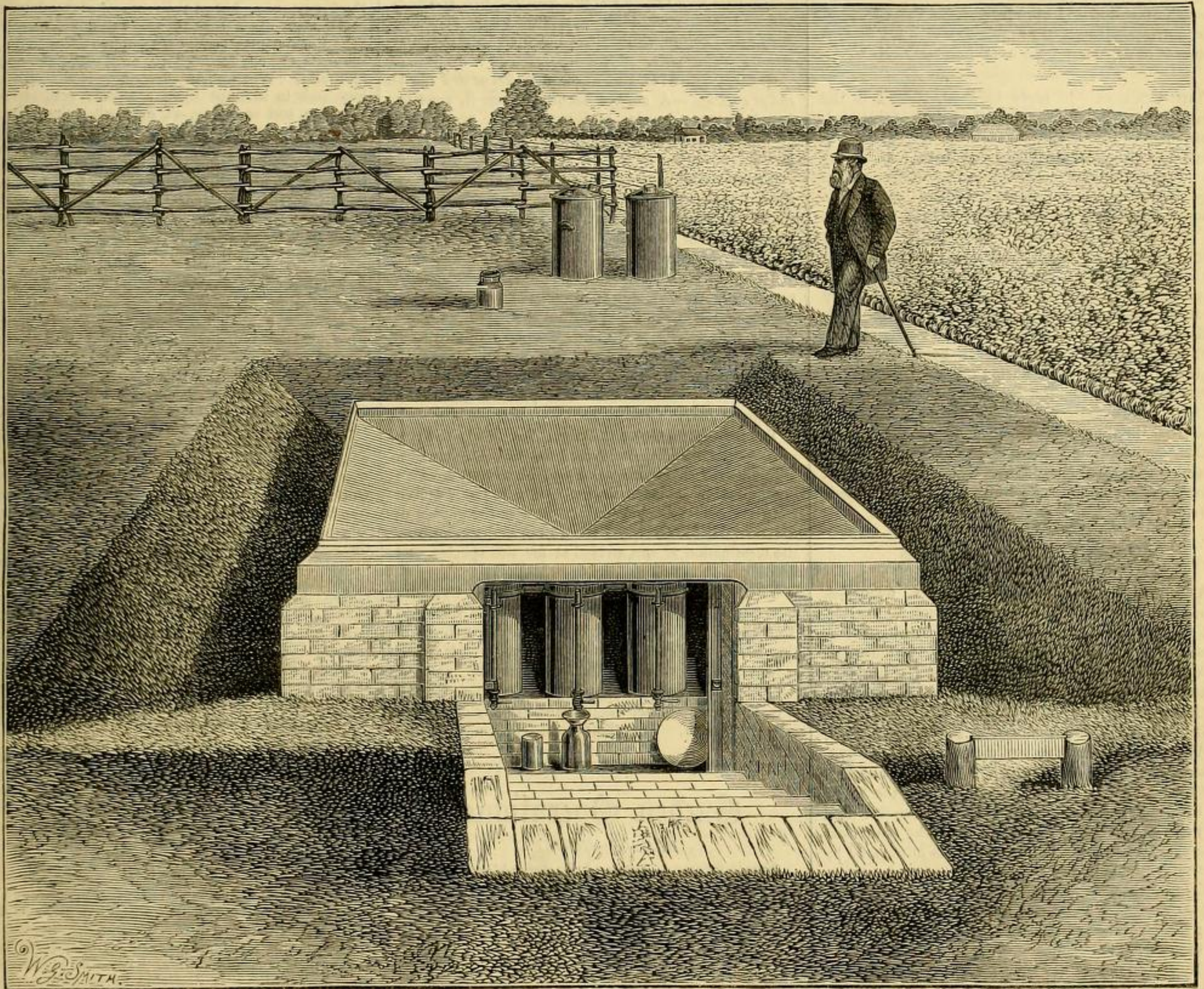


FIG. 73.—RAIN-GAUGE AT ROTHAMSTED; AREA, ONE-THOUSANDTH OF AN ACRE.

as fuel. The Winter Beech is a variety so called from its retaining the dead leaves all winter. It is a small tree, but the wood is much valued for axe-handles and agricultural implements.

The Chestnut (*Castanea vesca*). This tree grows only in Canada West. The wood is light and durable. It is very like our own Chestnut, if not identical; the nuts are much alike.

The Hornbeam (*Ostrya virginica*) is one of the hardest of Canadian woods. It is a small-sized tree; the wood is used by carriage builders.

Oleaceæ.—White Ash (*Fraxinus Americana*) grows in low land. A very tough and flexible wood, of closer grain than the English Ash. It is found all over Canada; used by carriage makers, barrel makers, &c. It is the most flexible of Canadian woods, and is used for making hoops, also by the Indians for making snow-shoe bows.

soft wood, something like our Sycamore; useful for turning and carving; also used in furniture and machinery.

Salicaceæ.—The American Poplar, Aspen, or Popple (*Populus tremuloides*). This tree is commonly found occupying the place of the old Pine forests that have been destroyed by fire. It is a very soft wood, of not much value. The Balm-of Gilead is a variety of the above. The seed coverings of this tree are a sort of down or cotton, which falls in the summer like snow.

Juglandaceæ. (Not found in the northern forests.)—The Black Walnut (*Juglans nigra*) grows only in Canada West. A very valuable wood, used chiefly by furniture makers; also makes stocks of guns, &c. Well known in this country.

Butternut (*Juglans cinerea*). This is an inferior species of Walnut, the wood is lighter in colour and

wood is of a yellow colour, and used for furniture and dyes. The bark is valuable for tanning purposes. The seed is contained in large crimson pods, which makes the tree very gay in the fall of the year. The Sumac is a very pretty ornamental tree, and grows freely when transplanted.

Amygdalaceæ.—There are three Cherries, of which the Red Cherry (*Cerasus pennsylvanica*) and the Choke Cherry (*C. virginiana*) are the most common. The former is one of the first trees that springs up on burnt land in succession to the Pine and Spruce. In some districts in the early summer whole tracts are white with the blossom of the Red Cherry. The fruit is not good. The Black Cherry (*C. serotina*) is a larger tree, and the wood is of some value, also the fruit. It only grows in Canada West. The Choke Cherry, so called from the fruit, which is such a strong astringent as almost to choke the eater. This pretty shrub grows in the outskirts of the forest.

Natural History.

THE WAGTAIL AND THE CUCKOO.—In your issue of the 1st I find an account, from your correspondent, Mr. Thomas Wynne, of the rearing of a young cuckoo by a pair of water-wagtails which had built their nest in a Laurel bush. Mr. Wynne states that he never before knew that these birds built in shrubs; I also was ignorant of the fact of water-wagtails building in shrubs, although I have paid some attention to the habits of our commoner birds. Some weeks ago, however, at the house of a relative, I saw a wagtail's nest built in a fork of the *Cotoneaster microphylla*, which covered the front wall of his house. The nest was about 2 feet from the ground, and not more than that from the portico. Here, close to the main door of the house, a pair of young wagtails were reared, and in due time took to wing. Though exceptional, I have little doubt that others of your correspondents will be able to cite a few similar instances of departure from usual habits. *J. A. C.*

THE CUCKOO.—In reply to "W. E. T.", in the issue of September 8, regarding the habits of this bird, I confidently believe they do suck the eggs of various species of the feathered tribe. I have found many nests during the past few seasons thus destroyed, the eggs being in many instances broken open in a manner which left no doubt that it had been done by the beak of some bird. Now in this immediate neighbourhood we have neither jays, squirrels, nor snakes, which "W. E. T." thinks might be the culprits; but both cuckoos and magpies are very plentiful, and it is known that the latter of these birds will destroy eggs. Having studied the habits of birds for years, I am convinced that both the above birds destroy many nests during the breeding season. There is no doubt that the habits of the cuckoo are not yet fully known, more particularly during the breeding time; but those naturalists who daily see these birds in their haunts during the spring may eventually, by careful study, solve many things which are at present open to much doubt concerning the cuckoo. *Yorkshire.*

PLANT PORTRAITS.

ALLIUM UNIFOLIUM, *Bot. Mag.*, t. 6320.—A handsome Californian species resembling *A. roseum*, but differing from all known species by the circumstance that its bulbs are developed at a distance one from the other, and are connected by a thread-like rhizome. The plant was introduced by Messrs. Backhouse.

DENDROBIUM CRYSTALLINUM, *Bot. Mag.*, t. 6319.—A species described in our columns, 1868, p. 572. Like *D. Wardianum*, to which it is closely allied, it is a native of Birma; it differs from it by the shape of its elongated anther-case, which is covered with very prominent crystalline papillæ. The plant was discovered by Colonel Benson, and was introduced by Messrs. Veitch.

ESCHSCHOLTZIA MANDARIN, *Floral Magazine*, t. 275.—A splendid variety of the common *Eschscholtzia*; the petals are clear yellow within, but blood-red on the outer side. *Carter & Co.*

ODONTOGLOSSUM CIRRHOSUM, *Lindl., Bot. Mag.*, t. 6317.—A very beautiful *Odontoglossum*, with dense panicles of white flowers, the lance-shaped segments spotted with brown, and with a yellow lip. Native of Ecuador, and figured by us in 1876, p. 503.

ORANGE, TANGIERINE, *Florist*, September, 1877.—A good figure of the fruit of this fine variety, from the collection of Messrs. Rivers.

PAVONIA WIRTHII, *Floral Magazine*, t. 276.—A stove shrub of the Mallow family, with lanceolate-serrate leaves; the flowers are each provided with an outer calyx of numerous linear pink or red bracts forming a kind of cage over the true calyx.

PELARGONIUMS ARTIST, EVELYN, DESPOT, *Floral Magazine*, t. 273.—Three show varieties, raised by E. B. Foster, Esq., Clewer Manor, Windsor, and in the hands of Mr. Turner, of Slough.

PELARGONIUM PRINCESS OF WALES, *Florist*, September, 1877.—One of the new Regal *Pelargoniums* sent out by Mr. W. Bull. The flowers are large, the petals crisped and frilled at the edges, the disc of the petals of a bright rose, mottled with white spots, and with a white stalk. The two upper petals are blotched with maroon.

PITCAIRNIA FLAVESCENS, *Bot. Mag.*, t. 6318.—

A stemless Bromeliad, with long, sheathing, recurved linear-lanceolate leaves, whitish on the under surface, erect, many flowered racemes, with a woolly rachis and pale yellow spreading flowers each about 2 inches long. The native country is not known. The present plant flowered at Kew in April.

PINK DUCHESS, *Floral Magazine*, t. 273.—A forcing Pink of lilac colour and good form and substance. It is in the hands of Mr. B. S. Williams.

PINK, SCARLET TOM THUMB, *Floral Mag.*, t. 270.—A very dwarf, stiff-habited Pink, with large, well-formed, fragrant, scarlet flowers. It was introduced by Messrs. Veitch, and is certainly a most desirable plant for pot culture.

ROSE EDWARD PYNART, *Revue de l'Hort. Belge*, September, 1877.—A fine globular Rose, of a bright red-groseille colour. It is a seedling from Antoine Ducher, raised by M. Schwarz, of Lyon.

SONERILA ALP. VAN DE SANDE, *Ill. Hort.*, t. 229.—A form with ovate-lanceolate leaves of a rich deep green colour abundantly blotched with irregular creamy white spots.

SPIRÆA VENUSTA var. **ALBICANS**, *Revue de l'Horticulture Belge*.—A chance seedling from *S. venusta*, found in the nurseries of Simon-Louis, near Metz. It differs from the type in its lighter rose-coloured flowers.

TRADESCANTIA NAVICULARIS, *Ortgies, Gartenflora*, t. 901.—A creeping species, with small, boat-shaped ovate-acute leaves, and small pink flowers. It is a native of Peru, and would make a pretty greenhouse basket plant.

TULIPA KAUFMANNIANA, *Regel, Gartenflora*, t. 906.—A species with medium-sized flowers, with oblong obtuse segments of various shades of pink, and with a yellow base. The anthers open gradually from above downwards, so that the upper portion is withered while the lower part is still unexpanded—a very curious circumstance. The plant is a native of the mountains of Turkestan.

TULIPA ORPHANIDEA, *Boiss., Bot. Mag.*, t. 6310.—A Greek species, discovered by Dr. Orphanides, with flowers as large as those of *T. silvestris*, of an orange-yellow colour, flushed with red. Figured from a plant which flowered in June in the garden of the Rev. H. H. Crewe. We do not understand how the termination *ea* was arrived at for this species, and leave it to the grammarians to explain.

YUCCA ORCHIOIDES, *Bot. Mag.*, t. 6316.—A form intermediate between *Y. orchioides* of Carrière and *Y. filamentosa*, being probably an extreme form of the latter species. In any case, with its broad spreading leaves with filiferous margins, and its panicle of large white, spreading, bell-shaped flowers, it is a very handsome, hardy plant, worthy of a place in every garden. The plant figured bloomed at Kew in July.

Garden Operations.

PLANT HOUSES.

PLANT STOVE.—Stock of all winter-blooming stove plants, especially such as are of a soft character, annually propagated, must not be left too long in pits or similar structures where they cannot receive enough warmth, for even in cases where they are not required in flower until the end of the year they must not be subjected to too cool treatment, or their roots will be liable to either perish or become stagnant to an extent that will seriously injure their blooming capabilities. *Salvias*, *Sericographis*, *Begonias*, and a portion of the *Poinsettias* should now be kept tolerably warm to bring them into flower at the time required.

Ferns.—There is one circumstance often lost sight of connected with the cultivation of heat-loving plants—Ferns in particular—that is, the rapidity with which that most troublesome insect, brown-scale, is communicated from any specimens which are affected with it, and which overhang others. The habits of this insect, which entails such an amount of labour in keeping it down, with injury and disfigurement to the plants, consequent upon the cleaning process they have to undergo, are little observed and often very little understood. From the apparently fixed position which it holds on the leaves and stems of plants, the observer is frequently led to the conclusion that it is little likely to be communicated to clean subjects, unless these are placed for a considerable time in absolute contact with affected ones; yet if any one will take the trouble to examine these scale coverings when they have attained something like their full size, if they are removed without crushing, it will be found that each contains a numerous colony of very small but perfectly formed insects, whose powers of locomotion will be easily

seen if placed upon a leaf or the hand, and subjected to a slight magnifying power. When these insects are released naturally from their scale-covered habitation very little disturbance of the plant, even no more than occurs from the use of the syringe, brings them down in quantity upon everything that stands beneath taller affected plants. In this way it often happens in the Fern-house that the most valuable dwarf-growing kinds, such, for instance, as *Gleichenias*, get seriously infested with the pest from overhanging Tree Ferns; consequently where scale exists in the latter the cultivator should not rest with merely keeping them in check, but ought to be satisfied with nothing less than their extermination. It is from now to the end of the year, when the season's growth has attained a mature hard condition and no young fronds are being formed, that the cleansing process may be effected with least injury. The lower, older fronds are those that are generally infested, and from these they usually find their way to the younger ones above, to prevent which many growers cut away the lower ones; but as the removal of the fronds in a green state has a serious weakening influence upon the plants, means should be taken to free them from the scale without cutting away until they have decayed naturally. When much affected, it is almost a hopeless task to attempt their complete eradication by brushing and sponging, as, even when the plants are repeatedly gone over, some are almost certain to escape detection. I have found nothing so effectual as, at this time of the year, immersing the infested fronds in Abyssinian Mixture at from 6 to 7 oz. to the gallon, varying the strength according to the more or less hardy state of the fronds, consequent upon the conditions under which they have been grown. The plants are awkward to get at for this purpose. I have found it best to lay them down on their sides, inclining the heads sufficiently to enable the affected fronds to be immersed in the mixture, in which position they should lie for an hour, turning the plants round until all the infested parts are so treated, when if the work is well done very few will escape; indeed, if there is any doubt, a second application should be given. At first sight this may seem to involve considerable trouble, but complete extermination will in the end be found a great saving of labour. Lower growing spreading Ferns that have now completed their growth may be similarly treated. With young plants of *Gleichenias* particularly, the work should be followed up until they are perfectly free from the insects, some of which often get so low down as to be found on the rhizomes creeping upon the surface of the soil. If these most beautiful and valuable Ferns are not effectually freed from this, to them the worst and most unmanageable of insects, before they attain any considerable size, the work becomes impossible so far as the ordinary cleaning by hand goes, as the incessant brushing and sponging renders them unsightly. *Adiantums*, *Aspleniums*, *Pteris*, *Polypodiums*, *Nothochlænas*, *Lomarias*, *Doodias*, *Davallias*, and similar dwarf-growing species should be treated in like manner, and the work persisted in until a thorough cleansing has been effected.

My reason for now going so far into detail in this matter is from a conviction that to see these most beautiful plants in the condition which they ought to be, they must be kept free from these, their worst enemies; and if, as happens in most collections, the plants are also more or less affected with thrips, the eradication of these at the same time is certain by the same means. It is useless, however, to attempt the work at any other time except now through the autumn, when most of the species will have done growing, and be devoid of soft immature fronds.

Previous to these insect-cleaning operations being carried out any plants that have ripe spores upon them, and which it is desirable to propagate, should have these taken off and sown. With many of the most difficult to raise in this way, if the spores are left until they can be shook off, it will be found the operation comes too late, and that they are already fallen and lost. I have found it better to take a few likely fronds, cut them in small bits with a pair of scissors, and strew them over the surface of the pans of prepared soil, squeezing them down by hand so as to be under the influence of the moisture contained in it. In this way I have increased many varieties with which I have previously failed. Seedling Ferns that have been raised through the summer should be now pricked off into well drained pans filled with very open porous soil, putting them in an inch apart; if allowed to remain through the winter in the seed pans they get weakened by over-crowding. Young Ferns that were moved singly some months back into thumb-pots should, as they require it, receive a shift, not giving them too much room; in this way they will be much better calculated to make strong growth next summer than if the potting was deferred until spring, as they will thus be enabled to acquire much more strength of roots. *T. Baines.*

ORCHIDS.—The very beautiful and showy varieties of *Miltonias* that will now be in flower, partly on account of their blooms appearing when there is a

comparative absence of flowers, and also because they retain their colour and freshness for a considerable length of time, are of such a useful and pleasing character that where convenience can be given it is desirable that they should be well represented and a little extra care given to them at all times. It is not always that they are to be met with in a very healthy and satisfactory condition—either the leaves are of a dull, yellow colour, with shrivelled bulbs, or in some cases the bulbs are without leaves altogether. In hardly any collection will the dwarf, compact-growing species, as *M. spectabilis*, *bicolor*, *virginialis*, or *Moreliana*, be observed where the foliage is of a deep shining green, and in these cases it is not so essential as an indication of health and vigour as it is with the majority of plants. These are all close and free growing species, and on account of the great numbers that have been imported at various times, are found to vary very much in different plants. Of *spectabilis* the labellum in some varieties is of an intense rosy purple, the colour being diffused to the very edge, the flowers also standing up in a very firm and bold manner. Among the *Morelianas*, too, are some where the flowers are of an unusual size and substance, the colour and veining of the lip being of a very rich and distinct character. These should all be grown in the Cattleya-house. As a rule they are found in their native habitat clinging very securely to the smaller branches of the trees, the small roots closely interwoven one over another, the growths at the same time gradually working themselves quite round the stems, forming close and dense tufts. They may be grown on blocks, in which condition they will root and grow very freely; in fact, if those that are just received after importation are treated thus they come on better than if they were made up in pots in peat and moss and stood on the side tables. On blocks they can be treated to copious supplies of water, and this during the lengthened growing season is an absolute essential; at the same time it runs quickly away, and thus the risk of damp and rot is not so great as when a mass of damp soil is present, and only a few roots entering it. When, after becoming established, it is thought desirable to make them up into larger specimens, they may be fixed, blocks and all, three or four, according to size, in shallow pans, so that they may be suspended from the roof. In making them up use plenty of drainage, and in the moss and peat some small crocks or broken pieces of bricks will be found to be of service in keeping the soil porous and open. At no season must they have the direct rays of the sun allowed to fall on them; at the same time a good light will assist the flowers in pushing up, and help them to expand. The long bulb section, such as *M. Clowesii*, of which there are several varieties; *candida grandiflora*, a most desirable form; and *Regnelli*, with the dark rosy purple variety named *purpurea*, are, on account of their manner of growth, best when grown in pots, well raised above the rim, with plenty of drainage and open soil, as already described. These, too, should be stood in the Cattleya-house, where they will grow very freely, and during early autumn throw up the spikes of bloom which are ever welcome. The rare *M. cuneata*, the lip of which is pure white, will, however, almost always come into flower during January and February. Carefully look through the collection from this time in the matter of watering; as the plants do not dry so quickly, only give water when necessary, otherwise an undue abundance of moisture is very apt to cause rot to attack the young shoots of those that start away in the autumn. *W. Swan, Fallowfield.*

FLOWER GARDEN, ETC.

Most of the bedding-plants have grown and bloomed well this season, but many of the flowers suffered from the heavy rains which prevailed over most parts of the country. From the same cause plants that are so unusually vigorous are consequently in the condition in which frost is most likely to pinch them; this may occur at any time now, but if frost keeps off, the flower-beds and borders may be fresh and enjoyable for several weeks to come. Keep a sharp look-out for decayed flowers, leaves, &c., and have them cleared off as soon as possible. Any plants that are growing beyond their proper limits may require to be thinned out and pinched back to their desired form; wherever they are encroaching on the grass or edging of walks have them trimmed without delay, for sometimes harm may be done before it may be thought necessary to look after it. Get the propagating brought to a close as early as possible. *Verbena* cuttings are in better condition now than earlier in the season, and will root quickly in a close, humid atmosphere. Climbers that are growing strongly will require attention. The stormy weather has kept the lawns rather untidy. Let them be swept up as often as required, in order to have them enjoyable. The grass still wants the machine frequently run over it, which keeps it firm and smooth. Provision had better be made for securing the *Pelargonium* cuttings in the event of heavy rains or frost setting in; the latter may occur at any time now, as the season is pretty far advanced, and not much to be trusted for tender

things after this time. The best varieties of *Lobelia* should be selected and marked, and the seeds carefully looked for in dry weather. Any other choice seeds may be collected in the same manner. See that the ties are not getting broken which keep *Cupressus*, *Junipers*, and other spiral trees in form; so much rain and wind has been rather trying for them. Have weeds kept under at every favourable opportunity. *T. Blair, Shrubland Park.*

FRUIT HOUSES.

FIGS.—If the same course of treatment as indicated in the preceding Calendar for Figs, viz., August 25, be extended for another fortnight or three weeks beyond the time of clearing the fruit, and conjointly with it a somewhat drier state at the roots be permitted, it will considerably advance the ripening process in the growths of the current year and render them more fruitful for the subsequent one. To accelerate this object, it will also be advisable to withhold water from the roots altogether for the next six or eight weeks. This can be done in the case of ordinary sized borders without any apprehension of danger arising from the borders becoming too arid, providing that hitherto they have had abundant supplies of the element. Attention should also at this season be directed to any requirements in the way of lifting the trees or root-pruning. These are points in management which are occasionally necessary in the cultivation of this gross growing subject: if by reason of too much vigour or from other causes any trees are unfruitful it is a safe plan to either lift the roots partially, or prune them in somewhat hard. This remark applies to these trees generally, but particularly, in this instance, to trees which are to be subjected to forcing operations again ere long, in which case the operation should be performed without much delay, at the same time giving the roots a little fresh compost made up of about half loam and road-sweepings. Keep the growths which are to be retained for bearing fruit next year well exposed to the sun's powerful influence, and any spurs which are not required which impedes its operation should now be removed.

Trees in pots which are intended for early forcing operations should at about this time be overhauled and their requirements attended to. In the case of trees to be shifted into larger pots be careful to have the soil rammed firmly round the old ball, so that in watering this element will penetrate the whole mass of soil evenly. With regard to the trees that do not need to be repotted, they should have the matted roots round the base and the soil removed to the extent of 3 or 4 inches, and, after the drainage is rectified, this space should be refilled with fresh compost. It is usual to employ in this case the same pots again; see, therefore, that the position of the tree in the pot is accurately noted before it is removed, so as when replaced it will occupy its former position. At the same time the surface of the balls should also be dressed down and an equivalent of new compost added. After such matters have been accomplished water the trees, in order to settle down the soil completely. All decayed leaves which fall from the trees should be collected daily, in order to prevent any insect pests which may infest them from being disseminated. *G. T. Miles, Wycombe Abbey.*

ORCHARD-HOUSE.—The most important work in this department includes the potting of early kinds of Peaches and Nectarines from which the fruit has been gathered, and attention to the thorough maturation of the wood of later varieties still under glass. To insure this all late growths will require shortening back to admit of full exposure of the wood to the influence of light, sun, and air, the gradual reduction of the supply of water to the roots, and the maintenance of a dry warm atmosphere by day with abundant ventilation through the night. If red-spider or other insects have gained a footing the trees should be well syringed on fine mornings as the fruit is cleared off, and all strong roots which have found their way through the bottoms of the pots into the border may be checked by the insertion of a sharp instrument to cut off the supply of moisture. Plums, Pears, and Cherries plunged in the open air will be greatly benefited by full or partial exposure of the pots for a time in a position where they can be protected from drenching rains; and if not already done, a shift where necessary into larger pots should be given without further delay. Stop all late growths in Figs, and turn aside the old leaves which interfere with direct action of sun and light on the fruit now ripening. Get in a good supply of stiff turfy loam from an old pasture for potting purposes. Stack in narrow ridges, and protect from snow and rain with thatch or shutters.

If fresh trees are required for potting up, a selection of clean handsome plants which have made firm, moderately strong wood, may now be made for lifting when the leaves are falling. Trees well set with bloom-buds may now be obtained from all the leading nurseries, and these, if carefully potted before the end of October, will give a moderate supply of fruit next

season. Rivers' Nectarine Peach is worthy of extensive cultivation for giving a supply of late fruit. *W. Coleman.*

HARDY FRUIT GARDEN.

Most of the autumn kinds of Apples and Pears are unusually late in ripening, but as strong winds generally prevail about this season and may now be expected at any time, they should not be left on the trees a day longer than is necessary, as a slight shaking will cause them to fall, and fallen fruit is of little or no value except for immediate use, owing to the rapid decay of the bruised parts. It does not require much discrimination to determine when Plums, Peaches, Nectarines, &c., are fit to gather, but as regards Pears and Apples the case is different, and cultivators of these should make themselves well acquainted with the sorts, for without this knowledge they are often plucked too soon, and the result is that they become shrivelled, and never reach that degree of mellowness or finish with the rich melting flesh for which all dessert Pears are so highly prized. Late kinds, such as *Joséphine de Malines*, *Bergamot d'Esperen*, *Glou Morceau*, and others of that class, should be allowed to hang at least a month later, or till such time as they part readily from the trees by just lifting them up, when if ripe they break off at the joint of the footstalk, and this is one of the best tests as to their fitness to gather. The handling in placing them in the baskets, and from thence to the fruit-room shelves, ought to be done as tenderly and carefully as would be necessary for eggs, and in laying them out there is nothing better than smooth, bare boards to store them on, as straw, hay, or sawdust is sure to impart an unpleasant flavour. Although such Pears as *Williams' Bon Chrétien*, *Louise Bonne*, *Beurré d'Amanlis*, and a few other autumn kinds do not keep long, the season for each may be considerably prolonged by introducing a portion of the forwardest where they can get a little warmth to accelerate ripening, and by placing the remainder in some cool, airy cellar or other situation where the temperature is low, and not liable to fluctuate.

It is to be hoped that nurserymen generally are well-stocked with young trees of Apricots, Peaches, and Nectarines, as the demand is likely to be great to replace those killed or crippled by the unpropitious weather we had during the early part of the season, and it would be well for those requiring such, and who desire to have the pick, to give their orders early, that they may secure what are likely to suit others, as those who come first are generally best served in matters of this kind.

As many may be at a loss which to select it may not be amiss to name a few of the most desirable, and among Nectarines *Lord Napier* is one of the very best, being of large size, highly coloured, and of first-rate flavour. To succeed this *Elrue* and *Violette Hâtive* are next in order of merit, and to follow these *Pitmaston Orange* or *Pine-apple* and *Hardwicke Seedling* are the most satisfactory. The *Victoria* is a first-class Nectarine and the latest of all to ripen, but is not to be depended on unless a warm, favoured situation can be afforded it.

Among the varieties of Peaches the most valuable in point of earliness is *Early Louise*, which ripens at the end of July, and is not deficient in either colour or flavour. *Dr. Hogg* or *Early Alfred* will succeed this, and both are good free-bearing hardy kinds; and to succeed these none are better than *Royal George*, *Noblesse*, *Violette Hâtive*, *Barrington*, and *Walburton Admirable*, the latter of which is equal to *Noblesse*, and the finest and best flavoured late Peach grown. All the above are sure to give satisfaction, and may be relied on as the most suitable to grow either outdoors or in.

The earliest amongst the Apricots are the *Golden Drop* and *Mush-Mush*, the latter of which is rather a shy bearer while the tree is in a young state. *Moor Park*, *Hemskirk*, and *Peach* are the three best of those that ripen later, and are all that are worth growing except for preserving, for which purpose the *Roman* and *Turkey* are most prized on account of being more juicy and of a sub-acid flavour. The trees, too, are hardier and not so liable to canker or go off in the way the *Moor Park* and *Hemskirk* generally do after they attain age or are growing in wet, cold soils or unsuitable situations. The late sunny weather has been very favourable for ripening the wood, but owing to the scarcity of fruit and the abundant rainfall most trees have made a grosser growth than usual, and root-pruning may in such cases be resorted to with considerable benefit. If this is taken in hand at once it will not be without effect next season, for although too late now to induce fruit-buds it will have that tendency in future by causing plenty of fibre and checking any further inclination to over-luxuriance. Filberts are now ripening, and will require close watching to save them from squirrels, which are sure to find them out and carry off the greater portion unless means are taken to prevent them. *J. Sheppard.*

THE
Gardeners' Chronicle.

SATURDAY, SEPTEMBER 22, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, Sept. 24 } Sale of Dutch Bulbs at Stevens' Rooms
(and Wednesday)
THURSDAY, Sept. 27 — Sale of Orchids, at Stevens' Rooms.
SATURDAY, Sept. 29 — Sale of Dutch Bulbs at Stevens' Rooms.

THE details which we are enabled to publish relating to the work done at ROTHAMSTED for the last thirty-five years, constitute a record of the very highest interest and importance. They illustrate very forcibly one striking difference between the procedure in this country and that of others. In Germany, in France, in America, for instance, agricultural stations and physiological laboratories abound—all doing useful work, but all, with few exceptions, maintained by the several Governments or by public means. Rothamsted, on the other hand, is the hereditary property of an English gentleman, the establishment is maintained at his sole cost, and the vast series of experiments there carried out have been devised and fulfilled for purposes of pure science by Mr. LAWES, with the assistance of trained observers and experts, foremost among whom we must mention Dr. GILBERT. By private enterprise, then—by zeal, industry, and talent, which we may well call unrivalled, a long series of experiments have been carried out in magnitude and in importance superior in their way, we may say, to anything that has been done in the experimental farms and laboratories of the Continent.

The bare details given in another column are sufficient to justify this assertion. The general aim of these truly vast series of experiments has been to question Nature as to the best and most efficient means of feeding plants and animals for the benefit of the human race. Although these experiments have throughout been carried out from the point of view of pure science—utility having been a secondary consideration—yet it will be evident to any one who casts his eye over the records now given that direct utility has been served in a greater degree than by any other series of experiments of like character that have hitherto been made. The Rothamsted experiments offer, indeed, another proof that in the promotion and advance of pure science as the primary consideration lies the surest and most certain road to practical utility.

Little need be added by us to the record given in another column. Its bare record of work accomplished is the most impressive commentary that could be made. It will be seen that the experiments were made with a view to elicit from Nature herself in the most practical manner the mode in which the feeding of plants and animals can, under both natural and artificial circumstances, be conducted. To this end the life history of plants and animals has been studied, the nature of their food investigated, the relations between the living organisms and the world around them, the earth, the air, the water, the heat, the light, and their reciprocal interactions, investigated. The mineral theory of LIEBIG has been proved to be erroneous. New and unexpected light has been thrown on the requirements of particular plants. Thus the highly nitrogenous leguminous plants have been conclusively shown not to be specially benefited by nitrogenous manures, and, on the other hand, starch and sugar yielding crops have been proved to be particularly assisted by the application of nitrogenous manures. But we have no space to do more than hint at the general character of the researches made at Rothamsted. The general result is in the highest degree

honourable to Mr. LAWES and his associates, and gratifying to our national self-esteem. These are no mere flower-pot experiments, they may be measured by the acre. These are no temporary or superficial trials, they have extended in most cases considerably over a quarter of a century; and the results have been in every case watched, observed, calculated, and tabulated with as much care as in the more minute proceedings of an analytical chemist. In the field, indeed, the same minute precautions and accuracy of observation and of record have been maintained, so far as the circumstances of the case have permitted, as are expected at the hands of the analytical chemist. Field observations and laboratory work have gone hand-in-hand together, have been carried out with the same method, treated in the same manner, and thus yield a body of observations unsurpassed in extent, in variety, and in accuracy. The results of all this labour and skill have, to a considerable extent, been given in the Journals of the Royal Agricultural and Royal Horticultural Societies and in other publications, but the very number of these scattered records and their prodigious wealth, variety, and complexity of detail render them difficult to be grasped by an ordinary scientific reader. Life is short, art is long. The time seems to us to have come when the directors of this noble experimental station should gather together into one harmonious consecutive treatise the main results of their labour and the legitimate inferences therefrom. We are, of course, aware that to some extent this has already been done. Most of the very numerous publications of Messrs. LAWES and GILBERT contain summaries, but these summaries themselves now require consolidating, and their mutual relationship made clearly evident. One other point remains to be mentioned.

In what other country would services so splendid and so disinterested be allowed to pass unnoticed by the nation? True, such honours as science can give have been bestowed, and agriculturists have not been unmindful of what has been done for them; but surely this is a case for Governmental recognition. Had Messrs. LAWES and GILBERT and their several associates in their respective degrees been soldiers or sailors, they need not have effected a tenth part of what they have done to have been the recipients of State honours and rewards. Doubtless their own satisfaction at the results of their labours is the best and sweetest reward they themselves could look for; but, as a matter of national honour, it is greatly to our discredit that services so long continued and so valuable should have been allowed to pass without State recognition.

Our illustrations represent the Jacobean mansion of Mr. LAWES at Rothamsted (fig. 75, p. 373). Fig. 74 the interior of the laboratory, with its myriads of *pièces justificatives* in the shape of analyses and records. Fig. 73 the rain-gauge, one-thousandth of an acre in area. Figs. 71 and 72 other drain-gauges of like area, but filled with soil of various depths, to show the quantity of rain that percolates through strata of different depths, and others again of smaller area arranged in a circle, and destined to show the amount of rain penetrating through soils of various characters, degrees of consistency, in a natural state or artificially consolidated, and mixed with farmyard and various artificial manures. Further, some of these gauges are intended to show the amount of rain that percolates through a given area and depth of soil when bearing a crop of cereals or other plants with different root and leaf action, &c. The rain so collected, together with the drainage-water from some of the fields, is not only measured but subjected to chemical analysis, to show its constitution. Some of the results of this wholesale plan of investigating the amount and composition of the rain according to different circum-

stances, are indicated in a suggestive manner in the paper at p. 360.

A REMARKABLE old plant of BRUGMANSIA SUAVEOLENS is now an object of considerable interest in one of the conservatories at CASTLE ASHBY, Northampton, the seat of the Marquis of NORTHAMPTON. It really forms a fine tree, for it completely fills the space allotted to it in the house in which it is planted out. The huge head is loaded with its large, pendent, trumpet-shaped, pure white flowers, which are very fragrant. It is quite a matter for conjecture how long this plant has been at Castle Ashby, but Mr. GEORGE BEECH, the gardener, informed us that an old man still on the place remembers it as having been there sixty years ago. Every year it is cut back hard to the old wood, something after the fashion of a pollard, and then at the proper time it bursts forth into growth, and the flowers may be said to be heaped up on the branches at this time of the year. In the same house there is a plant of Bignonia grandiflora, which it is believed is as old as the Brugmansia. It has a stem of considerable dimensions, suggestive of great age, and during the summer it produces an abundance of remarkably fine clusters of rich orange and scarlet trumpet-shaped flowers. In the same house Tecoma capensis, Plumbago capensis, Cassia corymbosa, trained against a wall, and various parterre flowers are now very attractive, and supply an abundance of bloom for cutting from. In one of the newer conservatories Sollya heterophylla, with its charming sky-blue flowers; Bignonia Cherere, Eupatorium glandulosum, are flowering very freely against a wall; and the old Parsley-leaved Pelargonium, P. apifolium, with its curious brown and blush flowers, are all of much interest to the visitor. A fine plant of Desfontainea spinosa against a pillar is making a fine growth, and its numerous red and orange flowers contrast strongly with its deep green leaves. In one of the stove houses at Castle Ashby Mr. BEECH has covered the wall at the back with various forms of Hibiscus, most of which are now in flower. The most striking are linearis variegata, with large carmine flowers; perfectus carminatus, with very large single red blossoms; luteo-carpus, pale salmon-buff; miniatus semperflorens, very large red; and metallicus, single rosy red. Single flowers of these forms of Hibiscus, against a background of fronds of the Maidenhair Fern, are very useful for table decoration, indeed they are fine things to cut from. In the same house Meyenia erecta was growing and blooming freely against the back wall. Mr. BEECH has also been very successful in flowering Tritonia aurea; a large pot containing six bulbs is now highly attractive, the flowers are large, bold and well coloured. After the plants have gone out of bloom at the end of the summer they are dried off, then the soil shaken from the roots, and the bulbs repotted in loam, leaf soil and sand, and kept on a shelf in the stove house near the glass. It blooms both in the spring and autumn.

— There are still some places remaining about the country where the more elaborate systems of modern FLOWER GARDENING have not altogether stamped out the old-fashioned characteristics of a flower garden. A flower garden at Castle Ashby, complete in itself, is wholly composed of beds of old-fashioned flowers. There are beds of sweet-scented Cloves, Asters, Stocks, Roses, Phlox Drummondii, Salpiglossis, &c., and one of them, a true bed of sweet-scented plants, contained a good selection of scented-leaved Pelargoniums, Balm of Gilead, Aloysia citriodora, and what is known as the Pine-apple-scented Salvia, which well deserves its name for the leaves are richly perfumed with a scent like that of the Pine-apple. Mr. BEECH obtained this from Miss HOPE, Wardie Lodge, Edinburgh, and he grows it in pots in the conservatory for the sake of its delicious fragrance. One of the finest of wall plants is Ceanothus Gloire de Versailles. It is a vigorous grower, but while free in growth blooms with great freedom, and it is just now highly attractive, the bunches of flowers being large and striking. A variety of C. rigidus with golden foliage is also a very desirable plant for warm walls, and though the yellow variegation is not particularly striking, the plant has always a cheerful appearance at all times of the year. Pavia californica is now a conspicuous object in the pleasure grounds at Castle Ashby. The specimens are growing in shady sheltered spots, but they are doing well, and are covered with large panicles of

white fragrant flowers. The foliage is ample and handsome, and in the autumn, when the trees bear fruit, the season of attractiveness is continued up to the fall of the leaf. This Pavia has been well described as "one of the handsomest introductions of recent date."

— In connection with the SLOUGH LITERARY AND SCIENTIFIC INSTITUTION a course of instruction was commenced yesterday, September 21, in the subject of botany, which will be pursued in connection with the Science and Art Department. The course will embrace, besides the chemical preliminaries, the various departments of the science designated as histological, structural, physiological, systematic,

— The Babool, or ACACIA ARABICA, seems to be a much more important tree in some parts of India than it is generally supposed to be. In a recently issued report of the Forest Department of the Bombay Presidency an account is given of the uses of this tree, from which we learn that its wood is preferred before any other for the construction of carts, and every village owns large numbers of these vehicles for the traffic of the country, which is carried on almost entirely by carts. Sugar and oil presses and grain pounders are made of it, and it is used for building the flat-roofed houses of the Deccan. Its branches, covered with long thorns, are invaluable for fencing material; thrown loosely down on the boundary line of a field they come into use at once as protectors to

flowers are more like those of the Orange. As we hope to give a figure of this very interesting fruit in a future issue we defer further notice of the plant at present, merely stating that Mr. GARNIER describes the fruit as superior to any tropical fruit he has ever tasted. It would probably succeed in an orchard-house in this country, and would be a valuable introduction into many of our colonies. We congratulate Mr. BULL as the fortunate introducer of this plant, and Mr. GARNIER on his success in fruiting it.

— Writing on the cultivation of EUCALYPTUS GLOBULUS in Kanara, one of the forest officers says:—"There is one thing that may be said in its favour, and that is, that if found successful, the people would

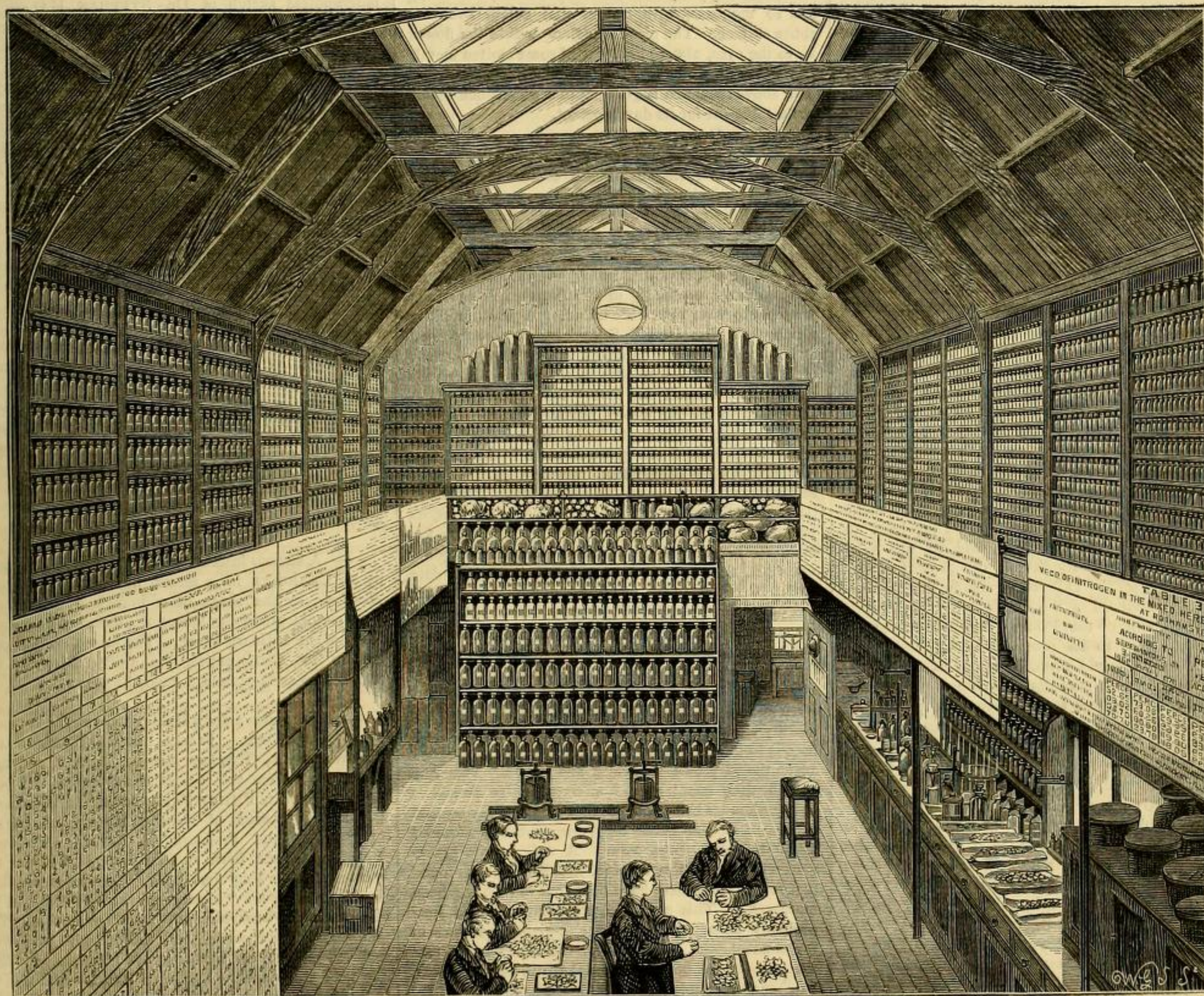


FIG. 74.—INTERIOR OF THE LABORATORY AT ROTHAMSTED.

economic, and geographical botany. The class will be held every Friday evening from 8.15 to 9.45. The instruction will be by means of class lectures, illustrated by diagrams and the use of the microscope. A constant reference to living specimens will be made, and these botanically described, with a view to impart a useful training in precision of expression, and to facilitate an acquirement of technical language. At the yearly Government examinations all students who are placed in the first class receive Queen's prizes: efforts will also be made to procure the offer of a local prize for the best worked paper in the examination of 1878. Mr. NEWLYN is the teacher, and in view of the admirable training botany well taught affords, as well as from its immediate advantage especially to young gardeners, we wish Mr. NEWLYN a large and appreciative class.

the crops, and are green and effective so long as the crops are on the ground. Its pods provide fodder for sheep and goats. It is prized above all woods for firewood. The gum it exudes is an article of commerce, and is used largely in the concoction of native medicines, cloth-dyeing, and printing. The bark is in request for tanning and dyeing; it is a powerful astringent, and when food is scarce it is eaten pounded and mixed with flour. The roots are also used for tanning, and for the distillation of a native liquor.

— Our thanks are due to Mr. BULL for allowing us to see four fine fruits of the CASIMIROA EDULIS, ripened in the garden of MITCHELL HENRY, Esq., M.P., of Kylemore Castle, Galway. The fruit in question has been called the Mexican Apple. In appearance it resembles an Apple, but the leaves and

everywhere take to planting it about their homes, in consequence of the properties it is said to possess in preventing malaria, and in which such of the natives as have seen it fully believe. In Duarwar, near the market-place, where a few plants of Eucalyptus globulus were planted and enclosed, the perfume given off from them attracted many admirers, and the greatest desire was evinced to touch or take away a leaf or two. One plant, a great beauty, pulled about in this manner, succumbed to the attack thus made upon it."

— Messrs. RUTLEY & SILVERLOCK, of 412, Strand, have sent us a cake of SOAP from China, stated to be made from the seed of the Tea plant, and to be very efficacious when used with water in destroying worms on lawns. The soap in question has somewhat

of the appearance and smell of coarse oilcake. When broken up and mixed with a canful of water, so as to form a rather thick mixture, we found it very efficacious in bringing to the surface and killing a large number of worms from a lawn on cold, wet soil.

— The successful extermination of weeds and creepers in the Indian forests is one of the difficulties the forest officers have to contend with, and one of the most difficult of these weeds to eradicate is the PRICKLY PEAR. This has become quite a pest, and it is satisfactory to learn that the plant is in future likely to become of some use. Its appearance in the Poona districts is, by a local tradition, attributed to a few seeds being brought to Poona from Delhi a century and a half ago. The rapid spread of the plant is due to birds being very fond of the seeds. Till very lately it was thought that the Prickly Pear could yield no return, but it has recently been discovered that the Babool seed sown in the ashes of the Prickly Pear germinated very quickly, and plants manured with the ash grew vigorously and strong. Further it has been said that this ash is a very valuable soil fertiliser. A series of experiments have been tried by the Deputy Conservator of Forests, Poona, in the use of Prickly Pear as manure, by crushing it and then applying it to the roots of plants and shrubs. The Superintendent of the Botanical Gardens, Gunesk Khind, writing to the Deputy Conservator of Forests, Poona, says:—"Since you drew my attention to Prickly Pear as manure, I have used several hundred cartloads of it. I put it into a tank through which water for irrigation passes; of course it decomposes rapidly, and the water carries away a large portion of the gases that are generated together with small pieces of half-decomposed vegetable tissue. What could be better plant food on a soil from which the vegetable matter has been collected and burned by so many generations?" These favourable opinions on the use of the Prickly Pear, however, are not shared in by all even of forest officers, for one writing on the subject says:—"The superintendent of a botanical garden may employ it as a manure without mischief, but it will be a very disastrous event if ever the cultivators make use of it generally for this purpose. They have no means of crushing it thoroughly, and its use as a manure would inevitably extend the growth of this mischievous plant." This writer also further says:—"I am so convinced of the impossibility of controlling the growth of the Prickly Pear when once introduced, owing to its propagation by birds and animals, that I would prohibit its use as a hedge to forests, or as a substitute for fire-paths." It will be gathered from this, that for the purpose of preventing the spread of fire in forests the Prickly Pear has been recommended, as it grows with such luxuriance, and establishes itself so readily, that impenetrable hedges are quickly formed, and if planted thickly on the outer boundary line of a reserve, it would be practically impossible for fire to penetrate from the outside into the forest. Several species of grass are also recommended as being admirably suited for the same purpose, *Panicum spectabile* being one of the best, and this is stated to grow luxuriantly in the hottest and driest places, shooting vigorously to 3 or four feet in height, with deep roots often a yard long, and 1 inch or 2 inches thick. "It is very sweet and succulent, and always green. A seedling will cover a square foot in one year with deep matted roots. Fire would not travel across it."

— There seems some reason to fear the total extinction of the SCAMMONY PLANT (*Convolvulus Scammonia*) in Turkey. For many years, owing to the wholesale adulteration of Turkish scammony, which includes a large proportion of gum-arabic, flour, and other ingredients, the English drug-houses have preferred buying the root and preparing their own scammony. The following extract from a report by the British Consul at Smyrna will be read with interest, and should be taken some notice of before it is too late:—"The Government," we read, "having allowed the digging of the roots of this drug the crop is annually diminishing, and if the destruction of the plant is not put a stop to the article will totally disappear."

— It may not be out of place just now when we are lamenting the exceeding SCARCITY OF HARDY FRUIT, to remind our readers that the humble VEGETABLE MARROW may be easily converted into a

delicious preserve such as may well be acceptable in any family circle. The mode of its preparation was explained in these pages about this time last year, and shows that with the addition of such simple flavouring materials as sliced lemon peel and ground ginger, the flesh of the Marrow may be converted into a most pleasant luxury. The Vegetable Marrow is so easily cultivated that it may well form a staple product in every garden. It is also comparatively independent of seasons, as it is rare indeed that the crop is a failure. In this respect, although tender in constitution, yet it may well be classed as a most valuable and reliable hardy fruit.

— NELUMBUM ASPERICAULE is flowering in the Lily-house at Kew. It is a great improvement on *N. speciosum* for garden culture, requiring a lower temperature, blooming more profusely, and having flowers that are even more magnificent. The petals are broader than those of *N. speciosum*, narrowing less to the base, with deeper rose colour over the entire surface. The glow of colour within the flower is, to the eyes, almost like that of some molten metal. It was raised, we believe, by the late Mr. SYLVESTER. The above specimen is growing in a pot, which seems quite sufficient for its development.

— We understand that it has been decided to hold the next spring exhibition of the Royal Caledonian Horticultural Society in the new Vegetable Market, Edinburgh. For light, space, &c., there cannot be a better situation for a flower show.

— The RAINFALL which has characterised the past summer, especially in the North, has not been confined to "our tight little island." A private soldier, serving with the United States' troops now engaged in holding the Indians in check in the remote portions of Nebraska State, mentions in a letter to his friends here, dated August 21, that "the Indians have endeavoured to fire the woods repeatedly, and so burn out the camp, but owing to its having been such a wet season everything is too green to burn." In spite of this EXCESS OF MOISTURE, however, it is unpleasantly dry at times, as he further mentions his belief that "it is the worst country in the world for dust, as when the wind blows the air looks like a London fog in November, and no one will face it; and as to going against it, not even a mule could do it." At the date of the letter it was "already beginning to grow cold, and one finds it comfortable to stay near the stove, for the country is not blessed with a very long summer; but when it comes it comes with a vengeance, and thus makes up for its short stay. Last month it was as hot as I have found it when under the equator." Further on he makes a singular reference to the healthy character of the climate, as in advising his friends to have no fear for his health, he says:—"I am in the very best of health and spirits. This is a very healthy country, and a consumptive person is quite unknown here. There is a common saying that people never die here—they are gradually withered up, and finally blown away. A visit to the graveyard will support this opinion, inasmuch as it is found that few that lie there have died, but must have been murdered." This excessive prevalence of cold steel probably accounts for the health-giving qualities of the atmosphere. If, however, the denizens of that State would but be content to take it in smaller doses, perchance they might all live to be blown away in the end.

— We learn from the *Revue Horticole* of the decease of Count LEONCE DE LAMBERTYE, one of the best known and most respected of French horticulturists.

— Mr. R. GILBERT requests us to state that he intends showing at the Royal Horticultural Society's Fruit Committee, on Tuesday, October 3, what he terms the true Gros Colman Grape, and he will esteem it a favour if Grape growers will send a bunch of that variety for comparison. Mr. GILBERT also intends exhibiting another seedling Melon.

— It would seem to lovers of hardy border plants almost impossible to write in terms too generous of the singular beauties of the varieties of the ANEMONE JAPONICA. We have in these probably the finest and most effective of hardy autumnal border flowers adapted to any soil, and when once planted simply requiring to be let alone. The original form of *Anemone japonica*, good and pleasing as it is, is

greatly excelled in size of flower, height, and robustness of growth by its compeers, *japonica alba* and *japonica intermedia*, the latter a pink-shaded form of *alba*. We recently saw established plants of these, from 4 to 5 feet in height, and covered with hundreds of flower-buds; these must, ere now, have been truly grand specimens. This *Anemone* does remarkably well in pots, and it will be a strong recommendation to many persons in its favour that it seems to have been specially designed to gratify the modern passion for cut flowers.

— We hear that the Hereford fungus meeting will be well attended this year, and that, amongst other visitors, MAX CORNU, of Paris, will be present.

— The number of the *Hungarian Journal of Botany* for this month—*Magyar Növénytanilagok*—pays this country the compliment of publishing a biographical sketch of Dr. STEPHEN HALES, the vegetable physiologist, who was born on September 17, 1677. In the same issue a reprint of the portrait of our distinguished countryman, which appeared in our columns on January 6, 1877, is given. How many of our physiologists, we wonder, would have remembered the bi-centenary of HALES' birth. The institution, however, of the physiological laboratory at Kew may be taken as an augury that the study of vegetable physiology will not be neglected in the future as it has been in the past, from the time of HALES to our own day, with some exceptions.

— M. CARRIÈRE records, in a recent number of the *Revue Horticole*, an instance of monœcism in *Cephalotaxus Fortunei*.

— The TELEPHONE has already been made of practical utility in a deep mine in Cornwall, where it has been found serviceable in communicating from the surface to the interior of the mine. We may look forward to this electrical speaking-tube being made use of to communicate orders from the gardener's cottage to workmen at a distance. In fact, the practical utility of the invention is so apparent, that a very short time will ensue before the instrument becomes general.

— A curious instance of bud variation is figured by M. CARRIÈRE in a recent number of the *Revue Horticole*, in the shape of a branch of *PLATANUS ACERIFOLIA* producing leaves of a different form from those of the ordinary *Plane*. The leaves on the sport are, in fact, nearly entire, and a little raised at the margins so as to present a hooded appearance.

— The losses among leading botanists have been very great of late. France has lost BRONGNIART and WEDDELL, Germany laments BRAUN, and now Italy has to bear the loss of her foremost and best-known botanist, PHILIP PARLATORE, the Director of the Royal Museum of Natural History and Physics at Florence, and Professor of Botany. Professor PARLATORE was born at Palermo, and died on the 9th inst., in his sixty-first year. In this country he is best known for his "Monograph on Conifers" in DE CANDOLLE'S *Prodromus*, and for his unfinished *Flora Italiana*. These works, and the splendid and well-ordered museum and herbarium at Florence, will form his best monument. Professor PARLATORE was the president of the Royal Tuscan Horticultural Society, and of the committee for the Botanical Congress which met in Florence in 1874, but his ill-health prevented him from taking any active part in the actual business of the meeting, to the great regret of the botanists assembled from all parts of the world. Professor PARLATORE had numerous friends in this country, by whom he will be regretted as much for his personal qualities as for his scientific attainments.

— The *Journal des Roses* gives an account of the Rose show at St. James' Hall in July last, which makes us wish that popular names of places, as well as of plants, could be abandoned in favour of appellations that could be made familiar to the educated reader of all nations. Where, for instance, is "Moulton Hyld, Chonnauck"? Can it be the forest where a certain "wyld savage" is supposed to roam?

— Some correspondence lately took place with reference to the "wild Lily," stated to grow in a gravel path. The upshot was that some correspondents obligingly told us that the plant intended was

the common Bind-weed, *CONVOLVULUS ARVENSIS*. We see our American friends call it a "vine," the word vine being used in a very wide sense across the Atlantic. These instances ought to convince grumblers of the inconvenience of popular nomenclature; hard words are bad, but they are better than appellations which are not only vague but altogether misleading. Some people have vague notions on natural history matters: a lady the other day in our hearing declared the sea anemones in the Brighton Aquarium to be "something between Mushrooms and flowers."

— We have before us the first part of the *Journal of the British Dairy Farmers' Association for the Improvement of the Dairy Husbandry of Great Britain*. The part opens with a simply written but most useful article on cheese-making, by Dr. VOELCKER, and various other articles and reports follow, all calculated in their degree to remove the imputation that in all parts of the country "the dairying of the district consists simply of spoiling good milk, cheese and butter being made that would not pay for the cost of the production of the raw material, milk." Those who know what London butter and London milk are will welcome the foundation of the Dairy Farmers' Association, and of their journal, which is well printed, well edited, and sufficiently illustrated.

— Eucalyptus culture in the Isle of Bourbon seems to succeed and prove beneficial in rendering the climate healthier. In the temperate zone especially, at an altitude of between about 1500 and 3000 feet, large plantations already exist. A writer in the *Bulletin de la Société d'Acclimatation* mentions one of several acres in extent which had the appearance of a real forest. He says, "I regard the introduction of these trees as most serviceable. The marsh fevers which desolate the island have not been able to pass the belt of Gum trees which surround my estate; not a single member of my family or work-people has been attacked by fever." The writer, a Mr. CHATEAUVIEUX, who was elected President of the Chamber of Agriculture of the colony in 1863, commenced operations about that date, and he has already felled trees which have furnished good planks 13 feet long. In what he calls the glacial zone—that is, above an altitude of about 3500 feet, where the mean winter minima are 20°.75, and the mean winter maxima are 54°.5—*E. globulus* grows slowly, but is less easily uprooted by hurricanes. At an altitude of 4000 there are large flourishing plantations, as mentioned above. At 1600 feet the Red Gum grows to a height of 65 feet in six years, but it does not succeed in the cold region. These little items of information are interesting and useful.

— The third annual Conference of the CRYPTO-GAMIC SOCIETY OF SCOTLAND has been postponed until October 17, 18, and 19, instead of October 10, 11, and 12, as previously announced.

— The annual cost of keeping in order the TREES, SHRUBBERIES, and SEATS upon the boulevards and in the public squares and gardens of PARIS is nearly 2,000,000 fr. It is estimated, says the *Builder*, that the trees in the avenues and boulevards of Paris number 82,201; those in the cemeteries, 10,400; and those in the squares and courtyards of various buildings, 8300. There are also 8000 seats for the accommodation of the public. The expense of keeping up all the extra-mural recreation grounds, exclusive of the Bois de Boulogne and the Bois de Vincennes, is rather more than 300,000 fr.

— The West of England still holds its own in the matter of FUCHSIA GROWING, and at the Bath floral *fête* on Wednesday, the 8th inst., Mr. J. LYE, gr. to the Hon. Mrs. HAY, Clyffe Hall, Market Lavington, was placed 1st, with nine plants of such merit that, though Fuchsias are invariably shown fine at Bath, these particular plants were considered some of the finest ever seen. The specimens were of medium size, graceful in contour, and superbly flowered. On this occasion the 1st prize for nine Fuchsias at Bath was a handsome silver cup, and Mr. LYE has crowned his previous efforts by winning it. He has this year taken eight 1st and two 2d prizes; and the latter were awarded him at Trowbridge, where he is generally invincible, as his large plants were not then in perfect condition, and he had to stage some smaller in size than usual. Why is it that while Fuchsias are generally so well grown in Wiltshire and Somersetshire,

they are so indifferently grown elsewhere? There is scarcely another plant that repays good cultivation as the Fuchsia does, and when well done it is one of the most attractive features in an exhibition tent. And yet they are often a poor display, not at all up to the average of many other flowering plants.

— A novel way of clearing a CORNFIELD of INSECT PESTS is reported from Budiansk, Russia. It seems that the last harvest was a very unequal one, the produce of one farm being abundant, and of the next one almost *nil*. This was in great measure owing, it is said, to the ravages of "a species of black beetle." To remove these insects from the ears of Wheat some farmers adopted the plan of dragging a piece of rope held by two men over the plants, and this had to be frequently repeated. This plan must certainly be an expensive one, inasmuch as it does not exterminate the insects but simply removes them for a time. There is something comical in playing with insect pests in this manner.

— We have been favoured with an inspection of a drawing of the fruit of HOYA CARNOSA which was produced in a garden at Wimbledon. Only a single follicle was ripened, and this of the elongated form so common in this order. The seeds, too, have the usual hairy appendage. The construction of the flower is such as to necessitate insect agency, but what the particular insect may have been in this case we cannot say.

— The French Vice-Consul at Larnaca, Isle of Cyprus, M. DUBREUIL, in a communication to the President of the French Society for Promoting the Acclimatisation of Useful and Ornamental Plants and Animals, respecting the vineyards, or rather Vines—for they are left pretty much to themselves—gives some account of a DISEASE which formerly attacked the VINES there, but which has since disappeared. During seven years, from 1859 to 1866, it is stated the Vines were stricken with a disease characterised by a kind of ash, covering the berry at the time when they ought to be ripe. No one attempted to find a remedy for it, though the ravages it committed were so serious that some of the Vine growers decided to root up their Vines. However, the disease seems to have died out, for no traces of it have been observed since 1866. What it really was nobody seems to know, but it is suggested that its exhaustion or extirpation might be due to the presence of the Sumach in the vineyards. After the outbreak of the disease the naturally indolent islanders took little care of their vineyards, allowing the shrub named to completely overrun them; and since it has spread so much the disease has not been seen. The total disappearance of the disease, whatever it may have been, is highly gratifying; but that the Rhus expelled it is exceedingly doubtful. It would be good news, indeed, if we could be sure that the Phylloxera was becoming less prolific and diminishing instead of extending its area of depredations. The same writer, referring to a report of an Oak growing in the same island, and bearing acorns as large as one's fist, states that as regards their actual size it has been considerably exaggerated. They are, however, very handsome, and three times as large as those of our largest Oaks.

Foreign Correspondence.

THE VALENCIA ORANGE GROVES.—Between the Orange groves and the sea for a width of several miles, there is a forest of Olive and Carouba trees from 20 to 30 feet high. They evidently serve to break the sea winds, and to protect the Orange trees from their contact. These Orange groves occupy the triangular plain above described, the two sides of which north-west and south-west are formed by sheltering mountains, whilst the base is protected from the easterly sea winds by the wide belt of Olive and Carouba trees. These protecting trees not being high the Orange trees are cultivated as bushes. The central stem is cut about 1 foot, or even less from the ground, and three, four, or five branches are carried up as a bush, and not allowed to grow above 10 or 12 feet high. To this mode of cultivation there is no exception whatever. Tens of thousands of these large Orange bushes are seen, but not one large regular Orange tree such as are found in Majorca, Sardinia, Sicily, and the Riviera. In the valley or vega of Valencia, above the city, the same system of cultivation is exclusively followed, as I found in a previous journey. Thus once more is the necessity of protection from wind exemplified in the cultivation of the Orange tree. In Majorca it is ex-

clusively cultivated in a large crater-like valley; in Minorca it is only seen in a deep serpentine valley, formed by a fault in limestone rocks; and here on the east coast of Spain we find it cultivated like a low Apple bush, in order to ensure the necessary protection from wind. In all these countries and regions I have always found Orange trees growing in calcareous soils.

The trees seemed perfectly healthy—to have escaped so far from the terrible *secco*. I could not discover whether they had been grafted or not. The crop of Oranges had been so thoroughly gathered and disposed of that at the small town of Castillon, where I passed the night, we could not procure one for love or money. Castillon, the capital of the fertile Orange covered delta plain, was formerly a fortified town of some local importance, but appears now to be merely an agricultural centre. The accommodation is essentially Spanish, that is, the *fonda* or inn leaves much to be desired. I would, however, say that in Spain the habit of using exclusively iron bedsteads and a small amount of bed furniture, the absence of carpets, and the paucity of furniture generally, with the universal whitewashing of the walls, secure the travellers and inhabitants greatly from vermin. Then, although the meat is tough, naturally very indifferent, it is so long stewed that it becomes tender and eatable at last. I myself have always managed to live and flourish when travelling in Spain, finding therein "the elements of nutrition" even if not presented in the French or English style. The wine and bread are always good, which is not a bad foundation for a meal.

Pursuing our course the next day, northwards, a few miles from the shore, we left the irrigated delta and passed through an unirrigated, therefore arid region. Here we found the scrub Palm of Algeria, the *Chamærops humilis*, growing wild, freely, and abundantly, evidently a native of the soil. I had seen it previously in the south of Spain, in Murcia, and Andalusia, growing wild as a scrub plant under the same circumstances. This *Chamærops* may be said to belong to Europe, as well as to Africa. It was formerly a common plant in Provence and the South of France generally, although now quite extirpated, and only growing in gardens. Along with the *Chamærops* were numerous Aloes, the *Lentiscus*, and the prickly Broom of the South of Europe. The mountains in the background were very naked and arid, quite burnt up and denuded. There were water-courses, but no water or water plants; river beds, but not a drop of water in them. Every now and then we came to small towns or villages, very poverty-stricken, located evidently in places where some little water could be obtained by wells. Around them were fields of Wheat and Barley, very clean, Vines, and Mulberry, Fig, and Walnut trees. The wells were mostly worked by rope and pulley, sometimes by mules.

We were passing through a part of Spain that had been occupied and ravaged by the Carlists during the war, of which we were rather uncomfortably reminded. As the train slackened at each station there was a soldier with gun in hand on each side of the line, and on reaching the platform we usually found two or three more awaiting our arrival. On inquiry we were told that these troopers were there to secure the safety of the passengers. It appears that after the Carlist bands ceased stopping the trains themselves, as they were wont, some of the gentry who composed them set to work on their own account in the following way:—They used, singly or by twos, and well-dressed, to get into first or second-class carriages, and once the train was in motion to draw out revolvers and take all the money and jewellery of the passengers. On the train slackening, at the next station, they opened the door, got out, and ran away. The soldiers had orders to shoot all who did so, and we were cautioned never to get out before the train stopped thoroughly, for fear of a mistake—a caution we took care to obey.

Emerging from this sunburnt, waterless, arid district, we suddenly came upon a fertile irrigated valley, in the midst of which was a broad yellow river, the Ebro, coming down from the glaciers of the Pyrenees, and making the land on each side laugh with wine, corn, oil, fruit, nuts, and Walnuts, for we had reached the southern limit of the Barcelona Nut region. There was a good-sized town on its banks, Tortosa. After leaving the smiling valley of the Ebro we once more emerged on a barren, waterless region, with bleak, sunburnt rocks, watercourses without water, and a scrub vegetation, principally *Chamærops Palm* and

Lentiscus; I think I may add Gorse, with here and there patches of miserable, half-starved cereals, Vines, and Olives, doing their best to live. We reached Tarragona, an old town formerly of great political importance, with a good port, the commercial outlet of the large and rich valley of the Ebro. At Tarragona I was principally struck by the number of new houses and streets, the former tall and built in the French style, one most unsuitable to a warm climate, and by the destruction of the fortifications which was being actively carried on. The massive thick walls were being pulled down, and the deep moat filled with the stones and rubbish of which they are composed. No doubt such destruction is progress, but it makes the traveller muse to find it going on everywhere on the Continent. Thus the olden times are passing away from us, and light and air are being let in physically as well as morally.

The next day we took the railroad that runs along the southern slopes of the Pyrenees to join the one from Madrid to Bayonne, and made a leisurely progress, sleeping at Lerida, Saragossa, and other towns on the road, so as to be able to study the country, its productions, and its people. I found the same agricultural and social conditions as in the central regions of Spain, Aragon, and Castille. The country is one rolling plain, presenting every variety and form of geological denudations, all but without trees, and principally cultivated with poor cereals on the fallow system.

The Spanish peasants think that birds eat the corn, and that trees harbour birds, so they cut down the trees, and the country presents the character of endless, melancholy, treeless plains with a poor stunted cereal vegetation. Then, owing, no doubt, in part to the lawless condition of the country the agricultural labourers live in the towns, not in farms or villages, so that these plains seem lifeless, unpopulated. The passing traveller wonders who does the agricultural work he sees carried out. Thus I was told at Saragossa that out of a population of 70,000 more than 40,000 were agricultural labourers, who tilled the land for 10 or 15 miles round. They were miserably clad, appeared miserably fed, and were evidently spending a mere animal existence, whilst observing rigidly all the outer forms of their religion. In every one of these wretched towns there was a magnificent cathedral. Some, such as the one at Saragossa, are undescribably beautiful, thrilling, awe-inspiring. These towns give the traveller the key to the social condition of the middle ages, still perpetuated, partially at least, in these out-of-the-way regions of Europe. At the entrance of the town the frowning feudal castle, around the town the massive walls and deep moat, in the centre the magnificent cathedral. Between the two the peasantry and citizens, like Olives between two millstones in an Olive mill, crushed between the two, absorbed between the two. It must have taken centuries of their labour to construct the double monuments, the castle and walls, the sumptuous, grand cathedral. To these poor souls the cathedral, with its sombre grandeur, its incense, its chants, its music must have always appeared a foretaste, an ante-chamber of heaven itself. The cathedral at Saragossa even had that effect upon me, the travelled, argumentative Anglo-Saxon.

For a hundred miles or more we followed the valley of the Ebro, always seeing the same facts reproduced; with irrigation fertility, without it sterility—all but barrenness. When along with water there was protection from the North, and the barometer showed that we were only some 500 feet above the sea, Olive trees appeared, and Vines became more numerous. We were constantly in sight of the Pyrenees sloping down to the south, with the higher summits still covered with snow (May 23), from whence came down wind still cold.

The vestiges of the late civil war were more decided than on the coast. In addition to the troopers at the stations we had before our eyes the evidence of past combats in the ruins of the stations. They had all been battered and destroyed by fire, and the station work was being done under sheds. Each station it appears had been a battle field, taken and retaken a dozen times.

As we approached the Atlantic the climate evidently changed, became less dry and scorching, moister. Trees, grass, pasturage appeared, a more careful system of agriculture, and numerous villages. We were entering into the Basque provinces, which are fertile, well cultivated, and populous. *J. Henry Bennet, M.D., The Ferns, Weybridge.*



INFLUENCE OF TREES AND PLANTATIONS ON SOIL AND CLIMATE.—One of the greatest and most important objects to be aimed at in the improvement of property is to produce shelter, for all animals (not even excepting poultry) are fond of warmth and shelter, and do not thrive well without it; and as our severest weather comes from the north and east these points should be best guarded and protected. In some cases summer as much as winter shelter is required, as in the case of stud farms; when the horses are housed in winter, and only remain out in summer, and when a cold and stormy day occurs, as is common in our variable climate, they suffer much without proper shelter. Upon many upland and Highland farms the stock cannot remain out during winter, but have to seek winter shelter in more congenial places. When a wintering is sought for, it is valued more for its dry soil and shelter than for the herbage upon it, and nothing pleases the shepherd better than an old plantation where the stems of the trees are all cleared of their dead and scraggy branches.

As the first and greatest of all improvements of land consists in drying it, draining is obviously the first thing to do, and may be done in various ways to suit the requirements of the case. Underground tile drainage is the best, both for arable land, pasture ground, and also plantation. But for the latter purpose the underground drains are objectionable on account of the roots entering and choking them, and for that reason open surface drains are often preferable, at least in extensive operations. Trees have a very absorbing and drying influence upon the ground, so much so, that when a piece of ground is planted that is termed wettish, in a very few years it becomes perfectly dry. This is eminently the case with soft mossy ground suitable for the growth of Norway Spruce, which is the best kind of tree to plant for the purpose of drying the ground, but has few other recommendations. While trees dry the ground very effectively when once they start growing freely, there is at first a difficulty in getting them to start growth, in consequence of the low temperature of the soil; hence the frequent, if not general necessity for draining the surface, with shallow drains, before planting. The drying influence of trees is so slow and imperceptible that by many it passes unobserved, and they only come to see the amount of water that has either been absorbed by the trees and evaporated, or through the shaking of their roots when the plantation is suddenly cut down. In cutting down a plantation two important results are produced, namely, the excessive heating of the soil in hot weather—I mean heating it beyond the temperature it attained while covered with wood, and soaking with water in the winter time in rainy weather. In confirmation of this view the late Lord Lovat, Beaufort Castle, told the writer that on one of his estates he used to creep while deer-stalking upon his hands and knees, through an extensive plantation quite dry and comfortable, and the first time he required to go over the same ground after the wood was cut down he would have required fishing boots, it being completely covered with water in many places, and all the ground very much wetter than he had ever seen it before. Now if cutting down a plantation so greatly increases its wetness in winter and dryness in summer it is evident that plantations keep the soil more uniformly dry, warm, and comfortable at all seasons than it would be without them.

Another benefit arising from the planting is that of raising the temperature. Drying the soil is only another term for heating it, but I think there are other ways by which trees raise the temperature besides merely drying the ground. I have noticed that snow melts sooner in a plantation than outside of it, and if a certain quantity of snow is laid near the base of an old tree it will melt sooner than the same quantity will at a distance from it or in the open field. The duramen, or heart-wood, of trees does not freeze. In cutting down old trees in frosty weather the heart-wood is as soft as at midsummer, but it is otherwise with the sap-wood, which becomes so hard at times as to resist the saw or axe. A dead tree is also warmer than a live one, until the former becomes soaked with water, when it becomes colder than the latter. Any one blindfolded can tell from the touch which is the dead and which is the live

tree, and those who have studied the subject well can in like manner say from the touch which is the old and which is the young tree, assuming both to be healthy and growing.

A still further benefit from trees is that of opening the soil through the leverage of the stem over the roots during a breeze of wind. The upheaving of the soil amongst the roots is very considerable, and when the earth is thus opened and loosened heat and air are thereby admitted, to the great benefit of the trees and the heating of the ground.

Another advantage of planting is the strengthening of springs, probably not all, but many of them. I know of at least two springs which have greatly increased in volume as the plantations surrounding them have grown up, and both went dry soon after the plantations were cut down. The shading of the ground by means of the branches and leaves prevents it from ever becoming unduly heated in summer, or cooled in winter. The soil amongst trees is drier and warmer than in the open field, but, at the same time, the grass in a plantation after dew or rain is wet for hours after it is dry outside the fence. Whether plantations do most good or harm to grain crops as such is a subject of dispute. They help to increase sparrows, and other small birds which devour grain; they also encourage rabbits, which injure it. In late and wet seasons they prevent it from being harvested, and in some cases from ripening; they prevent frost from leaving the ground on the north side of the plantation. The roots of the trees extend far and wide, rob the soil and choke drains. These and other complaints may be truly lodged against plantations, but, on the other hand, there is much ground that was not worth 1s. 6d. per acre that is now letting at five times that amount, and at the same time bringing to perfection a crop of trees worth more than the ground they occupy. As various other important advantages arise from trees and plantations too numerous to denote at present, they must be left in abeyance and resumed in my next paper. *C. Y. Michie, Cullen House, Cullen, N.B., September 8.*

Home Correspondence.

The Fruit Crops.—There are, I believe, more Apples in this neighbourhood than there was at one time thought to be; but the fruit is in general small. Some kinds have very heavy crops, whilst others have little or no fruit; even the same kinds have not crops alike in the same garden or orchard. One tree happens to be heavily laden, whilst another of the same kind growing close by has no fruit. Some trees here are heavily laden, others have partial crops, whilst some have no fruit. The following are the sorts of Apples bearing fruit here:—Four trees of Cockpit have an abundant crop; one Cockpit, light crop; one Improved Cockpit, an abundant crop; one Improved Cockpit, moderate crop; one Keswick Codlin, a good crop; one Keswick, very light; two Dumelow's Seedling, light crop; two Yellow Ingestre, good crops; one London Pippin, a good crop; one Lamb Abbey Pearmain, a good crop; one Claygate Pearmain, a moderate crop; one Yorkshire Greening, moderate crop, fruit small and some deformed; two Wormsley Pippin, moderate crop; two Hawthornden, heavy crops; one Sykehouse Russet, a good crop; one Old Nonpareil, moderate; one Manks' Codlin, moderate; one King of the Pippins, abundant; one Sir Walter Blackett's Favourite, good; one Ribston Pippin, a few fruit; two Warner's Pippin, moderate; two Court Pendu-Plat, moderate; two, of a kind I do not know, good; also one tree each of two sorts I do not know, good crops. There are several trees with a few fruit and some with scarcely any. The nearest tree to the Keswick Codlin that has a good crop, is another Keswick that has no fruit; then at no very great distance from the King of the Pippins tree that has an abundant crop, is another of the same kind that has very few fruit. There can be no question as to the injurious effects of the severe weather of the past spring on fruit trees whilst in bud and blossom, but the severe weather, in my opinion, was not the sole cause of the great failure of the fruit crops. I believe the great fall of rain in September and October last year also contributed to the failure of the crops—the wood and buds never got properly perfected and matured, and when the buds expanded in spring, being weak, they succumbed to the long continuance of severe weather. The Keswick Codlin and King of the Pippins that have crops this season had, if I remember rightly, very few fruit last year, whilst the Keswick Codlin and King of the Pippins that have little fruit this year had good crops last year. Several of the trees that have crops this season had very few fruit last year. The Cockpit is a well-known and a favourite Apple in Yorkshire. The tree

is of a stiff, sturdy habit of growth, forms strong, close spurs, and is a most abundant and a very certain bearer. It is only a small Apple. The sort that I know by the name of Improved Cockpit is a much larger and flatter Apple than the Cockpit. The tree is of a vigorous habit of growth, and a great bearer, but the fruit does not keep very long. With me they generally decay rapidly in December, whilst the Cockpit keeps until January and sometimes through February. Pears are a lighter crop here than they have been for some years. On the standards there are only a few Beurré Diel, Beurré Bosc, and Louise Bonne of Jersey. The pyramids are a great failure, only a few fruit on a Ne Plus Meuris, Bergamot d'Esperen, and one or two other sorts. Even on the wall trees this year the crops are very light. The following are the best here:—Two Easter Beurré, a good crop; two Beurré Rance, a fair crop; two Glou Morceau, moderate; one Winter Nelis, moderate; one Beurré Diel, fair crop; one Vicar of Winkfield, moderate; one Hacon's Incomparable, moderate. There are a few fruit on some of the other trees. On

stem, *M. Leichtlin*. [Mr. Fitch sends us a tracing from his original drawing of the plant at Kew, which certainly does not indicate the habit described by M. Max Leichtlin; moreover, the specimen from which the drawing was taken has been preserved, and this, Mr. Fitch tells us, shows leaves commencing a few inches from the ground, gradually decreasing in size upwards till they pass into bracts. The flowers produced were about 5 inches long, but native specimens show a spike with eight flowers, each 6½ inches long. EDS.]

Strawberries.—In your excellent Fruit Supplement last week, after mentioning several varieties of Strawberry as good for growing, "Z." says if only one sort can be grown he would recommend that this should be the Viscomtesse Héricart de Thury. Allow me to give my experience of this year. Out of over 250 plants I did not get 2 quarts of fruit from the Viscomtesse, although there was a profusion of bloom—the spring frosts have cut them off; while from the Stirling Castle Pine, which is by some considered

quainted with. It certainly would make a noble plant for massing in beds, singular in form and attractive in colour; a single plant will cover more space than a dozen Echeverias, equally handsome and far from being so commonplace; it is of the easiest possible culture, hardy and evergreen, or persistent in its foliage. Those who indulge in making carpets with plants should look out for this. *Thomas Williams, Ormskirk.*

Autumn-flowering Iris.—Accompanying I send you a plant of *Iris ruthenica*, with a flower on it, which has been blooming for some time freely at my grounds at Tooting; at the same time last year it flowered in the same position. Paxton gives it as flowering in May, but it is evident that in this country its time of flowering is in September. It is a remarkably distinctive plant, forming a circle of fan-shaped foliage, and from the heel of each fan come one, two, or three flowers. We have had this plant in our possession for many years, but only succeeded in flowering it last year and the present, having

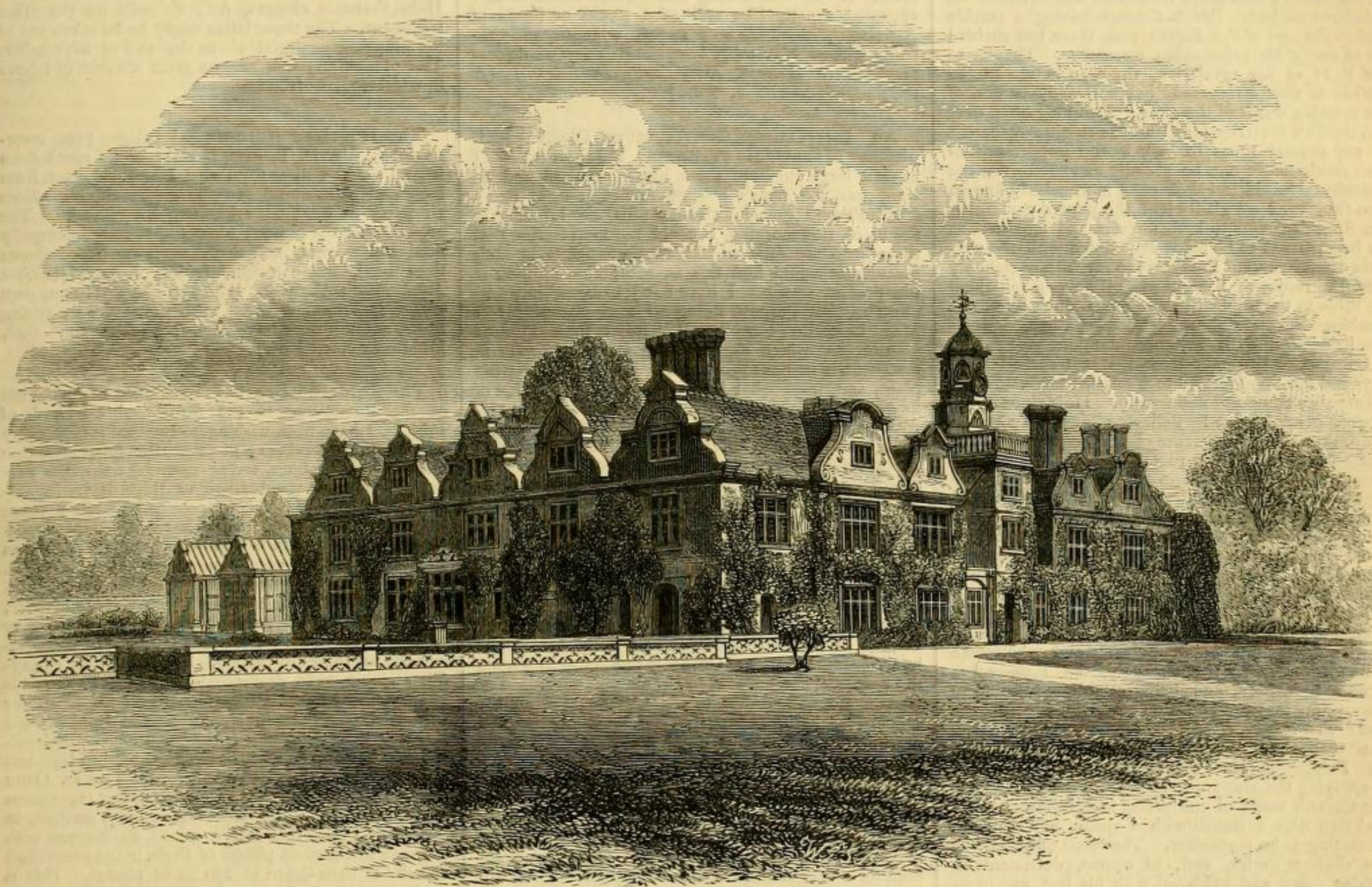


FIG. 75.—THE MANOR HOUSE, ROTHAMSTED.

Marie Louise, of which there are here several very fine healthy trees, there are very few fruit. Apricots have not been so scarce in this neighbourhood for some years. Peaches are also scarce here; there are three trees that have a moderate crop—one Walburton Admirable (or what I have as that sort), the other two sorts I do not know. Plums, with the exception of Victoria, are very scarce; here there are several trees of Green Gage, and I cannot see a single fruit on any of them. The present and last year have been very bad ones for fruit growers in this neighbourhood. Labour is dear, the crops have been light, and the importations from the Continent have been great. The immense quantities of foreign fruit that come into the market keep down the price of home-grown, to the benefit of the consumer but to the detriment of the grower. *M. Saul, Stourton, Yorkshire.*

Lilium cordifolium.—Allow me to say that your artist has made a mistake in the portrait of *L. cordifolium*; unlike *L. giganteum*, the stalk is not leafy, but rises bare to the height of 1 to 2 feet, and then six to eight leaves appear in a sort of rosette. This is one of the principal features in its distinction from *L. giganteum*, which is clothed regularly all along the

identical, I got over a quart to the root. But Sir Charles Napier was my best cropper. After many years of trial of a number of varieties, I should say that either of the two last, the former for choice, were the best when only one sort could be grown; they are good in flavour and colour, and abundant bearers. So is the Viscomtesse, but so early that the late spring frosts spoil it. *Harrison Weir, Weirleigh, Breckley.*

Euphorbia Myrsinites.—Perhaps no race or tribe of plants are more diversified in form and habit than the Euphorbias. Many of them are so singular and grotesque that they appear to connect themselves with the vegetation of the coal period. They assume every possible shape and size, from the tree to the small annual. Many of the herbaceous forms are very handsome, and our native *E. Paralias* is no despicable plant, but certainly the most handsome of the herbaceous kinds is *E. Myrsinites*. I scarce know of a handsomer hardy plant than this: it throws up a number of stems about 1 foot long, densely clothed with bold, almost imbricated foliage, so decidedly glaucous as to be almost blue—the stem, close to the ground, giving the plant a strange, yet very handsome appearance, unlike any other plant I am ac-

changed the situation and the class of soil. At the present time it is growing in a bed between two lines of Poplars, and in a dampish part of the grounds. I send you at the same time some flowers of *Iris pumila*, which has been blooming tolerably freely for some time past with me. You will see from the specimens sent—some being over, others open, and others in bud—that the succession of bloom is likely to be continued for some time yet. *P. Barr.*

Flow of the Sap.—Seeing an article on this subject, I thought my experience bearing upon the same subject might be worth giving. About ten years since, I planted many young fruit trees, two of which (Blenheim Pippin Apple) grew more freely than all the others, but neither of these two had any blossom from year to year. I was advised to root-prune them, and gave orders to a new gardener to do this. To my great annoyance he took upon himself to ring them, by cutting out the bark, about an inch wide, entirely round the collar of the stem, about 2 inches below the branches. I told him he had killed the trees. He was very indignant, and said he had done many so in his time, with great success. The next spring nearly every bud on the tree was a bloom, scarcely a leaf

worth the name making its appearance; all the bloom dropped off without setting a single Apple. The next year there was a similar result, but very much more feeble, and the following year both the trees were quite dead. During this time the bark below the ring appeared to dry up, and became very thin, while that above the ring became much thicker, which appeared to me very extraordinary, and altogether to suggest many points worthy of study to those who are interested in the subject. *C. A.*

Fruit of the Wild Rose.—The French have a mode of preparing the fruit of the Dog Rose as a confection for dessert and as a table sauce, but it requires a great deal of attention in consequence of the bristly hairs which line the interior of the hep. The hair and seeds have to be removed, and then the pulp has to be steeped in warm water or a little white wine for three days, until it is quite softened, when it requires bruising in a marble mortar with a wooden pestle and straining through very fine muslin or a close hair sieve. The sweetish, acidulous taste found in the pulp is said to depend on citric and malic acids. *H. E. Watney.*

The Potato Disease.—I have seen Mr. Worthington Smith's instructive illustrated contributions on the above subject. Beach Cottage having a seaside garden the care of the Potato plot there has enabled me to verify his painstaking researches. Thanks to the light of his revelation, the true nature of the disease is now discovered, but a remedy is one of the pressing wants of the time. Thinking often over Mr. Smith's investigations, the question has occurred to me several times to ask if the importance of their result might not be usefully extended over the agricultural world and their good more widely known than they are? I gladly lent the papers containing Mr. Smith's papers to both farmers and labourers as the best persons to be made acquainted with the welcome disclosures, but I am sorry to say with wretchedly unfruitful returns. I might as well have given them the Bible in the original tongue; men don't like to be dumbfounded, and stubborn ignorance, ashamed, won't own its defects, so that my good intentions were baffled by bucolic stolidity and conceit, that, entrenched in old ways and self-love, refused to admit the innovations of science they could not understand. How slow is the progress of knowledge! Believing, as I still continue to do, that the primal cause of the complaint is the coarse treatment of the root in its mode of culture, permit me to ask if it would not be possible to popularise Mr. Smith's well-tested observations and results, totally dismissing all hard words or scientific terms, and finding their equivalent in easily appreciated English names, or even local ones render his remarks comprehensible to all? Such a work, I think, could hardly fail to be both individually and nationally common good, and "do yeoman's service," particularly if it laid the main stress on the value of insuring for the future a more cleanly and wholesome mode of culture? Unfortunately, the malady has become hereditary, and being established for forty years, its long malignant prevalence will be hard to eradicate or cure. My opinion is, that throughout England, Scotland, and Ireland the Potato is the victim of gross treatment, by applying the manure to it in too direct a manner. The Cornish mode of cultivation is as follows:—The workman digs a trench with a spade, and walks in the cutting as he progresses. The result of his labour is a shallow gutter, and, of course, detrimentally trodden down and hardened with his feet, and in its hollow the sets are placed at intervals, each part perhaps fresh cut, with unhealed wounds on the sets; the dabs of dung (or manure of some sort) are placed in the cutting, being smothered with corrupting festering filth, suggestive of a vegetable plague. I know no plant that would stand such treatment and live, and the wonder is that the Potato has not degenerated before. In making the next parallel, the earth that is dug out of the second groove is thrown over the first, and that row is complete. The manure used is a compound variety of all kinds of refuse that the locality can furnish, putting aside lime and guano as exceptional (though both are occasionally applied). The following dressings are most prevalent in the county. Deposits from muck-middens, a collection of house contributions thrown out daily, cinder-ashes, cow and horse dung, pig-dung, human faeces, urine, soot, street or road sweepings, all left to fester in a heap exposed to the sun! Near the coast seaweed is available, also sea-sand, often black and putrid (sometimes shelly) decayed fish, and the salt sweepings of pilchard cellars; all these ingredients dug in the ground and left to assimilate with it would be beneficial if put in three months before the plants, but applied to them when sown (as in the case of the Potato) the surprise is how the hardy tuber should have stood it so long. The result of my observations—unassisted by scientific research—is, that an impression has prevailed in my mind for some years that the evil of the disease is communicated by the Potato's early contamination with the manure, a deleterious applica-

tion of refuse, in which the root of no plant can be placed and survive—that is noxious to all vegetation, in the first festering fermentation of its decay, and in which ultimately, when its virulence has passed away, is shown its affinity for mildew and fungus, the first outgrowth of all mouldering corruption through the world. *W. Browne, Beach Cottage, Fowey, Cornwall.*

Lapageria alba.—I have forwarded for your inspection a bunch of *Lapageria alba* flowers. I have occasionally observed clusters of four or five flowers together, but never one so large as the one I have sent you, and I shall be glad to know if such have before come under your notice. Its production I attribute to the vigorous health of the plant. I planted it nine years' since, together with one of the best variety of rosea, in a span-roofed house 20 feet long, which have nearly covered the north side of the roof, and is now bespangled with these gaudy and strongly contrasted coloured flowers, the number of which can only be calculated by the hundreds and more probably thousands. It is a very general idea that *alba* is much more spare in its growth than rosea, which I do not find is the case when properly treated and careful watching of the growths when emerging from the roots. We have some which come to the surface of the bed during last spring, which at first appeared exactly like real good stocks or heads of Asparagus, which are now 28 feet in length, and probably will in November have some dozens of flowers on them. *R. Westcott, Raby Castle, Darlington.* [A truly superb specimen. *EDS.*]

An Interesting Conservatory Plant: Kniphofia Macowani (Tritoma Macowani).—I have a large stock of these blooming in 48 and 60 sized pots, the plants ranging in height from 1 to 2 feet, and with graceful slender foliage. Looking at the batch this morning I could not help feeling that those who are fond of characteristic plants in their greenhouse would find this an acceptable addition at the present season. I have not yet planted any out-of-doors, but purpose doing so next season. Herr Max Leichtlin considers it hardier than *Tritoma glaucescens*, which has remained for many years in my grounds without protection. It is a free-flowering plant, and, from what I have said, you may judge of its grand effect as a border plant. I send you herewith specimens of the flowers, that you may judge. The beautiful rich soft orange spikes, with from twenty to fifty from an established stool, would be an object not to be despised in a mixed flower border, or associated with dwarf flowering shrubs in American borders or beds. *P. Barr.*

Mildew on Grapes.—A correspondent mentions, in the number for September 1, having heard of a case where "scraping off the bark" of mildewed Vines—that is, in the following season—was a "perfect cure." I have this season succeeded very fairly in saving a badly mildewed crop of Grapes in one house by wiping the berries about once a week for six weeks. The Grapes are quite saleable, and will be sold for the London market thus wiped. The bloom is gone, and they are not so large as usual, still they are ripening well, and are as fairly coloured this unfavourable season as many others not mildewed. I showed them to a good judge this week, to his immense surprise; and one importer on a large scale smiled at the notion of much bloom remaining on any Grapes by the time they reached their destination. If mildew remains even for a very short period unnoticed on Vines it will stain the shoots, but in the older wood this would hardly be perceptible. Why not try wiping the berries the moment you notice any mildew with soft muslin? If neglected, then wipe the leaves also and the wood. By painting the canes and shoots in the winter, and watching for any renewed symptoms next season, there is no reason why mildew should not be stamped out. Sudden draughts should also be avoided. These dry roots, with a cold, damp inner temperature, favour the introduction of this pest. Still there are mysterious causes besides these as yet unknown. *T. C. Fréhaut.*

Deutzia gracilis is a plant that is largely grown for the London market, and though there are many fine things that flower during the dull months of the year, I find the commoner things when well done are as greatly admired as the tenderest exotic, and a well done *Deutzia* in any sized pot is a very interesting object. In many places they are huddled together in any out-of-the-way corner, on the half-starved system, but when liberally treated, as they are by the grower for market, they soon make lovely objects in their wonderful 4-inch pots. They are easily propagated by cuttings and layers, but provision must be made according to the demand. If by cuttings, put as many into a 4 or 6-inch pot as possible, harden well off by May, shake all out of the pots, and plant them in well prepared nursery beds; if by layers, plant as many stools as will supply the requisite number of layers, peg the shoots all round the stock, next spring take them up and plant in nursery rows, and treat as

the cuttings: always replace those that are taken off by last year's growths; this system gives good healthy plants. The next spring cut them all back to within 3 or 4 inches of the ground, and pinch them back twice during the summer; the following February or March pot them in 4-inch pots in good loamy soil, and plunge in prepared beds of ashes or tan; during the summer pinch any shoots that show signs of grossness, keep well watered, and as the season advances give occasional waterings of liquid manure. About the end of October the preparation for forcing begins, by getting as many as possible under cover from the drenching rains and frosts, introducing them in batches into a nice heat of from 45° to 55°, shutting up early with plenty of moisture till they begin to show flower, then move into a dryer and cooler house to harden off for market. When grown for private establishments they can be grown on the same principle into any sizes, by cutting well back as soon as done flowering; give them a little heat to get a good break, harden well off, and plant out on prepared beds. By always keeping up a succession of young plants by cuttings or layers, it is not requisite to divide the old plants, which seldom give satisfaction. It is wonderful how long they can be kept in smallish pots, by plunging and liberal treatment. Lilacs, Primroses, Gueldres Roses, Callas, *Cytisus racemosus*, *Habrothamnus elegans*, &c., do well on the same treatment. The three latter ought to be taken out of the plunging material about the end of September. The plunging system saves a great amount of labour in watering. *E. W.*

The Roseless Autumn.—I believe your correspondent, Mr. D. T. Fish, is right, and I speak from what I see as well as from what I hear. Letters from large and experienced growers are reaching me from all parts of England reiterating his remarks. The growth after the summer blooming has been generally fitful and uneven, and there are more wood-shoots than usual, and consequently less flowers. *William Paul, Paul's Nurseries, Waltham Cross.* [In our own experience summer roses were destroyed by spring frosts, autumn roses have been most abundant. Soil, Middlesex clay. *EDS.*]

The Colorado Beetle.—Ever since I saw the cut of the Potato-bug in the *Gardeners' Chronicle* of July 28, I have been wishing to say that it is in every way quite natural except that the artist was too sparing with the bugs, as we consider five or six perfect insects, with twenty-five or thirty larvæ (of different sizes) to the square inch, to be a fair average crop. But you will doubtless have abundant opportunity for observation in this line after his bugship has established himself upon your shores. I suppose you await his arrival with considerable anxiety, but doubtless England will rise to a man to expel the invader, in which case (if every man does his duty) the victory will be an easy one. I see that Paris-green is recommended for their destruction. I am not aware of anything having been discovered up to this date that is as efficient; 1 lb. of Paris-green to 25 lb. of rye or wheat flour, thoroughly intermixed and thinly sprinkled over the plants, is the usual method of application, and is much more economical both in time and material than mixing the Paris-green with water. Quite a large experience has taught me this. But this season I have adopted a still more economical method, as follows:—I have this season mixed Paris-green with common fine-ground plaster of Paris, in the proportion of 2 lb. of Paris-green to 250 lb. of plaster. This is applied to the plants by means of a fine flour-sieve, with a stick fastened across the top for a handle. This answers every purpose. It is fatal to the vermin, and every way satisfactory, and the advantages of plaster over flour are several:—1, cheapness; 2, being much heavier than flour it fixes the Paris-green, allowing none to escape on to the adjoining crops, and general safety in application; 3, two or three such applications of plaster during the season becomes a valuable fertiliser to the land. I have applied it twice to our crops of Potatos, and have succeeded in making a thorough clearance of the bugs and larva at each application. *H. E. Chitty, Bellevue Nursery, Paterson, New Jersey, U.S.A.*

Hardiness of White-Flowered Plants.—I came lately upon a rather noticeable instance of the supposed superior hardiness of plants with white flowers over the same varieties with coloured flowers. I cannot say how far it is always the case. I do not know that I ever observed it before, though most flowers sometimes occur white. The charming *Solanum Dulcamara* is I think rather capricious as to soil, and here in Scotland it is not very common, though it grows luxuriantly in many places, but I have never seen it except near the sea, or nearly on a level with it. But lately passing for a good many miles through a corn country, where I rather missed it in the hedges, and certainly had not seen a single specimen, I was struck, on reaching the top of a ridge, exposed to the winds

as much as it could possibly be, and 200 or 300 feet above the sea some 8 miles off, to see the more sheltered bank of the road half-covered with the white-flowered variety of *Solanum Dulcamara*. I saw no signs of the common kind in the neighbourhood. *F. M., N. B.*

Striped Petunias Seeding.—I observe a query at p. 343 from a correspondent respecting the seeding of striped Petunias. My experience for several years has been that these Petunias are free seeders, especially towards the autumn after the plants have somewhat exhausted the soil and are making less growth. During September, especially if the weather be fine, they seed very freely. The striped forms having fimbriated edges, on the other hand, seed but sparsely, they make a very robust woody growth that is almost too luxuriant for the open ground except in poor soil. Striped Petunias, if a good strain, come very true from seed, and will make a most charming mass of mixed colours in a flower bed. *A. D.*

Sutton's Magnum Bonum Potato.—This Potato with me this season has withstood the disease better than any other variety grown here. A peck was purchased and planted in the ordinary way of field culture, making as many sets as possible. The crop was lifted to-day, and the produce from the 1 peck is about 8 bushels of large, handsome Potatoes, and not a single diseased one was found amongst them. When cooked it is of first-class quality. In the same field, right and left of Magnum Bonum, are ten other sorts planted, and I should say, as near as possible, half the crop are diseased. In all I grow a little over 3 acres, and the other sorts less diseased are Early Don, an excellent Potato; and the well-known Dalmahoy. Surely if any Potato will resist disease as Magnum Bonum has done, combined with productiveness and good quality, it is entitled to special notice and extended cultivation by all. *Thomas Carlton, Ashstead Park Gardens, Epsom.*

The Potato Crop of 1877.—Having had continued rain since July 14 in North Wales, it seems to touch upon the old proverb of forty days' rain. We have had considerably more than that, but have during the last few days had splendid harvest weather. The Potato crops at this place are most extraordinary, many of Myatt's Prolific, Mona's Pride, and others, weighing a pound each; but in all my experience of many years I never saw the disease so destructive as this year. It will be a very great loss to many of the large growers for market in the neighbourhood of Llandudno; we see whole fields completely dried up in the foliage. The last week or ten days, it matters not whether on the mountain or in the vale, all appear the same. *T. Capers.*

Orchard-house Experience.—I have just read Mr. Bréhaut's very interesting article on Orchard-houses, p. 334. I also am among the "early orchard-house workers." My trees came from Mr. Rivers in 1856. Mr. Bréhaut's houses appear to be not more than 15 feet wide, but he says, "as to ordinary span-roofed houses, I consider those of Mr. Rivers as of the best dimensions—say, 100 feet by 30." He also states, "Cherries and Apricots are impossible, save in immense houses—they need too much air." While entirely agreeing with most of Mr. Bréhaut's paper, I must demur to the last two propositions. I believe it to be true in practice, as it is in theory, that with most fruit the nearer the glass, and the freer circulation of air, the higher the flavour and the better health of the trees, and better setting of the fruit. The objection to narrow low houses is their little power of keeping out severe frost. I believe the best practice to be to have two houses, one for storing the more delicate fruit trees, such as Peaches and Nectarines, the other for placing them to ripen their fruit. Our plan is this—we grow Peaches, Nectarines, Apricots, Cherries, Figs, Plums, Pears, and Apples, to say nothing of the *Diospyros Kaki*. Almost all the trees are in pots, the first named five, except for a turn-out in autumn after the fruit is pulled, live in the houses, the others are only kept in till safe from frost, or, in the case of Plums, put in in wet weather, to prevent cracking. Our largest house is 60 feet by 20 in the clear, and 10 feet 6 inches high to the ridge-board, with raised middle bed as originally recommended. In this all the better-class fruit trees live, rather closely packed, through the cold weather. In the second house, 60 feet by 15, 6 feet 6 inches high to ridge-board, Plums, Pears, and Apples are huddled together till danger from frost is over, they are then turned out to make room for their betters. I believe in this low, narrow glass shed; where all the trees are close to the glass, and where the air circulates freely through their leaves better results are obtained than in any wide, high houses, especially with Apricots. Our Cherry trees live in the larger house. They always bear well, and from their earliness are amongst the most popular of the orchard-house productions. I used to wonder that orchard-houses were not very much more general.

I believe the reason why they seldom succeed in great gardens to be this. They require hard, constant work and attention, and there is much less honour and glory attached to them than there is to the growing of Pines, forced Grapes, Orchids, and stove plants, so a skilled, highly-trained gardener is apt to look down upon them. I believe the way to make them succeed is to put an under-man in charge, and lead him to take a pride in making a success. Our old trees, more than twenty years in pots, many of them subjected in old days to experiments, chemical and mechanical, and of shapes of which the less is said the better, give regular crops. I only remember one failure, that was with a cold, sunless spring, when the blossoms did not set (a neighbour who had the dangerous luxury of a hot-water pipe turned on heat and got a crop). Some of the Pear trees have the base of their trunks more than a third the diameter of the pot. They have arrived at the full weight for a man and boy to carry, and so can have no further shifts. So far they are in perfect health. I have more than once heard orchard-houses called toys, but as long as in a cottage garden, where our orchard-houses are, we get more and better fruit than is produced in most large gardens, I shall continue to think them very satisfactory toys to play with. *George F. Wilson.*

Rainfall in North Derby.—I have thought that a copy of the register of rainfall here (N.E. Derbyshire, bordering on North Notts), from September 1, 1876, to the end of August, 1877, may be acceptable to your readers, which though not a chronological year includes 365 days, out of which on 230 days .01 inch or more rain fell. I will quote each month separately, the number of days on which .01 or more rain fell with the date and amount of greatest fall in twenty-four hours, and total for each month. The monthly average is 3.576 inches, or a little over 3½ inches:—

	Days.	Date.	Depth.	Total.
1876.				
September	24	30	0.84	4.59
October	14	8	0.76	2.12
November	20	12	0.92	3.82
December	26	6	0.77	7.09
1877.				
January	24	3	1.31	3.93
February	21	25	0.76	2.42
March	21	24	0.65	2.60
April	19	9	0.64	2.69
May	16	10	0.54	3.24
June	9	1	0.80	2.01
July	16	14	0.87	2.98
August	23	25	1.25	5.43
	230			42.92

In this exceptional season from seed-time to harvest the husbandman has had much need of patience for the fine weather, rather than "for the early and latter rain." The average summer heat, too, has been very low, which, following a very cold spring, has made harvest unusually late. In respect to fruit we have shared the common lot; we had a good crop of Gooseberries and Currants on bushes sheltered by orchard trees—though light, the latter are nearly bare of fruit, with two or three exceptions in Apples, Duchess of Oldenburg, Nonsuch, and Wellington. We have a few Pears on walls of *Passe Colmar* and *Jargonelle*; the latter bloomed and had set its fruit before the very cold frosty winds came that cut off a splendid show of bloom on most other sorts, which confirms what has been often noticed before, that the young fruit can withstand more cold than the blossom, especially if accompanied by wet. The *Jargonelle* being an early bloomer frequently gets cut off when later blooming sorts have a good crop. By way of supplement to the above account of rainfall, I may add that we have had up to the 14th inst. 3.31 inch of rain this month, of which 1.55 fell on the 2d. Harvest operations are consequently very much impeded. The disease in Potatoes is developing itself very rapidly—some crops are nearly all bad. *R. Rolfe, Gr., Stuffywood Hall, near Mansfield.*

Notices of Books.

Arboretum Segrezianum. Paris: Baillière.
Under this title M. Alph. Lavallée has published a classified list of the trees and shrubs grown on his estate at Segrez, near Paris. The collection dates from 1857, with the exception of a few fine old trees already in the park. The preface tells us of the difficulties experienced in grouping the trees and shrubs so as to place them in the situations best adapted for them. M. Lavallée's efforts have been rewarded by obtaining a nearly complete collection of all the species of trees and shrubs hardy in the centre of France. The total number of reputed species and varieties is estimated at 4267, not including mere garden varieties, of which about a thousand are grown. Of these

eighty-four are Monocotyledons, 4081 Dicotyledons, and about 160 have not been determined.

The nomenclature presented an enormous difficulty, and M. Lavallée tells us that in preparing specimens for the herbarium and for future identification, he found it the best plan to forget or to ignore the name under which he received the plant in question, keeping a record, however, of this name, the source whence obtained, the date of receipt, the place where planted, and other necessary details. In addition to catalogues and plans, each tree bears a provisional label, containing similar information, destined to be superseded by a permanent label when the correct name has been decisively made out. The difficulties M. Lavallée has had to contend with in maintaining these collections in proper order are greater than those encountered in forming the collections. Without rigorous accuracy, continual revision, infinite precautions that each species should be represented by numerous examples, it would have been impossible to have preserved order amid so large a number of plants. In the formation of his arboretum, M. Lavallée has had the assistance of M. Herincq and of M. Decaisne, so that the correctness of the nomenclature may be relied on. An herbarium, a collection of books and plates relating to trees, a museum for specimens of woods and fruits, have all been established at Segrez, and have resulted in the present catalogue, acknowledged to be imperfect, but likely to be of great service in promoting the correct nomenclature of trees, and in unravelling their intricate synonymy. Gardens and nurseries, says M. Lavallée, abound in imperfectly known species. Many reputed common do not exist in cultivation; others, supposed to be rare, exist in profusion. Of these errors and misapprehensions M. Lavallée cites several instances which are familiar enough to all who make collections of living plants.

M. Lavallée brings a rather serious charge against *quelques horticulteurs* of purposely changing the name of old and long-cultivated species, and applying to them some new name. We do not believe that such a practice is wilfully followed in this country, unless in quite exceptional cases. Another cause of complaint brought by the author against nurserymen is that if they are applied to for a particular species not in their collection, they do not scruple to send something else, possessing none of the attributes of the required species but the name; thus in a plantation of twenty-six *noyers* (Walnuts) only two were correctly named.

M. Lavallée gives some interesting details relating to former collections of trees and shrubs in France. One of the most remarkable was that of René du Bellay, Bishop of Mans, established at Towvoys, and which formed the object of the praise of the botanist Gesner. This collection owed much to Pierre Belon, a physician and traveller of the period (1558). Of these collections not a trace now exists, and even the records of the bishopric were destroyed in the first French Revolution. From the mention of this the first arboretum in France the author passes on to the history of the *Jardin des Plantes* (which has been given in our columns) and to that of several other establishments, devoting, as is most due, some little space to the labours of Duhamel. The arboretum formed by this noted arboriculturist was situated at Vrigny and de Monceau. His brother at Denainvilliers seconded his efforts, so that in 1755 appeared the first instalments of the *Traité des Arbres et Arbustes qui se cultivent en France*—a work not completed till fifty years later by Loiseleur-Deslongchamps, but a veritable monument of French learning and industry. Passing over other names and establishments of minor interest to us on this side of the Channel we come to the names of Michaux, whose work on North American trees is still of very great value. The Michaux, father and son, introduced a large number of American trees to France. In 1810 De Vilmorin established at Des Barres an arboretum comprising some 260 species suitable for forestry purposes. This collection is now the property of the State. About the same time the great tree nurseries of Audibert at Tarascon, Baumann of Bollwyler, André Leroy at Angers, and Simon at Metz, were established. Incidentally the author laments the too frequent dispersal of private collections at the death of the founder, and to more than one the epithet *saccagé* during some political disturbance or other has unfortunately to be applied.

M. Lavallée's sketch of the history of arboriculture applies almost exclusively to those in the neighbourhood of Paris, or at such a distance from the metropolis as to enjoy a similar climate. From what we

have said it will be seen how much of interest attaches to the details given by M. Lavallée, an interest so great that we could wish M. Lavallée would expand the brief sketch here given, and publish a general history of French arboriculture, using the word in the sense in which it is employed in this country. Of the intrinsic merit of such a list as M. Lavallée has given us there can be no two opinions—each species mentioned, with the authority for the name, the native country, and the synonyms. Use, not mere casual inspection, must determine the relative value of this catalogue, but it is quite certain that all tree lovers owe a debt of gratitude to the compiler for this valuable list. Incidentally we may remark that *Vitis Weitchii* (*sic*) was published in these columns soon after its first introduction. It is the *Ampelopsis tricuspidata* of Siebold and Zuccarini, and the *Ampelopsis Veitchii* of the nurseries. *Cissus Roylei*, often confounded with it, is sufficiently distinct in character, and comes from a different country. Under *Acer* we find no mention of *A. Schweidleri*, under *Pyrus* or *Eriobotrya* no mention of *P. Maulei*, under *Vitis* no mention of *orientalis*, under *Quercus* no mention of *Q. pannonica*, under *Thamnocalamus Falconeri* no hint is given that this is the plant generally, but incorrectly, known as *Arundinaria falcata*. *Q. nobilis* should be referred to *Q. nigra*. The references to figures and descriptions are also not so numerous as they might be. A more complete search through the horticultural and botanical publications would have enabled the author to add many more citations and references to figures, and which would have considerably augmented the value of his catalogue.

Taking it, however, as a whole, we can but express the gratitude of lovers of trees and shrubs, and trust soon to see a reissue in a more complete form.

Stock and Share Investments. By Albert Sharwood. Bazaar Office.—A little pamphlet containing just the information that is required by small investors, and which, if perused, may save much disappointment, not to say misery.

PUBLICATIONS RECEIVED.—Scotch Live Stock, by James Bruce (Edmonston).—Victorian Year-Book for 1875.—The Clematis as a Garden Flower, new edition, by Thomas Moore and George Jackman.—Journal of the British Dairy Farmers' Association.—The Royal Guide to the London Charities for 1877, by Herbert Fry.—The Tannahill Bouquet, by William Elder.—Le Journal des Roses.

Reports of Societies.

Brentwood Horticultural: September 6.—This society held their autumn exhibition in the grounds of Hampton House, by kind permission of the liberal proprietor, W. A. Ogg, Esq., who also lent his grounds for the spring show. The competition was generally abundant and the productions good. Especially pleased were we to see the numerous vegetables staged—and that more particularly in the cottagers' classes. Prizes which were offered for "miscellaneous stove and greenhouse plants, foliage plants, and Ferns, arranged for effect," were won by collections of plants far beyond the average in such classes. Here instead of massing for effect somewhat small plants in groups, as is generally done, the competition was carried out in each instance with the best specimen plants arranged single and in two rows, as is the case when a given number of stove or greenhouse plants are asked for. D. McIntosh, Esq., Havering Park (gr., Mr. W. Bones), won the 1st prize, having excellent specimens of *Eucharis amazonica*, *Bougainvillea glabra*, *Allamandas*, *Erica æmula* (an excellent specimen), Ferns, &c. Major-General Fytche, C.S.I., Pyrgo Park, Havering (gr., Mr. Lane) was a good 2d, with amongst others a fine specimen and well bloomed of *Phœnocomma prolifera* Barnesi, *Croton undulatus*, *Adiantum farleyense*, Palms, &c. W. A. Ogg, Esq., Hampton House, was also a very excellent 3d, his plants being larger, though both the 2d and 3d prize plants were greatly wanting in flowers compared with their more successful competitor. Mr. Rank, Brick House, Rainham, staged some thoroughly well bloomed double Zonal Pelargoniums. The six Pelargoniums for beauty of foliage brought out some splendid collections, all of which were of a very high order of merit. Mr. Meadmore, Romford, was placed 1st—Messrs. T. Hill, Brentwood (W. North, gr.), and Saltmarsh, Chelmsford, being respectively 2d and 3d. Fuchsias were well shown by W. A. Ogg, Esq. (Mr. Wise, gr.). The best arranged baskets of pot plants were won by the three nurserymen, Messrs. Saltmarsh, Ford, and Meadmore, in the order here given.

Cut flowers were very numerous and good. For

twenty-four Dahlias, Messrs. Saltmarsh (1st) and Rawlings (2d) deserve every praise, their stands being very highly finished, Mr. Rawlings had the largest blooms, but the finish of those of Messrs. Saltmarsh was so good as to warrant the award. Mr. J. C. Quennell, of Brentwood, won the 3d prize well as an amateur. For twelve Dahlias, Messrs. Quennell, E. Mitchell (W. Harrington, gr.), stood respectively 1st and 2d. Mr. Atkins, Warley, was 1st with Roses, good for the season. For twelve Asters, quilled and not quilled, respectively, Messrs. Saltmarsh received 1st prizes. Their stands were splendidly grown and staged. Messrs. Harrington and Atkinson had the best amongst amateurs. The best basket of cut flowers came from Mr. Quennell, showing real taste in arrangement. The winners of the Maiden prizes for vase of cut flowers were, the Misses Wise 1st, and Soder 2d. For the prizes offered for table decorations (open) Mrs. Burley showed a splendid arrangement. Using more flowers than is customary, her display, though light and elegant, was one of the gayest we have yet seen, yet being within the legitimate margin of taste without overcrowding. Mrs. Bailey, Brentwood, was an admirable 2d; indeed, for an amateur, we have rarely seen better taste displayed, the only fault, if any, being that the flowers used were somewhat too dull. This the best taste possible failed to neutralise. Miss Haws won the 1st prize for bouquets.

Fruits were tolerably numerous in all but Melons and Pines. For best collection of six kinds, Pines excluded, D. McIntosh, Esq., was 1st, Major-General Fytche being 2d; the Grapes in Mr. Bone's collection being large in bunch. Major-General Fytche also carried premier awards for black Grapes and Muscats. Fine Peaches were shown by Mr. Clark, Figs and Plums by Mr. Constable, a grand dish of Cox's Orange Pippin Apples by Mr. T. Simpson, Chelmsford, &c.

For a collection of nine sorts of vegetables Mr. J. Rank was 1st, and for six sorts Mr. Soder—the Onions, for weight, of the latter exhibitor being very fine.

Mr. Burley, nurseryman, Brentwood, received an extra prize for a large collection of plants, including large baskets of the chaste new Pelargoniums Miss C. Quennell, white variegated foliage, and light blooms with salmon eye; *Boadicea*, similar in habit, &c.; Mrs. Hanbury, and the popular Snowdrift. *W. E.*

Wellingborough Horticultural: Sept. 7.—This, one of the great centres of the shoemaking industry, dressed itself out with becoming taste on the occasion of the above exhibition; archways were thrown across the street, and many of the houses put on quite a festive appearance. It was held in a field in the town, and a thoroughly good show rewarded the labours of the promoters.

In the classes open to all England, stove and greenhouse plants were nicely represented, the lateness of the year considered. The best group of twelve, for which a handsome 1st prize of £10 was offered, came from Mr. J. Parker, nurseryman, Rugby, who had *Statiche imbricata*, *Vinca alba*, *V. rosea*, *Dipladenia amabilis*, *Clerodendron Balfourianum*, *Allamanda Hendersoni*, *A. Schottii*, *Cycas revoluta*, *Allamanda nobilis*, &c.; 2d, Mr. J. House, nurseryman, Peterborough, who was strong in fine-foliage plants, but generally weak in those in bloom, the best specimens being *Phormium tenax variegatum*, *P. Colensoi variegatum*, *Croton interruptus*, *C. pictus*, *Allamanda Hendersoni*, and *Lantana borbonica*. In the class for six foliage plants Mr. House was 1st and Mr. P. Daventry 2d. With six Palms—very fair examples of good kinds—Mr. Parker was 1st and Mr. House 2d. With six new plants Mr. J. Parker was placed 1st, with *Cupania filicifolia*, *Ixora Williamsii*, *Phyllanthus nivosus*, very nicely variegated; *Croton majesticus*, *C. Youngi*, and *C. Weismanni*. 2d, Mr. J. Jackson, Blakedown Nursery, Kidderminster, who had *Croton Weismanni*, *C. Disraeli*, *C. Youngi*, *Cocos Weddelliana*, *Livingstonia Jenkinsi*, and *Aralia elegantissima*. Exotic Ferns, as well as hardy kinds, were moderately shown.

In the cut flower classes, Mr. W. Corp, nurseryman, Oxford, set up a stand of forty-eight Roses of excellent quality from the seedling Brier, and it would appear that if autumnal Roses are to be had this stock must be mainly relied on for the purpose. The best flowers were Madame Hunnebelle, Sir Garnet Wolseley, Madame H. Jamain, La France, Duc de Rohan, Pierre Notting, Belle Lyonnaise, Marie Finger, Madame Laurent, Marie Rady, Paul Néron, Avocat Duviérier, François Michelin, Horace Vernet, Beauty of Waltham, Star of Waltham, and Marie Van Houtte; 2d, Mr. J. Bond, with some very fine flowers. Mr. Cross was 1st in two other classes, and in that for twelve Tea-scented and Noisette Roses he set up very charming examples of Marie Van Houtte, Bouquet d'Or, Madame Bernard, Belle Lyonnaise, Devoniensis, and Louise de Sarvie among others. The best thirty-six Dahlias came from Mr. P. Painter, Smallwood, and included fine blooms of Annie Delevanté (large white), Criterion, Vice-President, Mr. Saunders, Royal Queen, Perfection, Yellow Globe,

and Royal Purple; 2d, Mr. W. Jackson, Kidderminster; 3d, Mr. G. H. Feukes, Erdington.

The other divisions of the schedule were, to a great extent, a repetition of the foregoing classes, but as far as the exhibits were generally concerned in descending scales of quality; but a good effect was secured, and the four commodious tents were completely filled.

The best collection of six dishes of fruit came from Mr. G. Day, Daventry, and consisted of good White Muscat and Black Hamburgh Grapes, Peaches, Nectarines, Melons, and Morello Cherries; 2d, Mr. W. Watts. Mr. Day also had the best three bunches of white Grapes, consisting of Duke of Buccleuch, Bowood Muscat, and Muscat of Alexandria; and the best three bunches of black Grapes also, in Black Hamburgh, Alicante, and Lady Downe's.

The best collection of eight kinds of vegetables came from Mr. T. Eads, gr. to J. Becke, Esq., Northampton, and consisted of fine Cauliflowers, Carrots, Beet, Turnips, Porter's Excelsior Potatoes, Onions, and Cucumbers—a remarkably good even lot; 2d, Mr. G. Day, with a very good lot also; and the six collections staged in this class were highly creditable. In all the classes vegetables were finely shown. An extra prize was awarded to Mr. T. Eads for an excellent collection of ten dishes of Potatoes, consisting of Fenn's Perfection, Snowflake, International Kidney, very fine; Bountiful, Waterloo Kidney, King of Potatoes, Model, Emperor, Porter's Excelsior, and Schoolmaster.

Hardy fruits were well represented, the culinary and dessert Apples being remarkably good. A pretty Apple, named Lord Lennox, was much shown as a dessert variety.

Collections of wild flowers were in pretty bunches of distinct sorts, shown as they should be. Bouquets of wild flowers were also very attractive. Collections of Grapes were similarly shown as the wild flowers, and two sisters, Ellen and Emily Coles, had the leading prizes in both classes. Designs in wild flowers were in the form of gardens to villa residences.

Factory Hands' Flower and Vegetable Show at Guide Bridge.—We are again able to speak in terms of commendation of the results of the cottage horticulture set on foot some few years ago by Mr. Hugh Mason in connection with his great cotton mills at Guide Bridge, 7 miles from Manchester. Closely adjacent to the mills there are more than a dozen nice little gardens, separated by hedges and paths, and let, at a merely nominal rent, to such of the workpeople as have an aptitude for the cultivation of flowers and vegetables, and who through good conduct or long service are entitled to claim priority in the privilege of possession. The most cordial encouragement is also given to the cultivation of pot plants in the windows of the workpeople who live around, so that on approaching the mills the spectacle of domestic leaf and flower is most refreshing. Why cannot every great mill-owner in the country follow this good example! If it were only for appearance sake how much good might be effected by the placing in every cottage parlour in the land of some pretty flowering plant, or little shrub. A flower in the window sweetens the air, makes the room look graceful, gives the light of the sun as it shines through it a new charm, and helps to develop love of neatness, cleanliness, and order.

Mr. Hugh Mason's factories are called the Oxford Mills, and familiarly, in the neighbourhood, Oxford. The Oxford gardeners, with others of the workpeople who reside near, and who have independent gardens of their own—the latter formed under the inspiration of what is done close to the mills, have constituted themselves into a little horticultural association, not with a view to any public display, but purely for the sake of good fellowship and co-operation. Under Mr. Mason's influence every year, about this time, a show is held of the best of the produce, both garden and window, and very pretty and creditable the display has always been. The show is held in the lecture-room of the Oxford Institute, which building, we may remark, erected by Mr. Mason at his own cost, is one of the completest things we know of in regard to its providing for every kind of rational human want. There is a capital library, with news-room, of course; there are baths also, and at a little distance, in outdoor supplement, there is a spacious drying-ground for the women who work in the laundry, and a bowling-green for the men. The whole place has an air of cleanliness, neatness, and finish, such as it is seldom our good fortune to meet with in the neighbourhood of a large manufacturing establishment. The current year's show came off on Saturday, September 1, and was quite equal to any of its predecessors, though in some respects declaring only too plainly the hurtful character of the recent weather. Not to mention the incessant rain, the Oxford gardeners have this year had an uncommon plague of caterpillars. The most effective of the vegetables were the Cauliflowers, all very good and meritorious. It was natural, however, that the greatest amount in prizes should go to a vegetable of humbler description—the immemorial

Onion, which was excellently done both in purple and white. Besides these, there were Potatoes, Greens, Carrots, Peas and Beans, Cucumbers, salad plants and seasoning herbs. The Oxford gardeners, of course, cannot have it all their own way. They succeed least satisfactorily perhaps with their Peas. Gardening, wherever carried on, like all other human enterprises, of course, has its failures and disappointments. It tries not only one's powers of perseverance, but one's patience and one's faith. Still, in the most ill-favoured of localities, and in the worst of seasons, there is always plenty to rejoice in, and more that gratifies than disappoints, and this we take to be one of the best facts or principles connected with the promotion of horticulture for the million, especially in and near our great manufacturing centres. The trials, the hopes and fears, the rewards and discomfitures connected with gardening, constitute a very salutary part of education; and as the truest and best results of education, rightly so-called, are shown in men becoming more manly and self-reliant, more content and more generous, it follows that a garden is one of the best schools of moral discipline. A cottage garden is not only a source of wholesome vegetable good, it does good to a man's whole character. The prizes awarded at Oxford consist, not of money, but of useful household articles, rocking-chairs, kettles, knives and forks, &c., so that all in the family may participate. This is very wise, as it shows to all the home circle that the idea of a garden is never intended to be selfish and exclusive, but in one way or another promotive of the pleasure and welfare of all who are connected with it. The idea of a selfish garden is one of the most shocking and inconsistent things in the world. Every man, of course, has a right to do what he likes with his own—provided he likes to do with it what is right, and that which is right can never be done with a garden if, in one way or another, God's good gifts, as displayed in it, are not opened to the enjoyment of many. The window plants comprised chiefly Fuchsias, Pelargoniums, Vallotas, Agapanthus, and Japan Lilies, all very pretty and delightful to look at, the more so because so certainly the recipients of plenty of human care, for that they had been tended well-nigh as carefully as a child was quite evident. Herein is found another good use of cottage window-gardening—it tends to awaken kindly sympathies, and with these to improve the taste. The cut flowers consisted principally of Dahlias, scarlet Gladiolus, Asters, Antirrhinums, and French Marigolds, with a sprinkling of Carnations. A tray of Roses, from somewhere close by, was also very creditable. Fruit, of course, could not be expected in quantity. Some of the Oxford gardeners have little greenhouses, in which they manage to raise a few Grapes. We would recommend them, with the kindest recognition of their industry and their desires, to try instead of Vines a Maréchal Niel Rose, for the blooms of which they would find a good market in the town, and thus add to their pecuniary profit. For the sake of decoration, Messrs. Taylor Bros. sent 150 ornamental tender plants; and Mr. John Shaw, jun., of Bowden, a quantity of Palms and Cycads.

The Oxford Institute supports a band, which at intervals "discoursed sweet music;" and at an appropriate hour an address was given by Mr. Leo Grindon, of Manchester, on the origin, history, &c., of the best descriptions of fruits at present cultivated in Great Britain. We cannot speak in terms too high of the practical value of the work thus set going by Mr. Hugh Mason, with results already so marked. The example is worthy of imitation wherever an employer has generous instincts, and if it cannot be carried out on a scale so extensive as at Guide Bridge, it can at all events be tried on a smaller one, improving and extending by degrees.

Prizes are given, we must not forget to add, for the neatest and best-kept gardens. They were awarded, on this occasion, to Wm. Whittaker, Joseph Bridge, and Thomas Moss. Commendation was also given to J. A. Isherwood. (From a Correspondent.)

Stevenage Horticultural Society: Sept. 14—The usual autumn exhibition of this Society took place in the Town Hall on the above date, and was one of the best exhibitions the Society has held for some time past. Particularly does this remark apply to the cottagers' produce, which is the more satisfactory as the real object of the Society is to give encouragement to the many cottage and allotment gardeners in Stevenage and the surrounding villages covered by the operations of the Society. The cottagers' productions as a whole were in advance of those shown by amateur and professional gardeners.

In the class for a single plant in a pot not less than twenty-two plants were staged; the best was a remarkable Hydrangea, showing indisputable signs of window growth—a large, well-grown, healthy, clean, bushy plant, having seven large trusses of bloom. This came from Henry Baldry. Next in importance came some good specimens of Vallota purpurea in bloom, Fuchsias, Coleus, a well-grown Gladiolus

in a pot, &c. The collections of wild flowers arranged with taste were remarkably good; and the sauce and table Apples excellent. The basket of mixed vegetables shown by W. Hough, to which the 1st prize was awarded, was some way in advance of those shown by amateurs. The cottagers' vegetables were remarkably good, and, with the exception of the Vegetable Marrows, were such as any gardener might have sent to his employer's kitchen.

In the amateurs' and general classes the leading exhibitors were Colonel Metcalfe, C.B., Ashton House; the Rev. J. O. Seager, Stevenage; the Rev. J. F. G. Jenyns, Knebworth; the Rev. J. E. Pryor, Bennington; Lieut.-Colonel Wilkinson; Mr. G. H. Smith, Stevenage; G. Salmon, Esq., &c. The Rev. C. E. Segar had the best basket of fruit as well as the best bunch of Grapes. Mr. G. Salmon's stand of twelve Dahlias was highly creditable, and the Asters from Colonel Metcalfe, C.B., remarkably good.

Dessert and culinary Apples were numerous and fine, and in the former the Rev. W. Jowitt staged a good dish of Early Codlin. Among vegetables, Potatoes and Celery were specially fine.

The plants comprised miscellaneous groups, also Fuchsias, Coleus, Balsams, &c.; all fair for a locality in which outdoor rather than indoor gardening appears to be most generally followed.

A leading feature is the baskets of mixed vegetables in the general class. On this occasion the best came from G. Salmon, Esq., and second best from Captain Fellowes. We were sorry to learn from the active honorary secretary, Mr. George Dunn, that the necessary support to maintain two exhibitions yearly is declining. The Society depends mainly on annual subscriptions for support, for the proceeds in the way of gate-money are very poor indeed; and it would be a decided calamity were the shows to be discontinued through lack of public support, for they have done much to improve the social position of many of the cottagers.



STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, SEPT. 19, 1877.

MONTH AND DAY.	BAROMETER.		TEMPERATURE OF THE AIR.				HYGROMETRIC DEDUCTIONS FROM GLAISHER'S TABLES 6TH EDITION.		WIND.	RAINFALL.	
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 Years.	Dew Point.			Degree of Humidity. Sat. = 100.
Sept. 13	29.80	-0.09	65.5	52.7	12.8	58.3	+0.9	53.0	83	WSW.	In. 0.01
14	29.77	-0.11	67.0	59.1	7.9	61.6	+4.4	59.6	93	S.W.	0.00
15	29.82	-0.05	63.4	56.0	7.4	59.2	+2.1	52.6	79	WSW.	0.06
16	30.11	+0.25	63.5	47.5	16.0	53.8	-3.1	49.3	85	NNW.	0.00
17	30.12	+0.27	59.5	49.5	10.0	53.6	-3.0	48.3	82	NNW.	0.00
18	30.09	+0.25	61.8	50.2	11.6	53.8	-2.8	48.3	81	N.	0.00
19	29.83	0.00	59.8	52.7	7.1	55.3	-0.8	50.8	85	N.N.E.	0.00
Mean	29.93	+0.07	62.9	52.5	10.4	56.5	-0.3	51.7	84	N.W.	sum 0.07

Sept. 13.—A dull, stormy day. Occasional slight rain. Gale at times.
 — 14.—Overcast, dull, and windy throughout. Slight shower of rain at 2 P.M.
 — 15.—Generally fine, dull at times. Showery in morning.
 — 16.—Dull and foggy till 11 A.M., fine and bright after. Cool.
 — 17.—Fine, but dull and cloudy. Cool breeze.
 — 18.—A fine day, partially cloudy. Cold.
 — 19.—Overcast and dull throughout. Few drops of rain at 5 P.M.

LONDON: Barometer.—During the week ending Saturday, September 15, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.99 inches at the beginning of the week to 30.04 inches by the morning of the 10th, decreased to 29.75 inches by the afternoon of the 11th, increased to 30.03 inches by noon on the 13th, decreased to 29.80 inches by the morning of the 15th, and increased to 30.18 inches by the end of the week. The mean reading for the week at sea level was 29.95 inches, being 0.07 inch below that of the preceding week, and 0.13 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 71½° on the 11th to 63½° on the 10th and 15th; the mean value for the week was 66½°. The lowest temperatures of the air observed by night varied from 49° on the 9th to

59° on the 14th; the mean for the week was 53½°. The mean daily range of temperature in the week was 12¼°, the greatest range in the day being 18½°, on the 11th, and the least 7½°, on the 15th.

The mean daily temperatures of the air, and the departures from their respective averages, were as follows:—9th, 56°.7, -1°.4; 10th, 56°.2, -1°.8; 11th, 60°.6, +2°.8; 12th, 59°.3, +1°.7; 13th, 58°.3, +0°.9; 14th, 61°.6, +4°.4; 15th, 59°.2, +2°.1. The mean temperature of the air for the week was 58°.8, being 1°.2 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 128° on the 9th, and 114° on the 12th; on the 14th it did not rise above 71½°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 45° on the 15th, and 45½° both on the 9th and 13th. The mean of the seven low readings was 48°.

Wind.—The direction of the wind was variable, and its strength brisk. The weather during the week was dull, and the sky cloudy.

Rain fell on four days during the week; the amount measured was 0.17 inch.

ENGLAND: Temperature.—The highest temperatures of the air observed by day were 72° at Cambridge, and 71½° at both Blackheath and Nottingham; the highest temperature at Bradford was 62½°; the mean value from all stations was 67°. The lowest temperatures of the air observed by night were 40° at Cambridge, 41° at Hull, and 41¼° at Eccles; the lowest temperature at Truro was 53°; the general mean from all stations was 47°. The range of temperature in the week was the greatest at Cambridge, 32°, and the least at Plymouth, 12½°; the mean range of temperature from all stations was 20°.

The mean of the seven high day temperatures was the highest at Cambridge, 69°, and at Blackheath and Norwich 66¼°, and the lowest at Bradford, 60¼°; the mean value from all stations was 63¼°. The mean of the seven low night temperatures was the lowest at Eccles, 48¼°, and Wolverhampton, 49½°; and the highest at Truro, Brighton, and Plymouth, all 56°; the general mean from all stations was 52½°. The mean daily range of temperature in the week was the greatest at Cambridge, 18°, and the least at Plymouth, 5¼°; the mean daily range from all stations was 11¼°.

The mean temperature of the air for the week from all stations was 56¼°, being 5¼° higher than the value for the corresponding week in 1876. The highest was 59½°, at Brighton, and the lowest 54¼°, at Wolverhampton and Bradford.

Rain fell on four or five days in the week at most stations. The amounts varied from 2 inches at Hull, and 1½ inch at Bristol and Plymouth, to one-tenth of an inch at Norwich; the average fall over the country was 1 inch.

The weather during the week was generally dull and showery, and the sky cloudy. Lightning was seen at Liverpool on the 11th inst.

SCOTLAND: Temperature.—The highest temperatures of the air observed by day varied from 67½° at Edinburgh to 62° at Perth; the mean value from all stations was 64¼°. The lowest temperatures of the air observed by night ranged from 35° at Paisley to 42° at Greenock; the mean from all stations was 39°. The mean range of temperature from all stations was 25¼°.

The mean temperature of the air for the week from all stations was 54¼°, being 3° higher than the value for the corresponding week in 1876. The highest was 55½°, at Glasgow, and the lowest 53¼°, at Paisley.

Rain.—The falls of rain varied from 2½ inches at Greenock to six-tenths of an inch at Edinburgh, Aberdeen, and Leith. The average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 67¼°, the lowest 40¼°, the range 27°, and the mean 57¼°. The fall of rain was 1.16 inch.

JAMES GLAISHER.

Variorum.

PRICES OF TIMBER IN KENT.—The annual sale of Oak timber, blackrinds, and Oak-top faggots upon the Surrenden-Dering estate, in the parishes of Pluckley, Little Chart, Smarden, Westwell, and Bethersden, took place on the 26th ult., when about 180 lots were submitted to public competition by Messrs. Bayley & Son, of Ashford. The timber was not of the class usually offered on this estate, as most of the last winter's falls of underwood, from which the thinnings are made, were upon the inferior woods of the estate. The company was, however, a large one, and the sale correspondingly brisk. The Oak timber ranged in price from 1s. 6d. to 2s. 8d. per foot; blackrinds from 2s. 6d. to 9s. each; and Oak-top faggots from 25s. to 30s. per 100. The terms of pay-

ment in this locality are, for purchases of less than £5, prompt cash; £5 and upwards, half the purchase-money at the time of the sale, and the remainder early in October.

PHENOMENA OF LIFE.—Sufficient knowledge has now been acquired of vital phenomena, to justify the assertion that the notion that there is anything exceptional about these phenomena receives not a particle of support from any known fact.

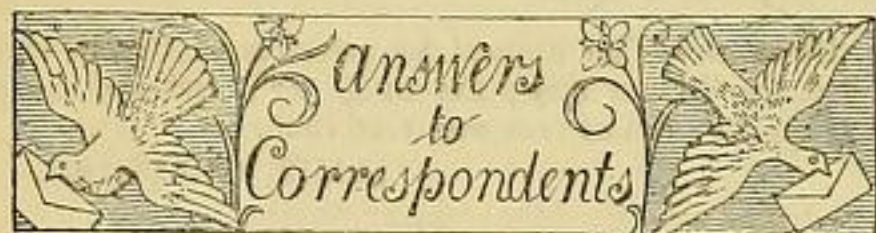
Enquiries.

He that questioneth much shall learn much.—BACON.

205. CORDONS.—Will any of your correspondents kindly favour me with their experience as to the angle at which Pear trees are best trained to wires in diagonal cordons?

206. LADY HENNIKER APPLE.—Will any of your readers kindly inform me if they have fruited the Lady Henniker Apple, and if they think it suitable for a market gardener to plant?

207. HAUTOBOIS STRAWBERRY.—I cannot get these to fruit. What management is necessary?



ANALYSIS OF FLOWERING PLANTS: G. N. T. Of course the composition depends not only on the particular flower but on the circumstances under which it is grown.

CARLISLE SHOW.—Messrs. James Dickson & Sons, Newton Nurseries, Chester, write that they were awarded the 1st prize for a pair of Tree Ferns, Dicksonia antarctica, and obtained a First-class Certificate for a new variety of Cupressus Lawsoniana.

CATERPILLAR: T. C. H. The insect had escaped from the box.

DAHLIAS AT THE ALEXANDRA PALACE.—Messrs. Rawlings write that the flower with a pin in it, which was the subject of some comment at this show, was

not exhibited by them, as might be inferred from a passage in our report.

EGG-FRUIT DISEASED: E. H. The diseased fruit of the Egg-plant was completely traversed by the mycelium of some fungus, probably belonging to some common mould; such cases are frequent.

FUNGUS ON VIOLET LEAVES: W. C. B. Your Violet leaves are attacked by a minute fungus, Septoria violæ. It is one of those pests against which there is no remedy.

GREENHOUSES: J. Parrott. We believe they are rateable, but as varying circumstances sometimes affect these legal matters you had better consult your solicitor.

INSECTS: W. T. T. The whitish objects on the seed-heads of Rush are the cases of the larvæ of a very small moth (Coleophora cæspitiella).

LEAVES FOR GARNISHING PURPOSES: Olivia. The plant you mean is probably Farfugium grande. In winter you must take what you can get.

OAK SPANGLES: T. E. Badman. Very common in all seasons, but more than usually abundant this year.

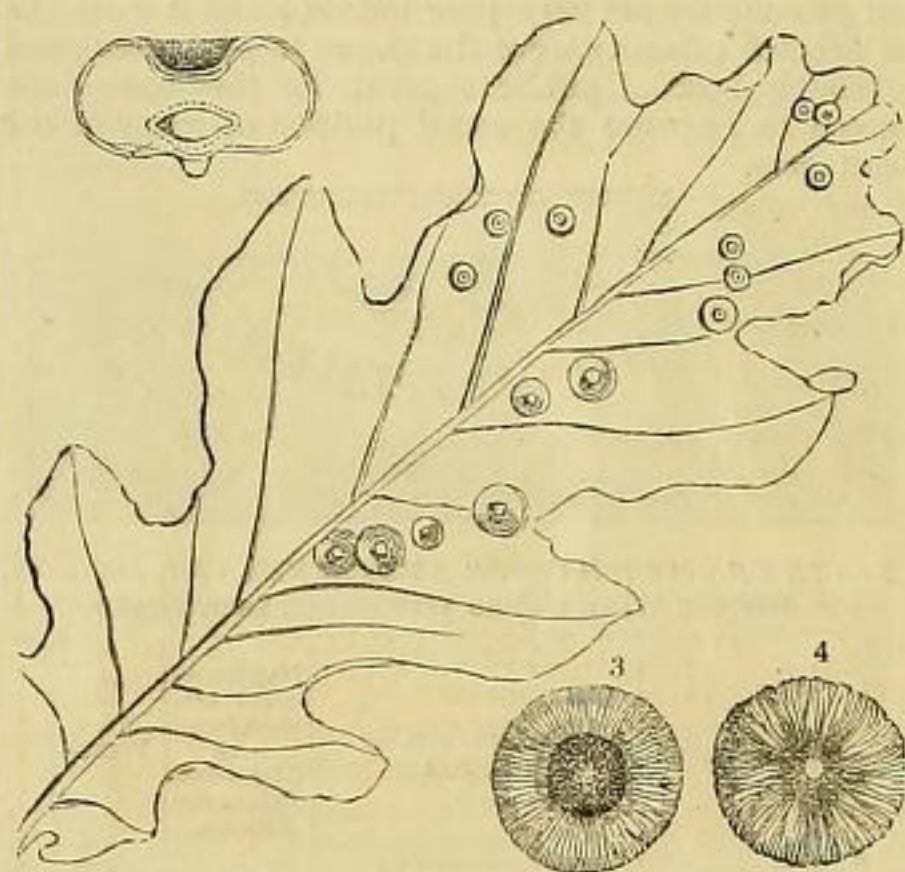


FIG. 76.—OAK SPANGLES: 3 AND 4, SILK-BUTTON-GALL.

They are the work of a gall insect, a species of cynips. (See fig. 76.)

NAMES OF PLANTS: S. 1, Escallonia macrantha; 2, Nepeta Mussinii; 3, Capsella Bursa-pastoris (Shepherd's Purse).

2, apparently a Lespedeza, but the materials are insufficient.—No Signature. 1, Colutea arborescens; 2, Francoa ramosa.—T. R. 1, Sedum album; 2, Sedum lydium; 3, Sedum carneum variegatum; 4, Veronica incana; 5, Lycopodium clavatum.—Fechney. 1, Nephrolepis tuberosa; 2, Asplenium flabellifolium; 3, Adiantum cuneatum probably, but very imperfect; 4, Pteris tremula; 5, Selaginella pubescens; 6, Platyloma rotundifolium.—Southampton. 1, Ptarmica vulgaris; 2, Sedum Sieboldii variegatum; 3, Plumbago Larpentæ; 4, Veronica spicata variegata; 5, Poterium sanguisorba; 6, Apcargia hispida.—L. H. 1, Oncidium obryzatum; 2, Oncidium holochrysum; 3, is curious, but indeterminable.

POPLAR CUTTINGS: G. B. We believe you will succeed in a warm border not too wet.

RABBITS: H. & Co. Try Mr. Tillery's plan: well mix a quantity of cow-dung with quicklime and some train-oil, and paint the stem of the trees with the mixture.

THAMNOCALAMUS FALCONERI OR ARUNDINARIA FALCATA: B. See Gardeners' Chronicle, June 16, 1877, and numerous notices in our volume for 1876.

TUBEROUS BEGONIAS: P. G. Keep them in pots of dry earth, in a place quite safe from damp and frost. The pots might be placed on a dry greenhouse shelf, or in a store-room.

Correspondents are specially requested to address, post-paid, all communications intended for publication to the "Editors," and not to any member of the staff personally.

FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED.—Messrs. Hooper & Co. (Covent Garden Market, London, W.C.), Catalogue of Bulbs, &c.—Messrs. Edmondson Bros. (10, Dame Street, Dublin), Catalogue of Bulbs, &c.—Auguste Van Geert (Ghent, Belgium), English Edition of General Plant Catalogue.—R. B. Matthews (65 and 67, Victoria Street, Belfast), Descriptive Catalogue of Dutch Flower Roots.—Thomas Meehan (German-town Nurseries, Philadelphia), Wholesale Catalogue of Trees, Shrubs, &c.—Messrs. Daniel Bros. (Norwich), Illustrated Catalogue of Dutch Flower Roots.—W. H. Rogers, 132, High Street, Southampton), Catalogue of Dutch Bulbs, &c.—Messrs. Carter & Co. (237, High Holborn, London, W.C.), Catalogue of Dutch Flower Roots.—Messrs. W. Paul & Son (Waltham Cross, Herts), Catalogue of Roses.

ERRATA.—We are requested to state that the Dahlia "Mr. Seaman," mentioned in our report of the Bishop Auckland show as "a new Northern flower," was sent out by Messrs. R. Edwards & Son in 1875.—In our report of the Sevenoaks Show, Miss Don Seale should have been 1st for single epergne, and Mrs. Bolton 2d.

COMMUNICATIONS RECEIVED.—W. Pontey (we did not consider it to be better than others now in cultivation).—C. Ford.—W. Pain.—D. T. D.—N. S.—W. D.—M.—A. G.—H. H.—Rchb. f.—Messrs. Backhouse (thanks).—J. F. R.—E. S. D.—T. R. (small box not received).—W. B. H.—G. M.—T. B.—R. D.—E. W.—G. M., Broseley.—A. W.—A. C.—W. M.—W. B.—W. C.—A. F.—T. W. W.

DIED, on September 18, aged 57, Mr. JOHN MORSE, of The Nurseries, Dursley, Gloucestershire.

Markets.

COVENT GARDEN, September 20.

Business has been steady during the last few days, and in all home-grown produce prices remain the same. Heavy consignments of Kent Cobs have reached us, and a slight reduction has been made to effect clearances. James Webber, Wholesale Apple Market.

Table of market prices for cut flowers. Columns include flower name, quantity, and price in shillings, pence, and farthings (s. d. s. d.).

Table of market prices for plants in pots. Columns include plant name, quantity, and price in shillings, pence, and farthings (s. d. s. d.).

Table of market prices for vegetables. Columns include vegetable name, quantity, and price in shillings, pence, and farthings (s. d. s. d.).

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at a very low rate, but owing to the labour attending its transport in a country destitute of means of communication, it comes to cost too much for speculative purposes to bring it down to the ports of shipment. Some good specimens of this valuable excrescence were notwithstanding brought down last season to Eozelee. The best marked samples of this wood are sent to England, via Tiflis, while the ordinary qualities suit best the French market. Some loupes are to be found weighing upwards of a ton, but, owing to the want of means of transport, they have to be reduced in size, "It would repay curiosity to witness the process by which these hard blocks of limber are cut up into sheets almost as thin as writing-paper for veneering purposes. The loupe is introduced into a large receptacle and steamed for several days consecutively, until from the adamantine hardness it naturally possesses it assumes the consistency of cheese & it is then placed under a machine, which, with a large blade, slices it off into sheets, which

harden by exposure, and are sold in the market according to size and beauty of design. Some loupes in Paris have fetched as much as ;i^800."

From these notes it will be seen that the forest produce of the districts under consideration are of a very valuable description, y.

THE ROTHAMSTED AGRICUL- TURAL EXPERIMENTAL STATION*

Mr. La WES was the founder of the Rothamsted Ex- perimental Station, and commenced experiments with different manuring substances, first with plants in pots, and afterwards in the field, soon after entering into possession of his hereditary property at Rothamstedf in 1834. The researches of De Saussure on vegetation were the chief subjects of his study to this end. Of all the experiments so made, those in which the neutral phosphate of lime, in bones, bone-ash, and apatite, was rendered soluble by means of sulphuric acid, and the mixture applied for root-crops, gave the most striking results. The results obtained on a small scale in 1S37, 183S, and 1839, were such as to lead to more extensive trials in the field in 1S40 and 1841, and subsequently.

In 1843 more systematic field experiments were

commenced, and a barn, which had previously been partially applied to laboratory purposes, became almost exclusively devoted to agricultural investigations. The foundation of the Rothamsted Experimental Station may be said to date from that time

(1843).

The Rothamsted station has up to the present time been entirely disconnected from any external organisation, and has been maintained entirely by Mr. Lawes. He has further set apart a sum of ;^icx),000, and certain areas of land, for the continuance of the investigations after his death.

In 1854-5 ^ ^®w laboratory was built, by public subscription of agriculturists, and presented to Mr. Lawes, in July, 1 S55, from which date the old barn-laboratory was abandoned, and the new one has been occupied.

From June, 1S43, up to the present time, Dr. J. H. Gilbert has been associated with Mr. Lawes, and has had the direction of the laboratory.

The number of assistants and other helps has increased from time to time. At first only one laboratory man was employed, but very soon a chemical assistant was necessary, and next a com-

puter and record-keeper. During the last twenty-five years the staff has consisted of one or two, and sometimes three, chemists, and two or three general assistants. One of these is usually employed in routine chemical work, but sometimes in more general work. The chief occupation of the general assistants is to superintend the field experiments — that is, the making of the manures, the measurement of the plots, the application of the manures, and the harvesting of the crops, also the taking of samples, the preparation of them for preservation or analysis, and the determinations of dry matter, ash, &c. These assistants also superintend any experiments made with animals. There are now about 25,000 bottles of samples of experiment-

* Drawn up ISlarch— April, 1877, in answer to Circular in connection with the commemoration of the twenty-fifth anniversary of the establishment of the first experimental station in Germany (Moclern), to be held in Leipzig in September, 1877.

t Rothamsted is in Hertfordshire, twenty-five miles from London, on the Midland Railway; station, Harpenden.

ally-grown vegetable produce, of animal products, of ashes, or of soils, stored in the laboratory.

A botanical assistant is also occasionally employed,

with from three to six boys under him, and with him is generally associated one of the permanent general assistants, who at other times undertakes the botanical work.

Two or three (for some time past three) computers and record-keepers have been occupied in calculating and tabulating field, feeding, and laboratory results, copying, &c.

One, and sometimes two, laboratory men are employed.

Besides the permanent laboratory staff, chemical assistance is frequently engaged in London or elsewhere, and in this way, for some years past, Mr. R. Richter, of Berlin, has been almost constantly occupied with analytical work sent from Rothamsted.

The field experiments, and occasionally feeding experiments, also employ a considerable but a very variable number of agricultural labourers.

On different descriptions of Wheat, nine years,

7 acres (each year in a different field), about 20 plots.

On Beans, thirty-one years (including one year

Wheat and five years fallow), 1¹ acre, 10 plots.

On Beans, alternated with Wheat, twenty-eight years, 1 acre, 10 plots.

On Clover, with fallow or a corn crop intervening, twenty-eight years, 3 acres, 18 plots.

On Turnips, twenty-five years, about 8 acres, 40 plots.

On Sugar Beet, five years, about 8 acres, 40 plots.

On Mangel Wurzel, 1 year (in progress), about 8 acres, 40 plots.

On Potatoes, one year (in progress), 2 acres, 10 plots.

On rotation, thirty years, about 2¹/₂ acres, twelve plots¹

On permanent grass land, twenty¹/₂ years, about 7 acres, twenty plots.

Comparative experiments with different manures have also been made on other descriptions of soil in other localities.

«ftuor |o. , , , |s. .

Fig, 71.— a, rain-gauge; b, smaller drain-gauges; c^ larger drain-gauge.

Nothing has been done at Rothamsted in the way
of manure-feeding stuff or seed control.

The investigations may be classed under two
heads: —

L — Field Experiments, Experiments on
Vegetation, &c.

The general scope and plan of the field experiments
has been : —

To grow some of the most important crops of
rotation, each separately, year after year, for many
years in succession on the same land, without manure,
with farmyard manure, and with a great variety of
chemical manures ; the same description of manure
being, as a rule, applied year after year on the same
plot. Experiments on an actual course of rotation
with different manures have also been made. In this
way field experiments have been conducted as
follows : —

On Wheat, thirty-four years in succession, 13 acres,
35 plots, many of which are duplicates of others.

On Barley, twenty-six years in succession, 4[^] acres,
23 (or 29) plots.

On Oats, nine years in succession, J acre, 6 plots.

On Wheat, alternated with fallow, twenty-six years,
I acre, 2 plots.

Samples of all the experimental crops are taken,
and brought to the laboratory. Weighed portions of
each are partially dried, and preserved for future refer-
ence or analysis. Duplicate weighed portions of each
are dried at 100° C, the dry matter determined, and
then burnt to ash on platinum sheets in cast-iron
muffles. The quantities of ash are determined and
recorded, and the ashes themselves are preserved for
reference or analysis.

In a large proportion of the samples the nitrogen is
determined.

In selected cases, illustrating the influence of season,
manures, exhaustion, &c., complete ash analyses have
been made, numbering in all about 500.

Also in selected cases, illustrating the influence of
season and manuring, quantities of the experimentally-

grown Wheat grain have been sent to the mill, and the proportion and composition of the different mill products determined.

In the case of Sugar Beet the sugar, by polariscope, has in most cases been determined.

In the case of the experiments on the mixed herbage of permanent grass land, besides the samples taken for the determination of chemical composition (dry matter, ash, nitrogen, woody fibre, fatty matter,

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and composition of ash), carefully averaged samples have frequently been taken for the determination of the botanical composition. In this way on three occasions, at intervals of five years — viz., in 1862, 1867, and 1872 — a sample of the produce of each plot was taken, and submitted to careful botanical separation, and the percentage by weight of each species in the mixed herbage determined. Partial

separations have also been made in other years, ,

Analysis of Soils.

Samples of the soils of most of the experimental plots have been taken from time to time, generally to | the depth of 9, 18, and 27 inches, but sometimes to

Rainfall.

Almost from the commencement of the experiments the rainfall has been measured — for twenty-four years in a gauge of one-thousandth of an acre area, as well as in an ordinary small funnel-gauge of 5 inches diameter.

From time to time the nitrogen, as ammonia and as nitric acid, has been determined in the rain waters.

Three "drain gauges," also of one-thousandth of an acre each, for the determination of the quantity and composition of the water percolating respectively through 20 inches, 40 inches, and 60 inches depth of soil (with its subsoil in natural state of consolidation) have also been constructed. A more numerous series of smaller "drain gauges," arranged for the investiga-

plants, including representatives of the gramineous, the leguminous, and other families, have been experimented upon. Similar experiments have also been made with various trees.

Botanical Characteristics.

Having regard to the difference in the character and amount of the constituents assimilated by plants of different botanical relationships, under equal external conditions, or by the same description of plants, under varying conditions, observations have been made on the character and range of the roots of different plants, and on their relative development of stem, leaf, &c. In the case of various crops, but

Fig. 72.— differential drain-gauges at rothamsted.

twice this depth. In this way nearly 600 samples have been taken, submitted to partial mechanical separation, and portions of the mould have been carefully prepared and preserved for analysis, In a large proportion of the samples the loss on drying at different temperatures and at ignition has been determined. In most the nitrogen determinable by burning with soda-lime has been estimated. In some the carbon, and in some the nitrogen as nitric acid, have been determined. Some experiments have also been made on the comparative absorptive capacity (for water and ammonia) of different soils and subsoils. The systematic investigation of the amount and condition of the nitrogen, and of

some of the more important mineral constituents of the soils of the different plots and from different depths, is now in progress or contemplated.

tion of the influence of different crops and of different manures, are in course of construction. Each of the differently manured plots of the permanent experimental Wheat field having a separate pipe -drain ; the drainage-waters have frequently been collected and analysed.

Professor Frankland has determined the nitrogen, as ammonia, as nitric acid, and as organic nitrogen, and also some other constituents, in many samples both of the rain and of the various drainage waters collected at Rothamsted ; and Dr. Voelcker has determined the combined nitrogen, and also the incombustible constituents, in many of the drainage waters.

Amount of Water TRANSPIRED.

For several years in succession, experiments were made to determine the amount of water given off by plants during their growth. In this way various

more especially with Wheat, samples have been taken at different stages of growth, and the composition determined in more or less detail, sometimes of the entire plant, and sometimes of the separated parts.

In a few cases the amounts of dry matter, ash, nitrogen, &c., in the above-ground growth of a given

area, at different stages of development, have been determined. The amounts of stubble of different crops have also occasionally been estimated.

Assimilation of Nitrogen.

Experiments were made for several years in succession to determine whether plants assimilate free or uncombined nitrogen, and also various collateral points. Plants of the gramineous, the leguminous, and of other families were operated upon. The late Dr. Pugh took a prominent part in this inquiry,

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li.— Experiments ON Animals, &c.

Experiments with the animals of the farm were commenced early in 1847, and have been continued, at intervals, up to the present time.

The following points have been investigated : —

1. The amount of food and of its several constituents consumed in relation to a given live weight of animal within a given time.

2. The amount of food and of its several constituents consumed to produce a given amount of increase in live weight.

3. The proportion and relative development of the different organs or parts of different animals.

4. The proximate and ultimate composition of the animals in different conditions as to age and fatness, and the probable composition of their increase in live weight during the fattening process.

5. The composition of the solid and liquid excreta (the manure) in relation to that of the food consumed.

6. The loss or expenditure of constituents by respiration and the cutaneous exhalations — that is, in the mere sustenance of living meat-and-manure-making machine.

The general plan of experimenting was as follows J —

To provide data as to the amount of food or its several constituents consumed in relation to a given live weight of animal within a given time, and to produce a given amount of increase in live weight, several hundred animals — oxen, sheep, and pigs — have been experimented upon. Selected lots of the animals were supplied for many weeks, or for months consecutively, with weighed quantities of foods, selected and allotted according to the special point under enquiry. The composition of the foods was determined by analysis. The weights of the animals were taken at the commencement, at intervals during the progress, and at the conclusion of the experiment.

The amount and relative development of the different organs and parts were determined in two calves, two heifer?, fourteen bullocks, one lamb, 249 sheep, and fifty-nine pig?.

The percentages of water, mineral matter, fat and nitrogenous substance, was determined in certain separated parts, and in the entire bodies of ten animals —namely, one calf, two oxen, one lamb, four sheep and two pigs. Complete analyses of the ashes respectively, of the entire carcasses, of the mixed internal and other offal parts, and of the entire bodies of each of these ten animals, have also been made.

From the data provided, as just described, as to the

chemical composition of the different descriptions of animal in different conditions as to age and fatness, the composition of the increase whilst fattening, and the relation of the constituents stored up in increase to those consumed in food, have been estimated.

To ascertain the composition of the manure in relation to that of the food consumed, oxen, sheep and pigs have been experimented upon.

In the case of oxen, the food and litter, sometimes with an acid absorbent, were weighed, sampled and analysed, the animals were fed in boxes for periods of from five to nine weeks, and the total dung produced was well mixed, weighed, sampled and analysed.

The constituents determined in the food and litter on the one hand and in the dung in the other, were dry matter, ash and nitrogen.

In the case of sheep no litter was used ; the animals were kept, in lots of five, on rafters, through which (but with some little loss) the solid and liquid excreta passed on to a sheet-zinc flooring at such an incline that the liquid drained off at once into carboys containing acid, and the solid matter was removed two or three times daily, and also mixed with acid. The constituents determined in the food and manure were dry matter, mineral matter, sometimes woody fibre,

and nitrogen.

In the case of pigs individual male animals were experimented upon, each for periods of three, five, or ten days only. Each animal was kept in a frame preventing it from turning round, and having a zinc bottom, with an outlet for the liquid to run into a bottle, and it was watched night and day, and the voidings carefully collected as soon as passed, which could easily be done, as the animal never passed either feces or urine without getting up, and in getting up he rang a bell, and so attracted the notice of the attendant. The constituents determined were, in the food and feces, dry matter, ash and nitrogen, and in the urine, dry matter, ash, nitrogen, and urea.

The loss or expenditure of constituents by respiration and the cutaneous exhalations has not been determined directly, that is by means of a respiration-apparatus, but only by difference, that is, by calculation founded on the amounts of dry matter, ash, and nitrogen in the food and in the feces and urine.

Independently of the points of inquiry above enumerated the results obtained have supplied data for the consideration of the following questions : —

1. The characteristic demands of the animal body

{for nitrogenous or non-nitrogenous constituents of food) in the exercise of muscular power.

2. The sources in the food of the fat produced in the animal body.

3. The comparative characters of animal and vegetable food in human dietaries.

Supplementary Investigations.

In conjunction with Professor Way, an extensive investigation was undertaken on the application of town sewage to different crops, but especially to grass. The amount and the composition of both the sewage and the produce grown were determined, and in selected cases the composition of the land drainage-water was also determined. Comparative experiments were also made on the feeding qualities of the differently grown produce, the amount of increase yielded by oxen, and the amount and composition of the milk yielded by cows being determined. In this inquiry part of the analytical work was performed at Rothamsted, but most of it by Professor Way in London.

The chemistry of the malting process, the loss of food constituents during its progress, and the com-

parative feeding value of barley and malt, have been investigated.

Although many of the results of the investigations above enumerated have already been published, a large proportion as yet remains unpublished.

CONCERNING GOOSEBERRIES

AND CURRANTS.

There are Peas which are called double-blossomed, somewhat inaccurately, because their blossoms are not double. Each flower-stalk that starts from the Pea-haulm bears two blossoms, and that is all. Can a more correct name be found for them? — twin-flowering? — or what? "Double-bearing" would seem to indicate that they bore two crops a-year, which is equally untrue.

A like difficulty occurs with Gooseberries, which occasionally give two fruits hanging from the same branched footstalk. M. Carriere overcomes it by designating the varieties which manifest this tendency as "biferous," although the term is not sufficiently precise, and gives only an imperfect idea of the fact so pointed out. The essential point is, that it should denote the varieties whose fructification differs from that peculiar to the typical form of Gooseberry, *Ribes*

grossularia, whose fruits are solitary, whereas these have a tendency to imitate Currants in their formation of bunches, by producing two, or even three, associated fruits, through a biferous or a multififerous effort. M. Carriere asks if the fact is exceptional — if it is capable of continued reproduction? He does not know ; the future will tell ; it is at least important to point it out. The occurrence, at any rate, is not unique j for in the sowing which produced the plant that attracted M. Carrifere's attention, there were several other seedlings possessing the same character. Is it the beginning of the development of a new type? The thing is possible, but cannot of course be certified. This biferous seedling is moderately vigorous and much less thorny than Gooseberries in general ; which, however, is not surprising, since it comes from the variety Billiard, which is almost thornless. The fruits have no particularly distinctive quality. They are of average size, slightly coloured, and of agreeable flavour, resembling that of other good varieties. Even it the biferous Gooseberry present no great interest in a horticultural point of view, the case is different when regarded botanically. By modifying the type to which it belongs, its inflorescence assimilates it to another type, a kindred species, the bunch-bearing Currant. Perhaps one of these days horticulture may succeed in making bunches of Gooseberries as familiar as bunches of Currants.

M. Carriere also recommends in the Revue Horikole the propagation of Gooseberries and Currants by budding, although they are usually multiplied by cuttings. The operation is performed in the same way as with other fruit trees, and at the same season when the bark is sufficiently matured and is easily raised from the wood. The same stock can be made to bear one or several varieties. In the latter case, the effect is sometimes very singular, especially if different kinds are associated ; for instance. Gooseberries and Currants of various colours, white, yellow, pink, green, red, and even black. At the beginning of last summer the nurseries of MM. Croux et Fils, Vallee d'Aulnay, a Sceaux (Seine), contained a certain number of Ribes palmatum, which had been trained in single upright stems and budded as above described. Not only was their ornamental effect very striking, but they also possessed considerable interest. There seemed to be such a complete identity of constitution between the stock and the scion that in many cases the point where the bud had been inserted was hardly distinguishable. This was especially noticeable with the Gooseberries, which seemed to make one with, and only to be a continuation of, the Ribes palmatum — a fact which somewhat surprised M. Carriere ; for, h priori, he would have expected the contrary. He

therefore urges amateurs to put this mode of budding in practice and, for that purpose, to rear as tall as possible single stems of *Ribes palmatum*, so as to produce tree Gooseberries and Currants, which will make remarkable rarities, especially the former. Nevertheless, it should be observed that as *R. palmatum*, *aureum*, *tenuifolium*, and others, have naturally a great tendency to throw up suckers, especially when grafted or budded, care must be taken to remove all such suckers immediately that they show themselves. Another ornamental way of growing Gooseberries and Currants is to train them over a low arcade or bower. The ripe fruit, of various colours, hanging overhead, makes both a novel and pleasing addition to the foliage of such an arbour or covered walk, E. S. D,

ENGLISH NAMES OF WILD

FLOWERS AND PLANTS.*

Eight years ago I was piloting a famous botanist from the east of England among the fields and lanes round Taunton, when he asked me the name of a plant which he did not at the moment recognise. I answered that it was the Gipsy-wort, and received a prompt rebuke. " This is the third time," he said, " that I have inquired the name of a flower, and you have answered me in English, The Latin names are universal, the English at best are local. It is to be

wished that all English names of plants could be forgotten, and their scientific names become popularised instead." Unquestionably a foolish utterance, it was of great service to myself, for it set me to consider the real value of these names which my pedantic guest despised, and from that time to this I have never encountered the popular name of any English wild flower without questioning it closely as to its etymological history and meaning, and noting the passages in our literature where it occurs. It would be a great pleasure to me to believe that the knowledge gained by these inquiries, put together to the best of my power, could interest you to-night as much as it has interested myself.

It is no new thing to infer from the terms in use at the beginning of a nation's history the arts and customs of the nation using them. Thus the fact that in all or nearly all the Aryan languages the words for the Supreme Being, for the king, for brother and sister, for ploughing, grinding, building, closely resemble one another, is admitted to show that our common forefathers in times when they were still one people, and had not yet scattered into India, Persia, Europe, had the beginnings of religion and government, possessed the family life, knew the simple arts which are most needed for the comfort of home life. Let us see what light will be thrown upon the habits of our Teutonic forefathers if we apply their method of

investigation to the popular names of plants.

Teutonic Names.

The following words are common to all the Teutonic languages — must have been known, that is, to the race from which we ourselves, with the Germans, Danes, Swedes, and Norwegians, are descended, on their first settlement in Europe, and before they broke up into sub-divided nations. The first I will take is Birch, the rind of which must, we

* Lecture by Rev. W. Tuckwell before the Somersetshire Archaeological and Natural History Society.

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find, have been used for boat-building and for roofing houses; for boat-building, since the word "bark," from the same root as Birch, stands for ship in English, Dutch, Icelandic, Danish ; for roofing houses, since the old English bcorgan and the German herqen, also from the same root, mean to cover, protect, or

shelter. From this simple word, then, we gather that our ancestors possessed the arts of building boats and of roofing or thatching houses. Houses could not be built without timber, and we find the word *"tree" in almost every Aryan language standing for three things — for a tree, for timber, and for an Oak, extending the use of Oak wood for building purposes back to the first formation in Asia of our mother language, and presenting us with the additional facts that our European ancestors built of Oak timber the houses which they roofed with Birch. In Hazel a fresh fact lies buried. It is in all Germanic dialects the instrumental form of *htvs^* command or behest, a Hazel stick having been used, as Jacob Grimm informs us, in the earliest times as a sceptre or baton to keep order among slaves and cattle. Without dwelling on the fact that the old word */urlisian*, to foretell, indicates the use of the Hazel rod for purposes of divination, we have the additional probability revealed in a single word that our remote ancestors possessed slaves and cattle. In Hawthorn, common to Swedish, German, and English, we have testimony to the use of a haw, *//(T^*, hedge, or fence, "honouring the holy bounds of property," and consequently to the division and appropriation of land, in the earliest Teutonic time. My next word makes some demand upon your etymological credulity. Without tracing particulars, I will ask you to believe

that the Sanskrit Kshi, to dwell, passes through various forms in one direction to the English "home," in another to the word "heath " ; now meaning the plant which grows wild on open land, standing originally for the land itself. *My foot," says Rob Roy, *'is on my native heath ;" and the same idea was enshrined in the same word to the first Teuton settlers. In the forest he fought his enemies, hunted his prey, hewed timber for his fences, and peeled timber for his roof ; his home was in the open land, or heath, from which, again, when ages had passed away and Christianity possessed the town?, he still worshipped his father's gods upon his father's heath, and gained, as Trench thinks, his ancient name of heathen. A sixth word lifts him higher than all the rest. The word Beech, in Gothic, old High-German, modern German, Norse, Danish, Dutch, English, is identical with book, the Runic tablets of our ancestors having been carved upon this wood. In Sloe, the wild Plum, we have the root of " slay," its tough wood having been used for bludgeons ; Dog-wood is dagger-wood, from daji to strike ; from Ash, whose wood was therefore used for spear-shafts, came the old English (TJT, a spear ; sedge is allied to setcg^ a sharp small iron sword. And let us observe that while all these plants, bearing purely Teutonic names, extend far into Northern Asia, trees which stop short at a more southern limit — the Elm, Chestnut, Holly, Sycamore, Plum, Pear, Peach, Cherry — all have

Latin names, showing that the Teuton squatters came from a colder country than that in which they are supposed to have settled near the Roman provincials on the Lower Rhine. The knowledge that Wheat, Barley, Oats, Corn, Rye, are all Teutonic words, completes the historical picture given by the first list of names. They show us a race of men coming from a northern to a southern region, dwelling in timber houses, roofed and thatched, launching boats upon the rivers, possessing cattle and slaves, recognising the rights of property and the sacredness of home, fighting with cudgels, swords, and spears, familiar with cereal agriculture, in some way not ignorant of letters. All these facts, just hinted at here, but challenging minute investigation, we owe to a dozen common names of English plants, whose Latin equivalents teach and commemorate nothing of any national interest to ourselves.

Greek and Latin Names,

These names, and a few more, are as old as the English language ; but from the conquest to the sixteenth century botanical enquiry ceased in England, and the rest of our popular names are little more than 300 years old. Most of these come to us from the Greek and Latin, Any scholar will detect in Acacia the Greek word for guilelessness ;

in the Amaranth, with which Milton's worshipping archangels wreathed their brows, the Greek for unfading; in the Periwinkle the *pe^oinma* used to bind about the head ; in Lettuce, the meaning of milky ; in Geranium, the descriptive name, crane's bill. In the Plane he will see the platanus of the poets ; in the Rose, the *rhodon* ; of Homer and the *rosa* of Virgil ; in the Sycamore, the wild Fig of the Bible, transferred in medieval miracle-plays to the tree which now bears the name ; in the Vine, the *oinon* and *vintm^o* whose Sanskrit root is still present in our words *twine* and *twist*. He will understand that the Basil, which poor simple Isabel planted in the pot which held her murdered lover's head, was the regal plant, used perhaps of old in some royal bath or unguent ; that the Angelica, which now flavours our soups, and was once a specific against the plague, was given to mankind by angels ; that the Belladonna was applied as a cosmetic to make ladies beautiful for ever ; that the Cyclamen, which still grows wild in Devonshire, owes its name to its prominent circular tuber. He will not so readily discover that the Tansy of our cottage gardens is the Greek *aihafuxsia* — immortality, administered to Ganymede that he might become fit for his life in heaven ; that the common Milfoil Yarrow is the *hicra^o* or holy herb, pledged to heal all herbs with its fragrant leaves ; that Nasturtium means nose-twister, from its pungent

smell ; that our Quantock Whortle-berry is a corruption of myrtillus^ Myrtle-berry ; that Eglantine is acii-ienta, the prickly Rose, or Sweet Brier ; that the Herb Bennett or avens, is the bcnedida, blessed herb, kept in houses to prevent the entrance of the Devil ; that the hip of the Dog Rose is a form of the Greek and Latin words which people affected with sore throats know as jujubes ; that Liquorice is an Anglicism of the Greek Glycyrriza, sweet-root ; that the Larch is from the Latin /^r, a house, in consequence of its use in building ; that Lavender, from the Latin lavar, to wash, was in the twelfth century Scotch and northern English for washerwoman, because then as now its sweet spikes were laid amongst fresh linen ; that the Service-tree is the Latin cerevisiutUt beer — its leaves having been used to flavour ale before the virtues of the Hop were known ; that the little Sqinancy-wort was the ancient remedy for the disease kynanche or dog-choker, which we know in its modern sound as quinsy ; that the Mushroom is the Muscarius or Fly-bane, because a particular Agaricus, pulverised and mixed with milk, was used in Southern Europe as we now use the poison called *' Keating's Insect Powder."

Least of all will our scholar be quick to admit that the Narcissus owes nothing to the love-sick youth over whom Ovid sung and Bacon moralised, but is connected with the Greek narkodcs^ sluggish, a derivative from narke, the torpedo, itself sprung from the

Sanskrit narky hell; cited by Sophocles (CEd., Col., 6S2), as crowning the gods of Hades ; gathered by Proserpine before her wedding tour into the same dark region, because its heavy odour (for by it the ancients meant the Hyacinth) blunts the nerves and makes men sleepy and torpid.

French Names,

I can find comparatively few names which we have borrowed from the French. Dandelion is, of course, the lion's-tooth. Mignonette is applied by us to a very different plant from that which bears the name in France. WoodruffTe, known to travellers in Germany as flavouring the pleasant drink called maitrank^ takes its last syllable from roue^ a wheel, its verticillate leaves being set like a wheel or rowell on the stone. Pansy is pensce, thought, from its significance in the language of flowers: "There's Pansy," says Ophelia — " that's for thoughts." Gilli-flower is giroJiJ^, from caiyo'/iyUutn, a Clove, a name originally given to the Carnation, but now transferred to the Wall-flower. Tutsan is loiite-sainc, the oil in its leaves having made it a remedy for wounds. Most curious of all is Apricot, from abricoi, which at one time I contentedly referred to the Latin apricus, sunny, ripening as it does on sunny walls. It is, in fact, traceable to the Latin prcvcox, early, the fruit being supposed by the Romans to be an early Peach. The Arabs took the Latin name and twisted it into

al hunjiq ; thej Spaniards altered its Moorish name
into ail'arkojue ; the Italians reproduced it ^.^albicocco
the French as abrkot, and we get it next in England
curiously enough as Apricock, so spelt in Shakespeare's
time, and finally as Apricot.

Legendary Names.

Many curious bits of myth and history reveal them-
selves as we excavate down to these old meanings.

The Pii-'ony, or healing-plant, commemorates the

Homeric god Pceon, the first physician of the gods,
who tended the bellowing Ares when smarting from
the spear of Diomed. The Centaury is the plant with
which the centaur Chiron salved the wound inflicted
by the poisoned arrow of Hercules. The Ambross,
or Wormwood, is the immortal food which Venus gave
to .Eneas, and Jupiter to Psyche — the Sanskrit (7/«r//Z
which Kehama and Kailyal quaff in Southey's
splendid poem. The Anemone, or Wind-flower,
sprang from the tears wept by Venus over the body
of Adonis, as the Rose sprang from his blood —

The Daphne, Syringa, and Andromeda tell their own
tales : the last, which you may find in the peat-bogs
round Shapwick station, is due to the delicate fancy of
Linnxus, -who first discovered and named it, blooming
lonely on a barren, rocky isle, like the daughter of

Cepheus, chained to her sea-washed cliff. The Juno Rose, or tall white Lily, was blanched by milk which fell from the bosom of Juno, the tale being transferred in Roman Catholic mythology to the Virgin Mary and the Milk-Thistle. The yellow Carline Thistle is named after Carl the Great (in Mr. Freeman's county I must not call him Charlemagne), who, praying earnestly for the removal of a pestilence which had broken out in his army, saw in vision an angel pointing out this plant as a heaven-sent cure. The Herb Robert healed a disease endured by Robert, Duke of Normandy, still known in Germany as RurpcchC S'pla^c. The Filbert, though this is disputed, commemorates the horticultural skill of one King Philibert. The Treacle Mustard, a showy crucifer resembling Wallflower, was an ingredient in the famous Venice treacle, compounded, as you will remember, by Wayland Smith to treat the poison sickness of the Duke of Sussex. The word treacle is corrupted from the Greek therjaciim^ connected with wild beasts, whose blood formed part of the antidote. It was at first made up by the physician to Mithridates, king of Pontus, and is still in many parts of England known as Mithridate Mustard. The Flower-de-luce, or Jieitr-de-lys^ is the flower of King Louis, having been assumed as a royal device by Louis VII, of France, though legend figures it on a shield brought down from Heaven to Clovis, when fighting against the Saracens. It is probably a white Iris.

Not a few strange superstitions and beliefs are embalmed in well-known names. The Celandine, from *chcUdon*^ the swallow, exudes a yellow juice, which, applied by the old birds to the eyes of young swallows, who are born blind, or have lost their sight, at once restores it. The Plawk-weed has the same virtue in the case of hawks. The Fumitory, /«/«d--A';-;'-, was produced without seed by smoke or vapour rising from the ground. The Devil's-bit is a common Scabious, with a premorse or shortened root, which v/as used so successfully for all manner of diseases, that the Devil spitefully bit it off, and for ever checked its growth. The Eyebright, or euphrasy^ was given to cure ophthalmia.

" Michael from Adam's eyes the film removed,
. . . Then purged with euphrasy and me
The visual nerve, for he had much to see."

The Judas-tree, with its thoins and pink blossomp, was the tree on which Judas hanged himself. The Mandrake gathered round itself a ho;t of wild credulities. It was the *Atropa Mandragora*, a plant nearly allied to the deadly Nightshade, but with a large forked tuber resembling the human form. Hence it was held to remove sterility, a belief shared by Rachel in the Book of Genesis, and was sold for

high prices in the middle ages with this idea. In fact, the demand being greater than the supply, the dealer used to cut the large roots of the White Bryony into the figure of a man, and insert grains of Wheat or Millet in the head and face, which soon sprouted and grew, producing the semblance of hair and beard. These monstrosities fetched in Italy as much as thirty gold ducats, and were sold largely, as Sir T. Brown tells us, in our own country. It was thought that the plant would only grow beneath a murderer's gibbet, being nursed by the fat which fell from his decaying body : hence it formed an ingredient in the love-philtres and other hell-broths of witches, and, as it was believed that the root, when torn from the earth, emitted a shriek which brought death to those who heard it, all manner of terrible devices were invented to obtain it. The readers of Thalaba will remember the fine scene in which the witch Kliawla procures the plant to form part of the wretched figure of the Destroyer. I have seen the plant growing in the Cambridge Botanical Gardens ; it is not uncommon in Crete and Southern Italy ; its fruit is narcotic, and its name is probably derived from tandra, an enclosed, over-grown place, such as forms its usual home. Nature,

[,To be continued.)

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3^4

THE GARDENERS' CHRONICLE.

[September 22, 1877.

DUTCH BULBS.

Through the kindness of Messrs. Byvoet, of Haarlem, we are enabled to give a list of the Hyacinths and Tulips which formed part of their prize collections at the Amsterdam International Horticultural Exhibition in the spring of the present year.

The list may be of some interest to those who are about purchasing bulbs. The varieties marked * formed also part of the smaller collections, and may therefore be looked on as superior varieties for exhibition purposes.

Collection of 100 Flowering Hvacinths in Pots in 100 Varieties, Sixty Single and Forty Double.

S'mgle Red.

Fabiola, or Florence

Nightingale

Romeo'

Lord Derby

Macaulay

Reinedesjacinthes^

Von Schiller"

Vuurbaak

Solfatara

Gigantea

Incomparable

Cavaignac

Milton

Garibaldi

Cynthia

Pelissifere

Agnes

Single White.

Snowball*

La Grandesse*

Lady Franklin

Alba maxima

„ snperbissima

Maria Cornelia

Paix de 1' Europe

Mont Blanc

La Franchise

Mina

Madame Van der

Hoop

Koningen der Ne-

derlanden

Grand Alexandre

Baroness van Tuyll

Elfride

Anna Paulowna

Single Bine.

Starlight*

King of the Blues*

Single Blue.

Czar Peter

Lord Derby*

Mary of Scotland

General Havelock

Pieneman

Grand Lilac

De Candolle

Lord Palmerston

Marie

Mimosa

Baron van Tuyll

Charles Dickens

Gladstone

Sir John Laurence

Prince Albert

Feruck Khan

Nimrod

Baron von Hum-

boldt

Blondin

Grande Vedette

Singh Yellow.

Ida

Obelisqne*

Bird of Paradise

Duke of MalakofT

Single Mauve.

Hadyn

Charles Dickens

Double Red.

Lord Wellington*

Grand ConquiJrant*

Noble par me'rite'^

Grooivoorst

Koh-i-noor

Prince of Orange^

Susanna Maria

Bouquet Royal

Double Red.

Princess Royal

Belle Alliance

La jeune Christine

Louis Napoleon

Milton

Double White.

Anna Elanca

Miss Nightingale'

Sir Lylton Bulwer*

Sphaera Mundi

La Virginite

Ne Plus Ultra

Jenny Lind

Rosa de Vries

Duchess of Bedford

Prince of Waterloo

Venus

Double Blue.

Eloksberg*

Laurens Koster*

Garrick

Van Speyk*

Albion

Karel Kroonprins

van Zweden

Koning der Neder-

landen

Helicon

Comte de St. Priest

Eendracht*

Madame Marmont

Shakespeare

Rembrandt

Double Velloiu.

Giethe'

Taune supreme

WiUem IIL

Collection of too Pots of Fine Early Ti;lips,

Flower, in 100 Varieties (three Bulds to a Pot),

La Charmante

Franciscus Primus

Susanna

Bizard Pronkert

Le Matelas

Queen Victoria

i'eu t-clatante

Correggio

Comte de Mel-

bourne

Maria de Medics

Belle Lisette

Marquis de West-

Feu rouge [rade

Queen of Violets

Constantine

De Keizer

Rose de Provence

Mianlus

Pronkjuweel

Cramoisie Royale

Comte de Ver-
gennes

Couronne pourpre

Rose Aplati

Rosa Mundi

Grootmeester

Maltha

white)

Morgenzon

Ferdinand Bol

Johanna

Non's Wit

Standard Royal

Perle blanche

Keizerskroon

Belle Laura

van

(pure

Cerise rectife

Globe de R^gaut

Rose tendre

Canarie-vogel

Triomphe des

Roses

Couleur ponceau

Red Prince

La Cour de France

Reine des Cerises

Roi Pepin

Grootmelster (red
and white)

, La Plaisante

: Rouge luisante

; Yacht van Rotter-

I dam

^ Drapeau rouge

Garibaldi

Zoost van Vondel

(pure white)

Van der Neer

Alida

Standard Gold

Cottage Maid

Grande blanche

' Paul Morulse

Theba

I Vermilion brillant

Cerise grisdelon

Washington

White Pottebakker

Cerise de France

Rose grisdelon

Brutus

I Flamboyante

I Rouge luisante

Bacchus

Alida Maria

Keizerskroon

(broken)

Wouverman

Yellow Pottebakker

Commandant

Zoost van Vondel

Molière

Marianne

Rose brillante

Eleonora

La Remarquable

Proserpine

Bride of Haarlem

Belle Alliance

(broken)

Waterloo

Alpheus

Brutus (broken)

Moliere (pure

white)

Pierrot

Epaminondas

Rembrandt

Little Dorritt

Intendant

Donna Maria

Parragon Everswyn

Chrysolora

Red Pottebakker

President Grant

Grand Due major

Holophernes

Duchesse d'Angou-

leme

La Favorite

AUTUMN ROSES.

Before the season for purchasing comes round, a few words about the most valuable of all Roses — those which bloom freely in the autumn — will not be without benefit to the large class of amateurs who have little opportunity of making observations for themselves. An authentic list of such varieties will not only form a basis for additions to collections, but also serve to correct notes taken at the summer shows, which afford no criterion of the perpetuity of the kinds staged on such occasion. For these reasons the kinds here given are chiefly those which have already appeared, and which have again occupied a noteworthy position in the stands where Roses have formed a portion of the exhibitions in the later part of the year. It is surprising how many of the so-called perennials are in actual culture, virtually only summer Roses, their second crop being either nothing, or of such inferior quality as to be scarcely worth growing at all except for the earlier exhibitions. It is unfortunate also that fragrance appears to be as little valued by many of the raisers of modern Roses as true per-

petuality. Some of the most attractive Roses of modern date, Baroness Rothschild for instance, are destitute of that property which is, so to speak, almost the very soul of the Rose. We may almost exclude the "Teas" from comment, as they are always late bloomers, some perhaps a little more freely so than others, but all worth cultivating are essentially autumn bloomers, the difference being that some display that invaluable function out-of-doors and with greater perfection in colour and substance than when grown under glass. The whole of the Gloire de Dijon family, which bid fair to become a distinct race, are remarkable for this faculty. Madame Berard'and Belle Lyonnaise with the Gloire itself are never so rich and so fine as late in the year.

The following were well shown at the Alexandra on September 13, though the boxes were much less numerous than they otherwise would have been but for the heavy rains in the earlier part of the week. They may, therefore, be taken as representing good autumn bloomers, and consequently worth the particular attention of those wishing to add to or remodel their collections. We shall give them alphabetically, for the sake of convenient reference : —

Madame la Baronne Rothschild, H.P. ; one of the most numerously illustrated, and

in fine condition.

Madame Bellenden Kerr, H.P.

Madame Marie Finger, H.P.

Madame Trifle, T.

Mdlle. Annie Wood, H.P. ;

several good.

Madame Victor Verdier, H.P. ;

most excellent.

Mdlle. E. Verdier, H.P. ;

good.

Marie Rady, H.P. ; good.

MartJchal Niel, T. or N. ; not

particularly fine-

Marie Baumann, H.P. ; fre-

quently shown, and well.

Marie Van Houtte, T.

Marquise de Lignerries, H.P.

Maiquise de Casteliane, H.P.

Miss Hassard, H.P. ; good.

Maurice Bernardin, H.P. ; a

fine bloom or two.

Paul N^ron, H.P. ; more

double and symmetrical than

usual, in consequence of not
being overdone. The writer
cut a bloom of this in Mr.
John Frascr's nursery a few
days before the show,
almost equal in globular
form to Felix Genero.

Mons E. Y. Teas. H.P.
Narcisse, T. ; always a good

autumn bloomer.

Niphetos, T. ; some good spe-
cimens appeared.

Perle des Jardins, T.; a nice

yellow Tea.

Prince C. de Rohan, H.P.; a

bloom or two.

Princess Beatrice, H.P. ;

several very fine examples.

Sir Garnet Wolseley, H.P.;

in Mr. Cranston's stand were

some good flowers.

Malmaison, B.; always a fine

late Rose.

Rev. J. B. M. Camm, H.P.;

good

Star of Waltham, H.P.; many

fine examples, proving

amongst other excellencies

that it is a reliable late Rose.

We cut some much finer

specimens at the Waltham

Cross Nurseries, however,

than were seen at the Palace.

Victor Verdier, H.P. ; a well-

known autumnal bloomer.

Von Moltke, H.P.; not often

exhibited, though small, of

a brilliant colour.

Xavier Olibo, H.P. ; very rich,

but scarcely a Rose for

amateurs unless under excep-

tionally favourable con-

ditions.

Abel Grand, H.P.

Adrienne Christophle, T.

Alba rosea or Madame Bravy,

T.

Alfred Colomb, H.P. ; frequently, and in fine form.

Antoine Ducher, H.P. ; a

bloom or two.

Auguste Rigotard, H.P. ;

ditto.

Beauty of Waltham, H.P. ;

several, in fine order. It is remarkable how frequently this fine old Rose appeared in the prize boxes at the great summer shows, incontestably proving its superior merit.

Belle Lyonnaise, T. ; very frequently.

Bessie Johnson, H.P. ; more

than once.

Bouquet d'Or, T.

Captain Christy, H.P. ; whatever other faults it may have it must certainly be admitted a free bloomer in the autumn.

Celine Forestier, N. ; some

blooms of this.

Charles Lefebvre, H.P. ; not so

fine as some

Cheshunt Hybrid, T.

Comtesse d'Oxford, H.P.;

several times

Dr. Andry, HP.

Duke of Edinburgh. H.P.;

frequently and fine

Dupuy Jamain, H.P.

Emile Hausberg, H.P.;; fine

and globular

Etienne Levet, H.P. ; many

times and good

Ferdinand de Lesseps, H.P.

Fisher Holmes. H.P.

Fran9ois Michelin, H.P.;;

good

General Jacqueminot, H.P. ;

one of the most floriferous

and continuous of all the

H.P.'s

Gloire de Dijon, T. ; plentiful

and good

John Hopper. H.P.

La France, H.P. ; most numerous of any kind

Louis Van Houtte, H.P. ; plentiful and good — far before Reynolds Hole, the few blooms of which, together with the Duke of Connaught, presented a burnt and foxy appearance at the petal points— anything but attractive.

Madame Berard, T. ; many

superb examples.

Madame Charles Wood ; good.

Madame Falcot. T.

Madame George Schwartz,

H.P.

It must not be supposed that these names exhaust the list of good autumnal Roses, or that others could not be found to accompany them at the nurseries or in large collections. There are hosts of old favourites of well established repute that have been and will be in

flower till cut off by the frost. There is another reason given as an illustration derived from the last public displays, which have had everything against them from unfavourable atmospheric conditions — the feasibility of establishing autumnal Rose show?. Under ordinary circumstances the list would have been multiplied fourfold, but exhibitors are notoriously at the mercy of the weather.

Speaking generally the present can scarcely be termed "a Roseless autumn." In this respect the

writer has met with few complaints. The writer's personal observation at several large nurseries, as well as at private collections, corroborates this view.

There has been no lack of fine flowers, with promise of plenty more to come, Jupiter Pluvius and rude Boreas — "blustering railer,"* as the song says — permitting. IV. D. Prm:

FOREST TREES OF CANADA.

{Cotcluded/yoni p. 299.)

Acerinecs, — Two of these trees are very common all over Canada, the Rock Maple (*Acer saccharinum*), and the White Maple (*A. dasycarpum*). These are the most beautiful trees in the Canadian forest. Their

tall rugged trunks are crowned with a mass of foliage, beautiful in summer, but doubly beautiful when turned by the early frosts of the fall into twenty gorgeous colours and shades of colours. My pen is quite unable to describe the beauties of the Canadian forest at this season of the year. No painter has ever done justice to it. The Rock Maple is a very tough, close-grained, and hard wood. It is highly prized for axe-handles, sleigh-runners, shafts, poles, machinery, and any purpose for which strength and elasticity are required. The Bird's-eye Maple that we see in furniture and ornaments is merely a variety of the Rock Maple, so is the Curly Maple. The woodsman never knows before he strikes his axe into the tree whether it is bird's-eye, curly, or plain.

The Rock Maple is the tree from which the maple sugar is made. Early in the month of April, in Lower Canada, when the snow is still deep in the wood, the inhabitants, the Indians, and many of the back settlers hie into their sugar camps ; sometimes accompanied by their wives and families, who enjoy the picnic immensely. The sugar-maker provides himself with a large quantity of Birch-bark sheets in the summer, which he makes up into troughs or pails to hold the sap. Some hundred of these are required in a large "sugary," The Maple tree is tapped by cutting the letter V in the bark. At the angle a little peg of wood is stuck in, to act as a spout, and convey

the sap into the trough which is placed below it A good tree will yield 3 gallons of this sap in a day. The sap only runs in warm sunny days after frosty nights ; 4 gallons of this sap are required to make 1 lb. of sugar. It is boiled down in a cauldron over a hot fire until the syrup on being dropped into the snow turns hard. When it is sufficiently boiled it is strained through a blanket (let us hope a clean one), and poured into bark dishes, when it soon hardens. The boiling and straining is the work of the women ; the men are kept very busy in attending to the trees and collecting the sap. One man will sometimes tap 200 or 300 trees. An Indian, with his wife and little child, can make 600 lb. of maple sugar in one spring. A very good Maple tree in one season will yield 8 lb, of sugar. Some springs the sap runs better than others. Strange to say, this great depletion — 8 lb. of sugar represents about 32 gallons of sap — does not seem to hurt the tree, which is tapped season after season without any bad result to its health. The average run of large trees is about 20 gallons in the season.

The stranger is astonished to see this very ornamental and useful timber used as firewood. Rock Maple is the best of fuel, and constitutes the staple firing of Lower Canada, New Brunswick, and Nova Scotia. Hundreds of thousands of trees are burned

every winter. Many thousand stoves in Lower Canada alone glow all winter with red-hot Maple brands, and yet they make no perceptible difference in the Maple forests. With fair play the Maple and the other valuable woods in the Canadian forests will suffice not only to warm and to shelter many generations of Canadians yet unborn, but also to adorn and beautify their country for ages to come. Detestable forest fires, the result of gross carelessness, do more harm to the forests in twelve hours than all the stoves in Canada do in a year. The Rock Maple indicates good dry soil, and is generally found growing with Beech, Black Birch, and White Maple. The White Maple is an equally ornamental tree, but the wood is inferior both as timber and as fuel. There are also two or three other varieties of the Maple, one of which, *A. pennsylvanicum*, is the favourite food of the moose.

Cupulifera. — The White Oak (*Quercus alba*) occurs here and therein the lower provinces, but is abundant in Canada West. It is a large and valuable tree, indi-

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eating the best quality of land. The wood is made into staves, and is used for carriage building and other purposes. The bark is used in the tanneries. The Swamp Oak (*Q. prinus*), a variety of the above, so called from its growing in swampy places, is also an excellent and very tough wood. The Red Oak (*Q. rubra*) is a somewhat inferior wood to both of these.

The Beech (*Fagus sylvestris*) is common all over Canada, and is generally found in company with the Maple and the Birch. It is a hard and excellent timber, but not much lumbered. Together with Maple and Birch it is cut up in 4-foot lengths, split, and piled in little heaps 8 feet long by 4 every other way. In this shape it is called cordwood, and is sold

Black Ash (*F. sambucifolia*) grows in swamps. It is chiefly used by the Indians for basket making. A tree is cut down, and after having been macerated in water it is beaten with the poll of an axe until the wood peels off in narrow ribbons, which the Indians dye and weave into baskets. Ash trees of both kinds indicate a poor soil.

Ulmaceiz. — The White Elm (*Ulmus americana*), a

magnificent tree, that grows in rich intervale lands, generally near the banks of rivers or creeks.

The Rock Elm (*Ulmus racemosa*) grows chiefly in Canada West, in the same sort of land as the foregoing. Both these Elms are very valuable wood.

TiliaaiX* — Bass wood (*Tilia americana*). A very more open in the grain, but makes very pretty furniture. The nuts are like Walnuts in shape, only much harder in the shell and the fruit more oily, not unlike the Brazil nuts in flavour. A very pretty tree j grows in poorer soil than the Walnut.

The Hickory (*Carya alba*) is the heaviest of all Canadian woods. Used for tool-handles, carriage-spokes and shafts, fishing-rods, &c. There are two varieties of this tree, the rough-bark and smooth-bark. Grows only in Canada West. The nuts of the rough-barked variety are very good eating.

Anacardiacciv^ — Sumac (*Rhus typhina*). A small and very pretty tree, that grows cliiefly in succession to the first forest crop. Indicates bad land. The

Fig. 73.— rain-gauge at^rothamsted ; area, one-thousandth^of an acre.

as fuel. The Winter Beech is a variety so called from its retaining the dead leaves all winter. It is a small tree, but the wood [is much valued for axe-handles and agricultural implements.

The Chestnut (*Castanea vesca*). This tree grows only in Canada West. The wood is light and durable. It is very like our own Chestnut, if not identical ; the nuts are much alike.

The Hombean (*Ostrya virginica*) is one of the hardest of Canadian woods. It is a small-sized tree ; the wood is used by carriage builders.

Oleacea. — White Ash (*Fraxinus Americana*) grows in low land. A very tough and flexible wood, of closer grain than the English Ash. It is found all over Canada ; used by carriage makers, barrel makers, &c. It is the most flexible of Canadian woods, and is used for making hoops, also by the Indians for making snow-shoe bows.

soft wood, something like our Sycamore ; useful for turning and carving ; also used in furniture and machinery,

Saiicacet[^].—The American Poplar, Aspen, or Popple (*Populus tremuloides*). This tree is commonly found occupying the place of the old Pine forests that

have been destroyed by fire. It is a very soft wood, of not much value. The Balm-of Gilead is a variety of the above. The seed coverings of this tree are a sort of down or cotton, which falls in the summer like snow.

Juglandacecs. (Not found in the northern forests.) —

The Black Walnut (*Juglans nigra*) grows only in Canada West. A very valuable wood, used chiefly by furniture makers ; also makes stocks of guns, &c. Well known in this country.

Butternut (*Juglans cinerea*). This is an inferior species of Walnut, the wood is lighter in colour and wood is of a yellow colour, and used for furniture and dyes. The bark is valuable for tanning purposes. The seed is contained in large crimson pods, which makes the tree very gay in the fall of the year. The Sumac is a very pretty ornamental tree, and grows freely when transplanted.

AmygdaUa:. — There are three Cherries, of which the Red Cherry (*Cerasus pennsylvanica*) and the Choke Cherry (*C. virginiana*) are the most common. The former is one of the first trees that springs up on burnt land in succession to the Pine and Spruce. In some districts in the early summer whole tracts are white

with the blossom of the Red Cherry. The fruit is not good. The Black Cherry (*C. serotina*) is a larger tree, and the wood is of some value, also the fruit. It only grows in Canada West. The Choke ChERRY, so called from the fruit, which is such a strong astringent as almost to choke the eater. This pretty shrub grows in the outskirts of the forest.

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THE GARDENERS' CHRONICLE.

[September 22, 1877.

Natural History.

The Wagtail and the Cuckoo. —In your issue of the 1st I find an account, from your correspondent, Mr. Thomas Wynne, of the rearing of a young cuckoo by a pair of water-wagtails which had built their nest in a Laurel bush. Mr. Wynne states that he never before knew that these birds built in shrubs ; I also was ignorant of the fact of water-wagtails building in shrubs, although I have paid some attention to the habits of our commoner birds. Some weeks ago, however, at the house of a relative, I saw

a wagtail's nest built in a fork of the Cotoneaster microphylla, which covered the front wall of his house. The nest was about 2 feet from the ground, and not more than that from the portico. Here, close to the main door of the house, a pair of young wagtails were reared, and in due time took to wing. Though exceptional, I have little doubt that others of your correspondents will be able to cite a few similar instances of departure from usual habits. J. A. C.

The Cuckoo.— In reply to "W. E. T.", in the issue of September 8, regarding the habits of this bird, I confidently believe they do suck the eggs of various species of the feathered tribe. I have found many nests during the past few seasons thus destroyed, the eggs being in many instances broken open in a manner which left no doubt that it had been done by the beak of some bird. Now in this immediate neighbourhood we have neither jays, squirrels, nor snakes, which "W. E. T." thinks might be the culprits ; but both cuckoos and magpies are very plentiful, and it is known that the latter of these birds will destroy eggs. Having studied the habits of birds for years, I am convinced that both the above birds destroy many nests during the breeding season. There is no doubt that the habits of the cuckoo are not yet fully known, more particularly during the breeding time ; but those naturalists who daily see these birds in their haunts during the spring may eventually, by

careful study, solve many things which are at present open to much doubt concerning the cuckoo. Yorkshire,

PLANT PORTRAITS.

Allium unifolium, Bot. Mag, t. 6320. — A handsome Californian species resembling *A. roseum*, but differing from all known species by the circumstance that its bulbs are developed at a distance one from the other, and are connected by a thread-like rhizome. The plant was introduced by Messrs. Backhouse.

Dendrobium crystallinum, Sol. Mag., t. 6319. — A species described in our columns, 1865, p. 572. Like *D. Wardianum*, to which it is closely allied, it is a native of Birma ; it differs from it by the shape of its elongated anther-case, which is covered with very prominent crystalline papillae. The plant was discovered by Colonel Benson, and was introduced by Messrs. Veitch.

Eschscholtzia Mandarin, Floral Magazine, t. 275 — A splendid variety of the common *Eschscholtzia* ; the petals are clear yellow within, but blood-red on the outer side. Carter & Co.

Odontoglossum cirrhosum, Lindl., Bot. Mag.,
t. 6317. — A very beautiful *Odontoglossum*, with dense
panicles of white flowers, the lance-shaped segments
spotted with brown, and with a yellow lip. Native
of Ecuador, and figured by us in 1876, p. 503.

Orange, Tangierine, Florist, September, 1877.

—A good figure of the fruit of this fine variety, from
the collection of Messrs. Rivers.

Pavonia Wiotii, Floral Magazine, t. 27G. — A
stove shrub of the Mallow family, with lanceolate-
serrate leaves ; the flowers are each provided with an
outer calyx of numerous linear pink or red bracts
forming a kind of cage over the true calyx.

Pelargoniums Artist, Evelyn, Despot, Floral
Magazine, t. 273. — Three show varieties, raised by
E. B. Foster, Esq., Clewer Manor, Windsor, and in
the hands of Mr. Turner, of Slough.

Pelargonium Princess of Wales, Florist,
September, 1877. — One of the new Regal *Pelargo-*
niums sent out by Mr. W. Bull. The flowers are
large, the petals crisped and frilled at the edges, the
disc of the petals of a bright rose, mottled with white
spots, and with a white stalk. The two upper petals
are blotched with maroon.

Pitcairnia flavescens, Bol, Mag., t. 6318, —

A stemless Bromeliad, with long, sheathing, recurved linear-lanceolate leaves, whitish on the under surface, erect, many flowered racemes, with a woolly rachis and pale yellow spreading flowers each about 2 inches long. The native country is not known. The present plant flowered at Kew in April,

Pink Duchess, Floral Magazine, t. 273. — A forcing Pink of lilac colour and good form and substance. It is in the hands of Mr. B. S. Williams.

Pink, Scarlet Tom Thumb, Floral Mag., t. 270. — A very dwarf, stiff-habited Pink, with large, well-formed, fragrant, scarlet flowers. It was introduced by Messrs. Veitch, and is certainly a most desirable plant for pot culture.

Rose Edward Pynaert, Revue de l'Hort. Beige, September, 1877. — A fine globular Rose, of a bright red-groseille colour. It is a seedling from Antoine Ducher, raised by M. Schwarz, of Lyon.

SoNERiLA Alt. Van de Sande, //l. Hort., t. 229 — A form with ovate-lanceolate leaves of a rich deep green colour abundantly blotched with irregular creamy white spots.

Spiraea venusta var. *albicans*, Revue de Horticulture Beige. — A chance seedling from *S. venusta*, found in the nurseries of Simon-Louis, near Metz. It differs from the type in its lighter rose-coloured flowers.

Tradescantia navicularis, Ortgies, Gartenflora, t. 901. — A creeping species, with small, boat-shaped ovate-acute leaves, and small pink flowers. It is a native of Peru, and would make a pretty greenhouse basket plant.

Tulipa Kaufmanniana, Regel, Gartenflora, t. 906. — A species with medium-sized flowers, with oblong obtuse segments of various shades of pink, and with a yellow base. The anthers open gradually from above downwards, so that the upper portion is withered while the lower part is still unexpanded — a very curious circumstance. The plant is a native of the mountains of Turkestan.

Tulipa Orphanidea, Boiss., Bot. Mag., t. 6310. — A Greek species, discovered by Dr. Orphanides, with flowers as large as those of *T. silvestris*, of an orange-yellow colour, flushed with red. Figured from a plant which flowered in June in the garden of the Rev. H. H. Crewe. We do not understand how the termination was arrived at for this species, and

leave it to the grammarians to explain.

Yucca orchioides, Bot. Mag., t. 6316. — A form intermediate between *Y. orchioides* of Carrijiire and *Y. filaraentosa*, being probably an extreme form of the latter species. In any case, with its broad spreading leaves with filiferous margins, and its panicle of large white, spreading, bell-shaped flowers, it is a very handsome, hardy plant, worthy of a place in every garden. The plant figured bloomed at Kew in July.

^axtcit #^erati0n;s.

PLANT HOUSES,

Plant Stove. — Stock of all winter-blooming stove plants, especially such as are of a soft characterj annually propagated, must not be left too long in pits or similar structures where they cannot receive enough warmth, for even in cases where they are not required in flower until the end of the year they must not be subjected to too cool treatment, or their roots will be liable to either perish or become stagnant to an extent that will seriously injure their blooming capabilities.

Salvias, Sericographis, Begonias, and a portion of the Poinsettias should now be kept tolerably warm to bring them into flower at the time required.

Ferns, — There is one circumstance often lost sight of connected with the cultivation of heat-loving plants — Ferns in particular — that is, the rapidity with which that most troublesome insect, brown-scale, is communicated from any specimens which are affected with it, and which overhang others. The habits of this insect, which entails such an amount of labour in keeping it down, with injury and disfigurement to the plants, consequent upon the cleaning process they have to undergo, are little observed and often very little understood. From the apparently fixed position which it holds on the leaves and stems of plants, the observer is frequently led to the conclusion that it is little likely to be communicated to clean subjects, unless these are placed for a considerable time in absolute contact with affected ones ; yet if any one will take the trouble to examine these scale coverings when they have attained something like their full size, if they are removed without crushing, it will be found that each contains a numerous colony of very small but perfectly formed insects, whose powers of locomotion will be easily seen if placed upon a leaf or the hand, and subjected to a slight magnifying power. When these insects are released naturally from their scale-covered habitation very little disturbance of the plant, even no more than occurs from the use of the syringe, brings them

down in quantity upon everything that stands beneath taller affected plants. In this way it often happens in the Fern-house that the most valuable dwarf-growing kinds, such, for instance, as *Gleichenias*, get seriously infested with the pest from overhanging Tree Ferns ; consequently where scale exists in the latter the cultivator should not rest with merely keeping them in check, but ought to be satisfied with nothing less than their extermination. It is from now to the end of the year, when the season's growth has attained a mature hard condition and no young fronds are being formed, that the cleansing process may be effected with least injury. The lower, older fronds are those that are generally infested, and from these they usually find their way to the younger ones above, to prevent which many growers cut away the lower ones ; but as the removal of the fronds in a green state has a serious weakening influence upon the plants, means should be taken to free them from the scale without cutting away until they have decayed naturally. When much affected, it is almost a hopeless task to attempt their complete eradication by brushing and sponging, as, even when the plants are repeatedly gone over, some are almost certain to escape detection. I have found nothing so effectual as, - at this time of the year, immersing the infested fronds in Abyssinian Mixture at from 6 to 7 oz. to the gallon, varying the strength according to the more or

less hardy state of the fronds, consequent upon the conditions under which they have been grown. The plants are awkward to get at for this purpose. I have found it best to lay them down on their sides, inclining the heads sufficiently to enable the affected fronds to be immersed in the mixture, in which position they should lie for an hour, turning the plants round until all the infested parts are so treated, when if the work is well done very few will escape ; indeed, if there is any doubt, a second application should be given. At first sight this may seem to involve considerable trouble, but complete extermination will in the end be found a great saving of labour. Lower growing spreading Ferns that have now completed their growth may be similarly treated. With young plants of *Gleichenias* particularly, the work should be followed up until they are perfectly free from the insects, some of which often, get so low down as to be found on the rhizomes creeping upon the surface of the soil. If these most beautiful and valuable Ferns are not effectually freed from this, to them the worst and most unmanageable of insects, before they attain any considerable size, the work becomes impossible so far as the ordinary cleaning by hand goes, as the incessant brushing and sponging renders them unsightly. *Adiantums*, *Aspleniums*, *Pteris*?, *Polypodiums*, *NothochlEenas*, *Lomarias*, *Doodias*, *Davallias*, and similar dwarf-growing species should be treated in like manner, and the

work persisted in until a thorough cleansing has been effected.

My reason for now going so far into detail in this matter is from a conviction that to see these most beautiful plants in the condition which they ought to be, they must be kept free from these, their worst enemies ; and if, as happens in most collections, the plants are also more or less affected with thrips, the eradication of these at the same time is certain by the same means. It is useless, however, to attempt the work at any other time except now through the autumn, when most of the species will have done growing, and be devoid of soft immature fronds.

Previous to these insect-cleaning operations being carried out any plants that have ripe spores upon them, and which it is desirable to propagate, should have these taken off and sown. With many of the most difficult to raise in this way, if the spores are left until they can be shook off, it will be found the operation comes too late, and that they are already fallen and lost. I have found it better to take a few likely fronds, cut them in small bits with a pair of scissors, and strew them over the surface .of the pans of prepared soil, squeezing them dojpn by hand so as to be under the influence of the moisture contained in it. In this way I have increased many varieties with

which I have previously failed. Seedling Ferns that have been raised through the summer should be now pricked off into well drained pans filled with very open porous soil, putting them in an inch apart ; if allowed to remain through the winter in the seed pans they get weakened by over-crowding. Young Ferns that were moved singly some months back into thumb-pots should, as they require it, receive a shift, not giving them too much room ; in this way they will be much better calculated to make strong growth next summer than if the potting was deferred until spring, as they will thus be enabled to acquire much more strength of roots. T. Baines,

Orchids. — The very beautiful and showy varieties of Miltonias that will now be in flower, partly on account of their blooms appearing when there is a

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comparative absence of flowers, and also because they retain their colour and freshness for a considerable

length of time, are of such a useful and pleasing character that where convenience can be given it is desirable that they should be well represented and a little extra care given to them at all times. It is not always that they are to be met with in a very healthy and satisfactory condition — either the leaves are of a dull, yellow colour, with shrivelled bulbs, or in some cases the bulbs are without leaves altogether. In hardly any collection will the dwarf, compact-growing species, as *M. spectabilis*, *bicolor*, *virginialis*, or *Moreliana*, be observed where the foliage is of a deep shining green, and in these cases it is not so essential as an indication of health and vigour as it is with the majority of plants. These are all close and free growing species, and on account of the great numbers that have been imported at various times, are found to vary very much in different plants. Of *spectabilis* the labellum in some varieties is of an intense rosy purple, the colour being diffused to the very edge, the flowers also standing up in a very firm and bold manner. Among the *Morelianas*, too, are some where the flowers are of an unusual size and substance, the colour and veining of the lip being of a very rich and distinct character. These should all be grown in the *Cattleya*-house. As a rule they are found in their native habitat clinging very securely to the smaller branches of the trees, the small roots closely interwoven one over another, the growths at the same time gradually working themselves quite round the stems, forming

close and dense tufts. They may be grown on blocks, in which condition they will root and grow very freely ; in fact, if those that are just received after importation are treated thus they come on better than if they were made up in pots in peat and moss and stood on the side tables. On blocks they can be treated to copious supplies of water, and this during the lengthened growing season is an absolute essential ; at the same time it runs quickly away, and thus the risk of damp and rot is not so great as when a mass of damp soil is present, and only a few roots entering it. When, after becoming established, it is thought desirable to make them up into larger specimens, they may be fixed, blocks and all, three or four, according to size, in shallow pans, so that they may be suspended from the roof. In making them up use plenty of drainage, and in the moss and peat some small crocks or broken pieces of bricks will be found to be of service in keeping the soil porous and open. At no season must they have the direct rays of the sun allowed to fall on them ; at the same time a good light will assist the flowers in pushing up, and help them to expand. The long bulb section, such as *M. Clowesii*, of which there are several varieties ; *Candida grandiflora*, a most desirable form ; and *Regnelli*, with the dark rosy purple variety named *purpurea*, are, on account of their manner of growth, best when grown in pots, well raised above the rim,

with plenty of drainage and open soil, as already described. These, too, should be stood in the Cattleya-house, where they will grow very freely, and during early autumn throw up the spikes of bloom which are ever welcome. The rare *M. cuneata*, the lip of which, is pure white, will, however, almost always come into flower during January and February. Carefully look through the collection from this time in the matter of watering ; as the plants do not dry so quickly, only give water when necessary, otherwise an undue abundance of moisture is very apt to cause rot to attack the young shoots of those that start away in the autumn. /A", Szuan, Fallowfidd.

FLOWER GARDEN, ETC.

Most of the bedding-plants have grown and bloomed well this season, but many of the flowers suffered from the heavy rains which prevailed over most parts of the country. From the same cause plants that are so unusually vigorous are consequently in the condition in which frost is most likely to pinch them ; this may occur at any time now, but if frost keeps off, the flower-beds and borders may be fresh and enjoyable for several weeks to come. Keep a sharp look-out for decayed flowers, leaves, &c., and have them cleared off as soon as possible. Any plants that are growing beyond their proper limits may require to be thinned out and pinched back to their desired form ; wherever they are encroaching on the

grass or edging of walks have them trimmed without delay, for sometimes harm may be done before it may be thought necessary to look after it. Get the propagating brought to a close as early as possible. Verbena cuttings are in better condition now than earlier in the season, and will root quickly in a close, humid atmosphere. Climbers that are growing strongly will require attention. The stormy weather has kept the lawns rather untidy. Let them be swept up as often as required, in order to have them enjoyable. The grass still wants the machine frequently run over it, which keeps it firm and smooth. Provision had better be made for securing the Pelargonium cuttings in the event of heavy rains or frost setting in ; the latter may occur at any time now, as the season is pretty far advanced, and not much to be trusted for tender

things after this time. The best varieties of Lobelia should be selected and marked, and the seeds carefully looked for in dry weather Any other choice seeds may be collected in the same manner. See that the ties are not getting broken which keep Cupressus, Junipers^ and other spiral trees in form j so much rain and wind has been rather trying for them. Have weeds kept under at every favourable opportunity. T* Blai}\ Shrubland Park.

FRUIT HOUSES.

Figs. — If the same course of treatment as indicated in the preceding Calendar for Figs, viz., August 25, be extended for another fortnight or three weeks beyond the time of clearing the fruit, and conjointly with it a somewhat drier state at the roots be permitted, it will considerably advance the ripening process in the growths of the current year and render them more fruitful for the subsequent one.

To accelerate this object, it will also be advisable to withhold water from the roots altogether for the next six or eight weeks. This can be done in the case of ordinary sized borders without any apprehension of danger arising from the borders becoming too arid, providing that hitherto they have had abundant supplies of the element. Attention should also at this season be directed to any requirements in the way of lirting the trees or root-pruning.

These are points in management which are occasionally necessary in the cultivation of this gross growing subject : if by reason of too much vigour or from other causes any trees are unfruitful it is a safe plan to either lift the roots partially, or prune them in somewhat hard. This remark applies to these trees generally, but particularly, in this instance, to trees which are to be subjected to forcing operations again ere long, in which case the operation should be performed without much delay, at the same time giving the roots a little fresh compost made up

of about half loam and road-sweepings. Keep the growths which are to be retained for bearing fruit next year well exposed to the sun's powerful influence, and any spurs which are not required which impedes its operation should now be removed.

Trees in pots which are intended for early forcing operations should at about this time be overhauled and their requirements attended to. In the case of trees to be shifted into larger pots be careful to have the soil rammed firmly round the old ball, so that in watering this element will penetrate the whole mass of soil evenly. With regard to the trees that do not need to be repotted, they should have the matted roots round the base and the soil removed to the extent of 3 or 4 inches, and, after the drainage is rectified, this space should be refilled with fresh compost. It is usual to employ in this case the same pots again ; see, therefore, that the position of the tree in the pot is accurately noted before it is removed, so as when replaced it will occupy its former position. At the same time the surface of the balls should also be dressed down and an equivalent of new compost added. After such matters have been accomplished water the trees, in order to settle down the soil completely. All decayed leaves which fall from the trees should be collected daily, in order to prevent any insect pests which may infest them from being disseminated.

G. T. Miles, Wycombe Abbey.

Orchard-house.— The most important work in this department includes the potting of early kinds of Peaches and Nectarines from which the fruit has been gathered, and attention to the thorough maturation of the wood of later varieties still under glass. To insure this all late growths will require shortening back to admit of full exposure of the wood to the influence of light, sun, and air, the gradual reduction of the supply of water to the roots, and the maintenance of a dry warm atmosphere by day with abundant ventilation through the night. If red-spider or other insects have gained a footing the trees should be well syringed on fine mornings as the fruit is cleared off, and all strong roots which have found their way through the bottoms of the pots into the border may be checked by the insertion of a sharp instrument to cut off the supply of moisture. Plums, Pears, and Cherries plunged in the open air will be greatly benefited by full or partial exposure of the pots for a time in a position where they can be protected from drenching rains and if not already done, a shift where necessary into larger pots should be given without further delay. Stop all late growths in Figs, and turn aside the old leaves which interfere with direct action of sun and light on the fruit now ripening. Get in a good supply of stiff turfy loam from an old pasture for potting purposes. Stack in narrow ridges, and protect from

snow and rain with thatch or shutters.

If fresh trees are required for potting up, a selection of clean handsome plants which have made firm, moderately strong wood, may now be made for lifting when the leaves are falling. Trees well set with bloom-buds may now be obtained from all the leading nurseries, and these, if carefully potted before the end of October, will give a moderate supply of fruit next

season. Rivers' Nectarine Peach is worthy of extensive cultivation for giving a supply of late fruit, W, Coleman.

HARDY FRUIT GARDEN.

Most of the autumn kinds of Apples and Pears are unusually late in ripening, but as strong winds generally prevail about this season and may now be expected at any time, they should not be left on the trees a day longer than is necessary, as a slight shaking will cause them to fall, and fallen fruit is of little or no value except for immediate use, owing to the rapid decay of the bruised parts. It does not require much discrimination to determine when Plums, Peaches, Nectarines, &c., are fit to gather, but as regards Pears and Apples the case is different, and cultivators of

these should make themselves well acquainted with the sorts, for without this knowledge they are often plucked too soon, and the result is that they become shrivelled, and never reach that degree of mellowness or finish with the rich melting flesh for which all dessert Pears are so highly prized. Late kindF, such as Josephine de Malines, Bergamot d'Esperen, Glou Morjeau, and others of that class, should be allowed to hang at least a month later, or till such time as they part readily from the trees by just lifting them up, when if ripe they break off at the joint of the footstalk, and this is one of the best tests as to their fitness to gather. The handling in placing them in the baskets, and from thence to the fruit-room shelves, ought to be done as tenderly and carefully as would be necessary for eggs, and in laying them out there is nothing better than smooth, bare boards to store them on, as straw, hay, or sawdust is sure to impart an unpleasant flavour. Although such Pears as Williams' Bon Chretien, Louise Bonne, Beurre d'Amanlis, and a few other autumn kinds do not keep long, the season for each may be considerably prolonged by introducing a portion of the forwardest where they can get a little warmth to accelerate ripening, and by placing the remainder in some cool, airy cellar or other situation where the temperature is low, and not liable to fluctuate.

It is to be hoped that nurserymen generally are

well-stocked with young trees of Apricots, Peaches, and Nectarines, as the demand is likely to be great to replace those killed or crippled by the unpropitious weather we had during the early part of the season, and it would be well for those requiring such, and who desire to have the pick, to give their orders early, that they may secure what are likely to suit others, as those who come first are generally best served in matters of this kind.

As many may be at a loss which to select it may not be amiss to name a few of the most desirable, and among Nectarines Lord Napier is one of the very best, being of large size, highly coloured, and of first-rate flavour. To succeed this Elruge and Violette Hative are next in order of merit, and to follow these Pitmaston Orange or Pine-apple and Hardwicke Seedling are the most satisfactory. The Victoria is a first-class Nectarine and the latest of all to ripen, but is not to be depended on unless a warm, favoured situation can be afforded it.

Among the varieties of Peaches the most valuable in point of earliness is Early Louise, which ripens at the end of July, and is not deficient in either colour or flavour. Dr. Hogg or Early Alfred will succeed this, and both are good free-bearing hardy kinds ; and to

succeed these none are better than Royal George, Noblesse, Violette Hative, Barrington, and Walburton Admirable, the latter of which is equal to Noblesse, and the finest and best flavoured late Peach grown. All the above are sure to give satisfaction, and may be relied on as the most suitable to grow either outdoors or in.

The earliest amongst the Apricots are the Golden Drop and Mush-Mush, the latter of which is rather a shy bearer while the tree is in a young state. Moor Park, Hemskirk, and Peach are the three best of those that ripen later, and are all that are worth growing except for preserving, for which purpose the Roman and Turkey are most prized on account of being more juicy and of a sub-acid flavour. The trees, too, are hardier and not so liable to canker or go off in the way the Moor Park and Hemskirk generally do after they attain age or are growing in wet, cold soils or unsuitable situations. The late sunny weather has been very favourable for ripening the wood, but owing to the scarcity of fruit and the abundant rainfall most trees have made a grosser growth than usual, and root-pruning may in such cases be resorted to with considerable benefit. If this is taken in hand at once it will not be without effect next season, for although too late now to induce fruit-buds it will have that tendency in future by causing plenty of fibre and checking any further inclination to

over-luxuriance. Filberts are now ripening, and will require close watching to save them from squirrels, which are sure to find them out and carry off the greater portion unless means are taken to prevent them. y. Shepiard.

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THE

SATURDAY, SEPTEMBER 22, 1877.

APPOINTMENTS FOR THE ENSUING WEEK.

,, . , o , J Sale of Dutch Bulbs at Stevens' Rooms

MONDAY, Sept. 24 \ , ^, j Wednesday)

Thursday, Sept. 27 — Sale of nrchids. at Stevens' Rooms.

Saturday, Sept. 29 — Sale of Dutch Bulbs at Stevens' Rooms.

THE details which we are enabled to publish relating to the work done at ROTHAMSTED for the last thirty -five years, constitute a record of the very highest interest and importance. They illustrate very forcibly one striking difference between the procedure in this country and that of others. In Germany, in France, in America, for instance, agricultural stations and physiological laboratories abound— all doing useful work, but all, with few exceptions, maintained by the several Governments or by public means. Rothamsted, on the other hand, is the hereditary property of an English gentleman, the establishment is maintained at his sole cost, and the vast series of experiments there carried out have been devised and fulfilled for purposes of pure science by Mr. Lawes, with the assistance of trained observers and experts, foremost amongwhom we must mention Dr. GILBERT. By private enterprise, then — by zeal, industry, and talent, which we may well call unrivalled, a long series of experiments have been carried out in magnitude and in importance superior in their way, we may say, to anything that has been done in the experimental farms and laboratories of the Continent.

The bare details given in another column are sufficient to justify this assertion. The general aim of these truly vast series of experiments has been to question Nature as to the best and most efficient means of feeding plants and animals for the benefit of the human race. Although these experiments have throughout been carried out from the point of view of pure science — utility having been a secondary consideration — yet it will be evident to any one who casts his eye over the records now given that direct utility has been served in a greater degree than by any other series of experiments of like character that have hitherto been made. The Rothamsted experiments offer, indeed, another proof that in the promotion and advance of pure science as the primary consideration lies the surest and most certain road to practical utility.

Little need be added by us to the record given in another column. Its bare record of work accomplished is the most impressive commentary that could be made. It will be seen that the experiments were made with a view to elicit from Nature herself in the most practical manner the mode in which the feeding of plants and animals can, under both natural and artificial circumstances, be conducted. To this end the

life history of plants and animals has been studied, the nature of their food investigated, the relations between the living organisms and the world around them, the earth, the air, the water, the heat, the light, and their reciprocal interactions, investigated. The mineral theory of LIEBIG has been proved to be erroneous. New and unexpected light has been thrown on the requirements of particular plants. Thus the highly nitrogenous leguminous plants have been conclusively shown not to be specially benefited by nitrogenous manures, and, on the other hand, starch and sugar yielding crops have been proved to be particularly assisted by the application of nitrogenous manures. But we have no space to do more than hint at the general character of the researches made at Rothamsted. The general result is in the highest degree

honourable to Mr. Lawes and his associates, and gratifying to our national self-esteem. These are no mere flower-pot experiments, they may be measured by the acre. These are no temporary or superficial trials, they have extended in most cases considerably over a quarter of a century ; and the results have been in every case watched, observed, calculated, and tabulated with as much care as

in the more minute proceedings of an analytical chemist. In the field, indeed, the same minute precautions and accuracy of observation and of record have been maintained, so far as the circumstances of the case have permitted, as are expected at the hands of the analytical chemist. Field observations and laboratory work have gone hand-in-hand together, have been carried out with the same method, treated in the same manner, and thus yield a body of observations unsurpassed in extent, in variety, and in accuracy. The results of all this labour and skill have, to a considerable extent, been given in the Journals of the Royal Agricultural and Royal Horticultural Societies and in other publications, but the very number of these scattered records and their prodigious wealth, variety, and complexity of detail render them difficult to be grasped by an ordinary scientific reader. Life is short, art is long. The time seems to us to have come when the directors of this noble experimental station should gather together into one harmonious consecutive treatise the main results of their labour and the legitimate inferences therefrom. We are, of course, aware that to some extent this has already been done. Most of the very numerous publications of Messrs. LAWES and Gilbert contain summaries, but these sum-

maries themselves now require consolidating, and their mutual relationship made clearly evident. One other point remains to be mentioned.

In what other country would services so splendid and so disinterested be allowed to pass unnoticed by the nation ? True, such honours as science can give have been bestowed, and agriculturists have not been unmindful of what has been done for them ; but surely this is a case for Governmental recognition. Had Messrs. Lawes and Gilbert and their several associates in their respective degrees been soldiers or sailors, they need not have effected a tenth part of what they have done to have been the recipients of State honours and rewards. Doubtless their own satisfaction at the results of their labours is the best and sweetest reward they themselves could look for ; but, as a matter of national honour, it is greatly to our discredit that services so long continued and so valuable should have been allowed to pass without State recognition.

Our illustrations represent the Jacobean mansion of Mr. Lawes at Rothamsted (fig. 75, p. 373).

Fig. 74 the interior of the laboratory, with its myriads of pieces justificatives in the shape of analyses and records. Fig. 73 the rain-gauge, one-thousandth of an acre in area. Figs. 71 and 72 other drain-gauges of like area, but filled with soil of various depths, to show the quantity of rain that percolates through strata of different depths, and others again of smaller area arranged in a circle, and destined to show the amount of rain penetrating through soils of various characters, degrees of consistency, in a natural state or artificially consolidated, and mixed with farmyard and various artificial manures. Further, some of these gauges are intended to show the amount of rain that percolates through a given area and depth of soil when bearing a crop of cereals or other plants with different root and leaf action, &c. The rain so collected, together with the drainage-water from some of the fields, is not only measured but subjected to chemical analysis, to show its constitution. Some of the results of this wholesale plan of investigating the amount and composition of the rain according to different circumstances, are indicated in a suggestive manner in the paper at p. 360.

A REMARKABLE old plant of *BRUGMANSIA*

SUAVEOLENS is now an object of considerable

interest in one of the conservatories at Castle Ashby, Northampton, the seat of the Martjuis of Northampton. It really forms a fine tree, for it completely fills the space allotted to it in the house in which it is planted out. The huge head is loaded with its large, pendent, trumpet-shaped, pure white flowers, which are very fragrant. It is quite a matter for conjecture how long this plant has been at Castle Ashby, but Mr. George Beech, the gardener, informed us that an old man still on the place remembers it as having been there sixty years ago. Every year it is cut back hard to the old wood, something after the fashion of a pollard, and then at the proper time it bursts forth into growth, and the flowers may be said to be heaped up on the branches at this time of the year. In the same house there is a plant of *Bignonia grandiflora*, which it is believed is as old as the *Brugmansia*. It has a stem of considerable dimensions, suggestive of great age, and during the summer it produces an abundance of remarkably fine clusters of rich orange and scarlet trumpet-shaped flowers. In the same house *Tecoma capensis*, *Plumbago capensis*, *Cassia corymbosa*, trained against a wall, and various parterre flowers are now very attractive, and supply an abundance of bloom for cutting from. In one of the newer conservatories *Soya heterophylla*, with its charming sky-blue flowers; *Bignonia Cherere*, *Eupatorium*

glandulosum, are flowering very freely against a wall ; and the old Parsley-leaved Pelargonium, *P. apifolium*, with its curious brown and blush flowers, are all of much interest to the visitor, A fine plant of *Desfontainea spinosa* against a pillar is making a fine growth, and its numerous red and orange flowers contrast strongly with its deep green leaves. In one of the stove houses at Castle Ashby Mr. Beech has covered the wall at the back with various forms of *Hibiscus*, most of which are now in flower. The most striking are *linearis variegata*, with large carmine flowers ; *perfectus carminatus*, with very large single red blossoms ; *luteo-carpus*, pale salmon-buff; *miniatus semperflorens*, very large red; and *metallicus*, single rosy red. Single flowers of these forms of *Hibiscus*, against a background of fronds of the Maidenhair Fern, are very useful for table decoration, indeed they are fine things to cut from. In the same house *Meyenia erecta* was growing and blooming freely against the back wall. Mr. Beech has also been very successful in flowering *Tritonia aurea* ; a large pot containing six bulbs is now highly attractive, the flowers are large, bold and well coloured. After the plants have gone out of bloom at the end of the summer they are dried, then the soil shaken from the roots, and the bulbs repotted in loam, leaf soil and sand, and kept on a shelf in the stove house near the glass. It blooms both in the spring and autumn.

There are still some places remaining about the
countryside where the more elaborate systems of modern
Flower Gardening have not altogether stamped
out the old-fashioned characteristics of a flower
garden. A flower garden at Castle Ashby, complete
in itself, is wholly composed of beds of old-fashioned
flowers. There are beds of sweet-scented Cloves,
Asters, Stocks, Roses, Phlox Drummondii, Salpi-
glossis, &c., and one of them, a true bed of sweet-
scented plants, contained a good selection of scented-
leaved Pelargoniums, Balm of Gilead, Aloysia citri-
odora, and what is known as the Pine-apple-scented
Salvia, which well deserves its name for the leaves
are richly perfumed with a scent like that of the
Pine-apple. Mr. Beech obtained this from Miss
Hope, Wardie Lodge, Edinburgh, and he grows it in
pots in the conservatory for the sake of its delicious
fragrance. One of the finest of wall plants is
Ceanothus Gloire de Versailles. It is a vigorous
grower, but while free in growth blooms with great
freedom, and it is just now highly attractive, the
bunches of flowers being large and striking. A variety
of *C. rigidus* with golden foliage is also a very
desirable plant for warm walls, and though the yellow
variegation is not particularly striking, the plant has
always a cheerful appearance at all times of the year,

Pavia californica is now a conspicuous object in the pleasure grounds at Castle Ashby, The specunens are growing in shady sheltered spots, but they are doing well, and are covered with large panicles of

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white fragrant flowers. The foliage is ample and handsome, and in the autumn, when the trees bear fruit, the season of attractiveness is continued up to the fall of the leaf. This Pavia has been well described as "one of the handsomest introductions of recent date."

— In connection with the Slough Literary AND Scientific Institution a course of instruction was commenced yesterday, September 21, in the subject of botany, which will be pursued in connection with the Science and Art Department. The course will embrace, besides the chemical preliminaries, the various departments of the science designated as histological^ structural, physiological, systematic,

The Babool, or *Acacia arabica*, seems to be a much more important tree in some parts of India than it is generally supposed to be. In a recently issued report of the Forest Department of the Bombay Presidency an account is given of the uses of this tree, from which we learn that its wood is preferred before any other for the construction of carts, and every village owns large numbers of these vehicles for the traffic of the country, which is carried on almost entirely by carts. Sugar and oil presses and grain pounders are made of it, and it is used for building the flat-roofed houses of the Deccan. Its branches, covered with long thorns, are invaluable for fencing material ; thrown loosely down on the boundary line of a field they come into use at once as protectors to

flowers are more like those of the Orange. As we hope to give a figure of this very interesting fruit in a future issue we defer further notice of the plant at present, merely stating that Mr. Garnier describes the fruit as superior to any tropical fruit he has ever tasted. It would probably succeed in an orchard-house in this country, and would be a valuable introduction into many of our colonies. We congratulate Mr. Bull as the fortunate introducer of this plant, and Mr. Garnier on his success in fruiting it.

Writing on the cultivation of Eucalyptus

GLOBULUS in Kanara, one of the forest officers says :

— " There is one thing that may be said in its favour,
and that is, that if found successful, the people would

Fig. 74.— interior of the laboratory at rothamsted.

economic, and geographical botany. The class will
be held every Friday evening from 8. 15 to 9.45*
The instruction will be by means of class lectures,
illustrated by diagrams and the use of the micro-
scope. A constant reference to living specimens will
be made, and these botanically described, with a
view to impart a useful training in precision of ex-
pression, and to facilitate an acquirement of technical
language. At the yearly Government examina-
tions all students who are placed in the first
class receive Queen's prizes : efforts will also be made
to procure the offer of a local prize for the best worked
paper in the examination of 1878. Mr. Newlyn is
the teacher, and in view of the admirable training
botany well taught affords, as well as from its imme-
diate advantage especially to young gardeners, we
wish Mr. Newlyn a large and appreciative class.

the crops, and are green and effective so long as the
crops are on the ground. Its pods provide fodder for

sheep and goats. It is prized above all woods for firewood. The gum it exudes is an article of commerce, and is used largely in the concoction of native medicines, cloth-dyeing, and printing. The bark is in request for tanning and dyeing ; it is a powerful astringent, and when food is scarce it is eaten pounded and mixed with flour. The roots are also used for tanning, and for the distillation of a native liquor.

Our thanks are due to Mr. Bull for allowing

us to see our fine fruits of the *Casimiroa edulis*, ripened in the garden of Mitchell Henry, Esq., M.P., of Kylemore Castle, Galway. The fruit in question has been called the Mexican Apple. In appearance it resembles an Apple, but the leaves and

everywhere take to planting it about their homes, in consequence of the properties it is said to possess in preventing malaria, and in which such of the natives as have seen it fully believe. In Duarwar, near the market-place, where a few plants of *Eucalyptus globulus* were planted and enclosed, the perfume given off from them attracted many admirers, and the greatest desire was evinced to touch or take away a leaf or two. One plant, a great beauty, pulled about in this manner, succumbed to the attack thus made upon it. "

Messrs. K.UTLEY & Silverlock, of 412,

Strand, have sent us a cake of Soap from China, stated to be made from the seed of the Tea plant, and to be very efficacious when used with water in destroying worms on lawns. The soap in question has somewhat

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of the appearance and smell of coarse oilcake. When broken up and mixed with a canful of water, so as to form a ratlier thick mixture, we found it very efficacious in bringing to the surface and killing a large number of worms from a lawn on cold, wet soil.

The successful extermination of weeds and

creepers in the Indian forests is one of the difficulties the forest officers have to contend with, and one of the most difficult of these weeds to eradicate is the Prickly Pear. This has become quite a pest, and it

is satisfactory to learn that the plant is in future likely to become of some use. Its appearance in the Poona districts is, by a local tradition, attributed to a few seeds being brought to Poona from Delhi a century and a half ago. The rapid spread of the plant is due to birds being very fond of the seeds. Till very lately it was thought that the Prickly Pear could yield no return, but it has recently been discovered that the Babool seed sown in the ashes of the Prickly Pear germinated very quickly, and plants manured with the ash grew vigorously and strong. Further it has been said that this ash is a very valuable soil fertiliser. A series of experiments have been tried by the Deputy Conservator of Forests, Poona, in the use of Prickly Pear as manure, by crushing it and then applying it to the roots of plants and shrubs. The Superintendent of the Botanical Gardens, Gunesk Khiud, writing to the Deputy Conservator of Forests, Poona, says : —

* ' Since you drew my attention to Prickly Pear as manure, I have used several hundred cartloads of it. I put it into a tank through which water for irrigation passes; of course it decomposes rapidly, and the water carries away a large portion of the gases that are generated together with small pieces of half-decomposed vegetable tissue. What could be better plant food on a soil from which the vegetable matter has been collected and burned by so many genera-

tions ? " These favourable opinions on the use of the Prickly Pear, however, are not shared in by all even of forest officers, for one writing on the subject says : — " The superintendent of a botanical garden may employ it as a manure without mischief, but it will be a very disastrous event if ever the cultivators make use of -t generally for this purpose. They have no means of crushing it thoroughly, and its use as a manure would inevitably extend the growth of this mischievous plant." This writer also further says : — *I am so convinced of the impossibility of controlling the growth of the Prickly Pear when once introduced, owing to its propagation by birds and animals, that I would prohibit its use as a hedge to forests, or as a substitute for fire-paths." It will be gathered from this, that for the purpose of preventing the spread of fire in forests the Prickly Pear has been recommended, as it grows with such luxuriance, and establishes itself so readily, that impenetrable hedges are quickly formed, and if planted thickly on the outer boundary line of a reserve, it would be practically impossible for fire to penetrate from the outside into the forest. Several species of grass are also recommended as being admirably suited for the same purpose, *Panicum spectabile* being one of the best, and this is stated to grow luxuriantly in the hottest and driest places, shooting vigorously to 3 or four feet in height, with deep roots often a yard long, and i inch or 2 inches thick. " It is very sweet and succulent, and

always green. A seedling will cover a square foot in one year with deep matted roots. Fure would not travel across it."

There seems some reason to fear the total

extinction of the ScAMMONY Plant (Convolvulus Scammonia) in Turkey. For many years, owing to the wholesale adulteration of Turkish scammony, which includes a large proportion of gum-arabic, flour, and other ingredients, the English drug-houses have preferred buying the root and preparing their own scammony. The following extract from a report by the British Consul at Smyrna will be read with interest, and should be taken some notice of before it is too late : — " The Government," we read, " having allowed the digging of the roots of this drug the crop is annually diminishing, and if the destruction of the plant is not put a stop to the article will totally disappear."

It may not be out of place just now when we

are lamenting the exceeding Scarcity of Hardy Fruit, to remind our readers that the humble Vegetable Marrow may be easily converted into a

delicious preserve such as may well be acceptable in

any family circle. The mode of its preparation was explained in these pages about this time last year, and shows that with the addition of such simple flavouring materials as sliced lemon peel and ground ginger, the flesh of the Marrow may be converted into a most pleasant luxury. The Vegetable Marrow is so easily cultivated that it may well form a staple product in every garden. It is also comparatively independent of seasons, as it is rare indeed that the crop is a failure. In this respect, although tender in constitution, yet it may well be classed as a most valuable and reliable hardy fruit.

Nelumeium aspericaule is flowering in

the Lily-house at Kew. It is a great improvement on *N. speciosum* for garden culture, requiring a lower temperature, blooming more profusely, and having flowers that are even more magnificent. The petals are broader than those of *N. speciosum*, narrowing less to the base, with deeper rose colour over the entire surface. The glow of colour within the flower is, to the eyes, almost like that of some molten metal. It was raised, we believe, by the late Mr. Sylvester. The above specimen is growing in a pot, which seems quite sufficient for its development.

We understand that it has been decided to

hold the next spring exhibition of the Royal Caledonian Horticultural Society in the new Vegetable Market, Edinburgh. For light, space, &c., there cannot be a better situation for a flower show.

The Rainfall which has characterised the

past summer, especially in the North, has not been confined to "our tight little island." A private soldier, serving with the United States' troops now engaged in holding the Indians in check in the remote portions of Nebraska State, mentions in a letter to his friends here, dated August 21, that "the Indians have endeavoured to fire the woods repeatedly, and so burn out the camp, but owing to its having been such a wet season everything is too green to burn." In spite of this Excess of Moisture, however, it is unpleasantly dry at times, as he further mentions his belief that "it is the worst country in the world for dust, as when the wind blows the air looks like a London fog in November, and no one will face it ; and as to going against it, not even a mule could do it." At the date of the letter it was "already beginning to grow cold, and one finds it comfortable to stay near the stove, for the country is not blessed with a very long summer ; but when it comes it comes with a vengeance, and thus makes up for its short stay. Last month it was as hot as I have found it when under the equator."

Further on he makes a singular reference to the healthy character of the climate, as in advising his friends to have no fear for his health, he says : — " I am in the very best of health and spirits. This is a very healthy country, and a consumptive person is quite unknown here. There is a common saying that people never die here— they are gradually withered up, and finally blown away. A visit to the graveyard will support this opinion, inasmuch as it is found that few that lie there have died, but must have been murdered." This excessive prevalence of cold steel probably accounts for the health-giving qualities of the atmosphere. If, however, the denizens of that State would but be content to take it in smaller doses, perchance they might all live to be blown away in the end.

We learn from the Reviti Ho7-tuole of the decease of Count Leonce de Lambektye, one of the best known and most respected of French horticulturists.

Mr. R. Gilbert requests us to state that he intends showing at the Royal Horticultural Society's Fruit Committee, on Tuesday, October 3, what he terms the true Gros Colman Grape, and he will esteem it a favour if Grape growers will send a bunch

of that variety for comparison. Mr. Gilbert also intends exhibiting another seedling Melon.

It would seem to lovers of hardy border plants

almost impossible to write in terms too generous of the singular beauties of the varieties of the *Anemone japonica*. We have in these probably the finest and most effective of hardy autumnal border flowers adapted to any soil, and when once planted simply requiring to be let alone. The original form of *Anemone japonica*, good and pleasing as it is, is

greatly excelled in size of flower, height, and robustness of growth by its compeers, *japonica alba* and *japonica intermedia*, the latter a pink-shaded form of *alba*. We recently saw established plants of these, from 4 to 5 feet in height, and covered with hundreds of flower-buds; these must, ere now, have been truly grand specimens. This *Anemone* does remarkably well in pots, and it will be a strong recommendation to many persons in its favour that it seems to have been specially designed to gratify the modern passion for cut flowers.

We hear that the Hereford fungus meeting

will be well attended this year, and that, amongst

other visitors, M. Cornu, of Paris, will be present.

The number of the Hungarian Journal of

Botany for this month — Magyar Novénytanlappok — pays this country the compliment of publishing a biographical sketch of Dr. Stephen Hales, the vegetable physiologist, who was born on September 17, 1677. In the same issue a reprint of the portrait of our distinguished countryman, which appeared in our columns on January 6, 1877, is given. How many of our physiologists, we wonder, would have remembered the bi-centenary of Hales' birth. The institution, however, of the physiological laboratory at Kew may be taken as an augury that the study of vegetable physiology will not be neglected in the future as it has been in the past, from the time of Hales to our own day, with some exceptions,

M. Carrière records, in a recent number of

the *Rhine Horticulturist*, an instance of monogamy in *Cephalotaxus Fortunei*.

The Telephone has already been made of

practical utility in a deep mine in Cornwall, where it has been found serviceable in communicating from the surface to the interior of the mine. We may look

forward to this electrical speaking-tube being made use of to communicate orders from the gardener's cottage to workmen at a distance. In fact, the practical utility of the invention is so apparent, that a very short time will ensue before the instrument becomes general,

A curious instance of bud variation is figured

by M. Carrière in a recent number of the *Revue Horticohe* in the shape of a branch of *Platanus ACERIFOLIA* producing leaves of a different form from those of the ordinary *Platanus*. The leaves on the sport are, in fact, nearly entire, and a little raised at the margins so as to present a hooded appearance.

The losses among leading botanists have been very great of late. France has lost Bromfiart and Weddell, Germany laments Braun, and now Italy has to bear the loss of her foremost and best-known botanist, Philip Parlato, the Director of the Royal Museum of Natural History and Physics at Florence, and Professor of Botany. Professor Parlato was born at Palermo, and died on the 9th inst., in his sixty-first year. In this country he is best known for his "Monograph on Conifers" in De Candolle's *Prodromus*, and for his unfinished *Flora*

/(a liana. These works, and the splendid and well-ordered museum and herbarium at Florence, will form his best monument. Professor Parlatores was the president of the Royal Tuscan Horticultural Society, and of the committee for the Botanical Congress which met in Florence in 1874, but his ill-health prevented him from taking any active part in the actual business of the meeting, to the great regret of the botanists assembled from all parts of the world. Professor Parlatores had numerous friends in this country, by whom he will be regretted as much for his personal qualities as for his scientific attainments.

. The Journal des Roses gives an account of the Rose show at St. James' Hall in July last, which makes us wish that popular names of places, as well as of plants, could be abandoned in favour of appellations that could be made familiar to the educated reader of all nations. Where, for instance, is " Moulton Hyld, Chonnauck " ? Can it be the forest where a certain "wyld savage" is supposed to roam ?

Some correspondence lately took place with reference to the "wild Lily," stated to grow in a gravel path. The upshot was that some correspondents obligingly told us that the plant intended was

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The common Bind-weed, *Convolvulus arvensis*.

We see our American friends call it a "vine," the word vine being used in a very wide sense across the Atlantic. These instances ought to convince grumblers of the inconvenience of popular nomenclature ; hard words are bad, but they are better than appellations which are not only vague but altogether misleading. Some people have vague notions on natural history matters : a lady the other day in our hearing declared the sea anemones in the Brighton Aquarium to be "something between Mushrooms and flowers."

We have before us the first part of the

journal of the British Dairy Farmers' Association for the Improvement of the Dairy Husbandry of Great Britain. The part opens with a simply written but most useful article on cheese-making, by Dr. VOELCKER, and various other articles and reports follow, all calculated in the degree to remove the

imputation that in all parts of the country *the dairying of the district consists simply of spoiling good milk, cheese and butter being made that would not pay for the cost of the production of the raw material, milk." Those who know what London butter and London milk are will welcome the foundation of the Dairy Farmers' Association, and of their journal, which is well printed, well edited, and sufficiently illustrated.

Eucalyptus culture in the Isle of Bourbon

seems to succeed and prove beneficial in rendering the climate healthier. In the temperate zone especially, at an altitude of between about 1500 and 3000 feet, large plantations already exist. A writer in the Bulletin de la Societe d'Acclimatation mentions one of several acres in extent which had the appearance of a real forest. He says, " I regard the introduction of these trees as most serviceable. The marsh fevers which desolate the island have not been able to pass the belt of Gum trees which surround my estate ; not a single member of my family or work-people has been attacked by fever." The writer, a Mr. Chateauvieux, who was elected President of the Chamber of Agriculture of the colony in 1863, commenced operations about that date, and he has already felled trees which have furnished good planks 13 feet long. In what he calls the glacial zone— that

is, above an altitude of about 3500 feet, where the mean winter minima are $20^{\circ}.75$, and the mean winter maxima are $54^{\circ}.5$ — ^' globulus grows slowly, but is less easily uprooted by hurricanes. At an altitude of 4000 there are large flourishing plantations, as mentioned above. At 1600 feet the Red Gum grows to a height of 65 feet in six years, but it does not succeed in the cold region. These little items of information are interesting and useful.

-- — - The third annual Conference of the Crypto-GAMic Society of Scotland has been postponed until October 17, 18, and 19, instead of October 10, 11, and 12, as previously announced.

The annual cost of keeping in order the

Trees, Shrubberies, and Seats upon the boulevards and in the public squares and gardens of Paris is nearly 2,000,000 fr. It is estimated, says the Builder^ that the trees in the avenues and boulevards of Paris number 82,201 ; those in the cemeteries, 10,400 ; and those in the squares and courtyards of various buildings, 300. There are also 8000 seats for the accommodation of the public. The expense of keeping up all the extra-mural recreation grounds, exclusive of the Bois de Boulogne and the Bois de Vincennes, is rather more than 300,000 fr,

The West of England still holds its own in

the matter of Fuchsias Growing, and at the Bath floral fete on Wednesday, the 11th inst., Mr. J. Lye, gr. to the Hon. Mrs. Hay, Clyffe Hall, Market Lavington, was placed 1st, with nine plants of such merit that, though Fuchsias are invariably shown fine at Bath, these particular plants were considered some of the finest ever seen. The specimens were of medium size, graceful in contour, and superbly flowered. On this occasion the 1st prize for nine Fuchsias at Bath was a handsome silver cup, and Mr. Lye has crowned his previous efforts by winning it. He has this year taken eight 1st and two 2d prizes ; and the latter were awarded him at Trowbridge, where he is generally invincible, as his large plants were not then in perfect condition, and he had to stage some smaller in size than usual. Why is it that while Fuchsias are generally so well grown in Wiltshire and Somersetshire,

they are so indifferently grown elsewhere ? There is scarcely another plant that repays good cultivation as the Fuchsia does, and when well done it is one of the most attractive features in an exhibition tent. And yet they are often a poor display, not at all up to the average of many other flowering plants.

A novel way of clearing a Cornfield of

Insect Pests is reported from Budiarisk, Russia. It seems that the last harvest was a very unequal one, the produce of one farm being abundant, and of the next one almost ;;//. This was in great measure owing, it is said, to the ravages of **a species of black beetle."

To remove these insects from the ears of Wheat some farmers adopted the plan of dragging a piece of rope held by two men over the plants, and this had to be frequently repeated. This plan must certainly be an expensive one, inasmuch as it does not exterminate the insects but simply removes them for a time. There is something comical in playing with insect pests in this manner.

We have been favoured with an inspection of

a drawing of the fruit of HoYA carnososa which was produced in a garden at Wimbledon. Only a single follicle was ripened, and this of the elongated form so common in this order. The seeds, too, have the usual hairy appendage. The construction of the flower is such as to necessitate insect agency, but what the particular insect may have been in this case we cannot say.

The French Vice* Consul at Larnaca, Isle of

Cyprus, M. Dubreuil, in a communication to the

President of the French Society for Promoting the Acclimatisation of Useful and Ornamental Plants and Animals, respecting the vineyards, or rather Vines — for they are left pretty much to themselves — gives some account of a Disease which formerly attacked the Vines there, but which has since disappeared. During seven years, from 1859 to 1866, it is stated the Vines were stricken with a disease characterised by a kind of ash, covering the berry at the time when they ought to be ripe. No one attempted to find a remedy for it, though the ravages it committed were so serious that some of the Vine growers decided to root up their Vines. However, the disease seems to have died out, for no traces of it have been observed since 1866. What it really was nobody seems to know, but it is suggested that its exhaustion or extirpation might be due to the presence of the Sumach in the vineyards. After the outbreak of the disease the naturally indolent islanders took little care of their vineyards, allowing the shrub named to completely overrun them ; and since it has spread so much the disease has not been seen. The total disappearance of the disease, whatever it may have been, is highly gratifying ; but that the Rhus expelled it is exceedingly doubtful. It would be good news, indeed, if we could be sure that the Phylloxera was becoming less prolific and diminishing instead of extending its area of depredations. The same writer, referring to a report of an Oak growing in the same

island, and bearing acorns as large as one's fist, states that as regards their actual size it has been considerably exaggerated. They are, however, very handsome, and three times as large as those of our largest Oaks.

Jforeigii Cornspnhnte.

The Valencia Orange Groves. — Between the Orange groves and the sea for a width of several miles, there is a forest of Olive and Carouba trees from 20 to 30 feet high. They evidently serve to break the sea winds, and to protect the Orange trees from their contact. These Orange groves occupy the triangular plain above described, the two sides of which north-west and south-west are formed by sheltering mountains, whilst the base is protected from the easterly sea winds by the wide belt of Olive and Carouba trees. These protecting trees not being high the Orange trees are cultivated as bushes. The central stem is cut about 1 foot, or even less from the ground, and three, four, or five branches are carried up as a bush, and not allowed to grow above 10 or 12 feet high. To this mode of cultivation there is no exception whatever. Tens of thousands of these large Orange bushes are seen, but not one large regular Orange tree such as are found in Majorca, Sardinia, Sicily, and the Riviera. In the valley or vega of Valencia, above the city, the same system of cultivation is exclusively followed, as

I found in a previous journey. Thus once more is the necessity of protection from wind exemplified in the cultivation of the Orange tree. In Majorca it is exclusively cultivated in a large crater-like valley ; in Minorca it is only seen in a deep serpentine valley, formed by a fault in limestone rocks ; and here on the east coast of Spain we find it cultivated like a low Apple bush, in order to ensure the necessary protection from wind. In all these countries and regions I have always found Orange trees growing in calcareous soils.

The trees seemed perfectly healthy — to have escaped so far from the terrible scorch. I could not discover whether they had been grafted or not. The crop of Oranges had been so thoroughly gathered and disposed of that at the small town of Castellon, where I passed the night, we could not procure one for love or money. Castellon, the capital of the fertile Orange covered delta plain, was formerly a fortified town of some local importance, but appears now to be merely an agricultural centre. The accommodation is essentially Spanish, that is, the fonda or inn leaves much to be desired. I would, however, say that in Spain the habit of using exclusively iron bedsteads and a small amount of bed furniture, the absence of carpets, and the paucity of furniture generally, with the universal

whitewashing of the walls, secure the travellers and inhabitants greatly from vermin. Then, although the meat is tough, naturally very indifferent, it is so long stewed that it becomes tender and eatable at last. I myself have always managed to live and flourish when travelling in Spain, finding therein "the elements of nutrition " even if not presented in the French or English style. The wine and bread are always good, which is not a bad foundation for a meal.

Pursuing our course the next day, northwards, a few miles from the shore, we left the irrigated delta and passed through an unirrigated, therefore arid region. Here we found the scrub Palm of Algeria, the *Chamjerops humili?*, growing wild, freely, and abundantly, evidently a native of the soil, I had seen it previously in the south of Spain, in Murcia, and Andalusia, growing wild as a scrub plant under the same circumstances. This *Chamrerops* may be said to belong to Europe, as well as to Africa. It was formerly a common plant in Provence and the South of France generally, although now quite extirpated, and only growing in gardens. Along with the *Chamasrops* were numerous *Aloes*, the *Lentiscus*, and the prickly Broom of the South of Europe. The mountains in the background were very naked and arid, quite burnt up and denuded. There were water-courses, but no water or water plants ; river beds, but not a drop of water in them. Every now

and then we came to small towns or villages, very poverty-stricken, located evidently in places where some little water could be obtained by wells. Around them were fields of Wheat and Barley, very clean, Vines, and Mulberry, Fig, and Walnut trees. The wells were mostly worked by rope and pulley, sometimes by mules.

We were passing through a part of Spain that had been occupied and ravaged by the Carlists during the war, of which we were rather uncomfortably reminded. As the train slackened at each station there was a soldier with gun in hand on each side of the line, and on reaching the platform we usually found two or three more awaiting our arrival. On inquiry we were told that these troopers were there to secure the safety of the passengers. It appears that after the Carlist bands ceased stopping the trains themselves, 'as they were wont, some of the gentry who composed them set to work on their own account in the following way : — They used, 'singly or by twos, and well-dressed, to get into first or second-class carriages, and once the train was in motion to draw out revolvers and take all the money and jewellery of the passengers. On the train slackening, at the next station, they opened the door, got out, and ran away. The soldiers had orders to shoot all who did so, and we were cautioned never to get out before the train stopped

thoroughly , for fear of a mistake — a caution we took care to obey.

Emerging from this sunburnt, waterless, arid district, we suddenly came upon a fertile irrigated valley, in the midst of which was a broad yellow river, the Ebro, coming down from the glaciers of the Pyrenees, and making the land on each side laugh with wine, corn, oil, fruit, nuts, and Walnuts, for we had reached the southern limit of the Barcelona Nut region. There was a good-sized town on its banks, Tortosa, After leaving the smiling valley of the Ebro we once more emerged on a barren, waterless region, with bleak, sunburnt rocks, watercourses without water, and a scrub vegetttion, principally Cbamcerops Palm and

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Lentiscus ; I think I may add Gorse, with here and there patches of miserable, half-starved cereals, Vines, and Olives, doing their best to live. We reached Tarragona, an old town formerly of great political

importance, with a good port, the commercial outlet of the large and rich valley of the Ebro. At Tarra-gona I was principally struck by the number of new houses and streets, the former tall and built in the French style, one most unsuitable to a warm climate, and by the destruction of the fortifications which was being actively carried on. The massive thick walls were being pulled down, and the deep moat filled with the stones and rubbish of which they are composed. No doubt such destruction is progress, but it makes the traveller muse to find it going on every-where on the Continent. Thus the olden times are passing away from us, and light and air are being let in physically as well as morally.

The next day we took the railroad that runs along the southern slopes of the Pyrenees to join the one from Madrid to Bayonne, and made a leisurely progress, sleeping at Lerida, Saragossa, and other towns on the road, so as to be able to study the country, its productions, and its people. I found the same agricultural and social conditions as in the central regions of Spain, Aragon, and Castille. The country is one rolling plain, presenting every variety and form of geological denudations, all but without trees, and principally cultivated with poor cereals on the fallow system.

The Spanish peasants think that birds eat the corn,

and that trees harbour birds, so they cut down the trees, and the country presents the character of endless, melancholy, treeless plains with a poor stunted cereal vegetation. Then, owing, no doubt, in part to the lawless condition of the country the agricultural labourers live in the towns, not in farms or villages, so that these plains seem lifeless, unpopulated. The passing traveller wonders who does the agricultural work he sees carried out. Thus I was told at Saragossa that out of a population of 70,000 more than 40,000 were agricultural labourers, who tilled the land for 10 or 15 miles round. They were miserably clad, appeared miserably fed, and were evidently spending a mere animal existence, whilst observing rigidly all the outer forms of their religion. In every one of these wretched towns there was a magnificent cathedral. Some, such as the one at Saragossa, are undescribably beautiful, thrilling, awe-inspiring. These towns give the traveller the key to the social condition of the middle ages, still perpetuated, partially at least, in these out-of-the-way regions of Europe. At the entrance of the town the frowning feudal castle, around the town the massive walls and deep moat, in the centre the magnificent cathedral. Between the two the peasantry and citizens, like Olives between two millstones in an Olive mill, crushed between the two, absorbed between the two. It must have taken centuries of their labour to con-

struct the double monuments, the castle and walls, the sumptuous, grand cathedral. To these poor souls the cathedral, with its sombre grandeur, its incense, its chants, its music must have always appeared a foretaste, an ante- chamber of heaven itself. The cathedral at Saragossa even had that effect upon me, the travelled, argumentative Anglo-Saxon.

For a hundred miles or more we followed the valley of the fibro, always seeing the same facts reproduced ; with irrigation fertility, without it sterility—all but barrenness. When along with water there was protection from the North, and the barometer showed that we were only some 500 feet above the sea, Olive trees appeared, and Vines became more numerous. We were constantly in sight of the Pyrenees sloping down to the south, with the higher summits still covered with snow (May 23), from whence came down wind still cold.

The vestiges of the late civil war were more decided than on the coast. In addition to the troopers at the stations we had before our eyes the evidence of past combats in the ruins of the stations. They had all been battered and destroyed by fire, and the station work was being done under sheds. Each station it appears had been a battle field, taken and retaken a dozen times.

As we approached the Atlantic the climate evidently changed, became less dry and scorching, moister. Trees, grass, pasturage appeared, a more careful system of agriculture, and numerous villages. We were entering into the Basque provinces, which are fertile, well cultivated, and populous. J. Henry Bennd, M.D., The Ferns, Weyiridge.

Influence of Trees and Plantations on Soil and Climate. — One of the greatest and most important objects to be aimed at in the improvement of property is to produce shelter, for all animals (not even excepting poultry) are fond of warmth and shelter, and do not thrive well without it ; and as our severest weather comes from the north and east these points should be best guarded and protected. In some cases summer as much as winter shelter is required, as in the case of stud farms ; when the horses are housed in winter, and only remain out in summer, and when a cold and stormy day occurs, as is common in our variable climate, they suffer much without proper shelter. Upon many upland and Highland farms the stock cannot remain out during winter, but have to seek winter shelter in more congenial places. When a wintering is sought for, it is valued more for its dry soil and shelter than for the herbage upon it, and nothing pleases the shepherd better than an old plantation where the stems of the trees are all cleared

of their dead and scraggy branches.

As the first and greatest of all improvements of land consists in drying it, draining is obviously the first thing to do, and may be done in various ways to suit the requirements of the case. Underground tile drainage is the best, both for arable land, pasture ground, and also plantation. But for the latter purpose the underground drains are objectionable on account of the roots entering and choking them, and for that reason open surface drains are often preferable, at least in extensive operations. Trees have a very absorbing and drying influence upon the ground, so much so, that when a piece of ground is planted that is termed wettish, in a very few years it becomes perfectly dry. This is eminently the case with soft mossy ground suitable for the growth of Norway Spruce, which is the best kind of tree to plant for the purpose of drying the ground, but has few other recommendations. While trees dry the ground very effectively when once they start growing freely, there is at first a difficulty in getting them to start growth, in consequence of the low temperature of the soil ; hence the frequent, if not general necessity for draining the surface, with shallow drains, before planting. The drying influence of trees is so slow and imperceptible that by many it passes unobserved, and they only come to see the amount of water that has either been absorbed by the trees and evaporated, or through

the shaking of their roots when the plantation is suddenly cut down. In cutting down a plantation two important results are produced, namely, the excessive heating of the soil in hot weather — I mean heating it beyond the temperature it attained while covered with wood, and soaking with water in the winter time in rainy weather. In confirmation of this view the late Lord Lovat, Beaufort Castle, told the writer that on one of his estates he used to creep while deer-stalking upon his hands and knees, through an extensive plantation quite dry and comfortable, and the first time he required to go over the same ground after the wood was cut down he would have required fishing boots, it being completely covered with water in many places, and all the ground very much wetter than he had ever seen it before. Now if cutting down a plantation so greatly increases its wetness in winter and dryness in summer it is evident that plantations keep the soil more uniformly dry, warm, and comfortable at all seasons than it would be without them. Another benefit arising from the planting is that of raising the temperature. Drying the soil is only another term for heating it, but I think there are other ways by which trees raise the temperature besides merely drying the ground. I have noticed that snow melts sooner in a plantation than outside of it, and if a certain quantity of snow is laid near the base of an old tree it will melt sooner than the

same quantity will at a distance from it or in the open field. The duramen, or heart-wood, of trees does not freeze. In cutting down old trees in frosty weather the heart-wood is as soft as at midsummer, but it is otherwise with the sap-wood, which becomes so hard at times as to resist the saw or axe. A dead tree is also warmer than a live one, until the former becomes soaked with water, when it becomes colder than the latter. Any one unfolded can tell from the touch which is the dead and which is the live

tree, and those who have studied the subject well can in like manner say from the touch which is the old and which is the young tree, assuming both to be healthy and growing.

A still further benefit from trees is that of opening the soil through the leverage of the stem over the roots during a breeze of wind. The upheaving of the soil amongst the roots is very considerable, and when the earth is thus opened and loosened heat and air are thereby admitted, to the great benefit of the trees and the heating of the ground.

Another advantage of planting is the strengthening of springs, probably not all, but many of them. I know of at least two springs which have greatly increased in volume as the plantations surrounding them have grown up, and both went dry soon after

the plantations were cut down. The shading of the ground by means of the branches and leaves prevents it from ever becoming unduly heated in summer, or cooled in winter. The soil amongst trees is drier and warmer than in the open field, but, at the same time, the grass in a plantation after dew or rain is wet for hours after it is dry outside the fence. Whether plantations do most good or harm to grain crops as such is a subject of dispute. They help to increase sparrows, and other small birds which devour grain ; they also encourage rabbits, which injure it. In late and wet seasons they prevent it from being harvested, and in some cases from ripening ; they prevent frost from leaving the ground on the north side of the plantation. The roots of the trees extend far and wide, rob the soil and choke drains. These and other complaints may be truly lodged against plantations, but, on the other hand, there is much ground that was not worth is. bd. per acre that is now letting at five times that amount, and at the same time bringing to perfection a crop of trees worth more than the ground they occupy. As various other important advantages arise from trees and plantations too numerous to denote at present, they must be left in abeyance and resumed in my next paper. C. Y. Michie, Culkn House, Cnllcn, N.B., ' September 8.

lame Camspnbente.

The Fruit Crops. — There are, I believe, more Apples in this neighbourhood than there was at one time thought to be ; but the fruit is in general small. Some kinds have very heavy crops, whilst others have little or no fruit ; even the same kinds have not crops alike in the same garden or orchard. One tree happens to be heavily laden, whilst another of the same kind growing close by has no fruit. Some trees here are heavily laden, others have partial crops, whilst some have no fruit. The following are the sorts of Apples bearing fruit here:— Four trees of Cockpit have an abundant crop ; one Cockpit, light crop ; one Improved Cockpit, an abundant crop ; one Improved Cockpit, moderate crop ; one Keswick Codlin, a good crop ; one Keswick, very light ; two Dumelow's Seedling, light crop ; two Yellow Ingestre, good crops : one London Pippin, a good crop ; one Lamb Abbey Pearmain, a good crop ; one Claygate Pearmain, a moderate crop ; one Yorkshire Greening, moderate crop, fruit small and some deformed ; two Wormsley Pippin, moderate crop ; two Hawthornden, heavy crops ; one Sykehouse Russet, a good crop ; one Old Nonpareil, moderate ; one Manks' Codlin, moderate ; one King of the Pippins, abundant ; one Sir Walter Blackett's Favourite, good ; one Ribston Pippin, a few fruit ; two Warner's Pippin, moderate ; two Court Pendu-Plat, moderate ; two, of a kind I do not know, good ; also one tree each of two sorts I

do not know, good crops. There are several trees with a few fruit and some with scarcely any. The nearest tree to the Keswick Codlin that has a good crop, is another Keswick that has no fruit ; then at no very great distance from the King of the Pippins tree that has an abundant crop, is another of the same kind that has very few fruit. There can be no question as to the injurious effects of the severe weather of the past spring on fruit trees whilst in bud and blossom, but the severe weather, in my opinion, was not the sole cause of the great failure of the fruit crops. I believe the great fall of rain in September and October last year also contributed to the failure of the crops — the wood and buds never got properly perfected and matured, and when the buds expanded in spring, being weak, they succumbed to the long continuance of severe weather. The Keswick Codlin and King of the Pippins that have crops this season had, if I remember rightly, very few fruit last year, whilst the Keswick Codlin and King of the Pippins that have little fruit this year had good crops last year. Several of the trees that have crops this season had very few fruit last year. The Cockpit is a well-known and a favourite Apple in Yorkshire, The tree

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is of a stiff, sturdy habit of growth, forms strong, close spurs, and is a most abundant and a very certain bearer. It is only a small Apple. The sort that I know by the name of Improved Cockpit is a much larger and ratter Apple than the Cockpit. The tree is of a vigorous habit of growth, and a great bearer, but the fruit does not keep very long. With me they generally decay rapidly in December, whilst the Cockpit keeps until January and sometimes through February. Pears are a lighter crop here than they have been for some years. On the standards there are only a few Beurr[^] Diel, Beurre Bosc, and Louise Bonne of Jersey. The pyramids are a great failure, only a few fruit on a Ne Plus Meuris, Bergamot d'Esperen, and one or two other sorts. Even on the wall trees this year the crops are very light. The following are the best here : — Two Easter Beurr[^], a good crop ; two Beuire Ranee, a fair crop j two Glou Mor[^]eau, moderate ; one Winter Nelis, moderate ; one Beurrd Diel, fair crop ; one Vicar of Winkfield, moderate ; one Hacon's Incomparable, moderate. There are a few fruit on some of the other trees. On

stem. M. LikhtUn. [Mr. Fitch sends us a tracing from his original drawing of the plant at Kew, which certainly does not indicate the habit described by M. Max Leichtlin ; moreover, the specimen from which the drawing was taken has been preserved, and this, Mr. Fitch tells us, shows leaves commencing a few inches from the ground, gradually decreasing in size upwards till they pass into bracts. The flowers produced were about 5 inches long, but native specimens show a spike with eight flowers, each 63 inches long. Eds.]

Strawberries. — In your excellent Fruit Supplement last week, after mentioning several varieties of Strawberry as good for growing, "Z." says if only one sort can be grown he would recommend that this should be the Viscomtesse Hericart de Thury. Allow me to give my experience of this year. Out of over 250 plants I did not get 2 quarts of fruit from the Viscomtesse, although there was a profusion of bloom — the spring frosts have cut them off! ; while from the Stirling Castle Pine, which is by some considered quaint with. It certainly would make a noble plant for massing in beds, singular in form and attractive in colour; a single plant will cover more space than a dozen Echeverias, equally handsome and far from being so commonplace ; it is of the easiest possible

culture, hardy and evergreen, or persistent in its foliage. Those who indulge in making carpets with plants should look out for this. Thomas UiliianiSy Ormskirk.

Autumn-flowering Iris. — Accompanying I send you a plant of *Iris ruthenica*, with a flower on it, which has been blooming for some time freely at ray grounds at Tooting ; at the same time last year it flowered in the same position. Paxton gives it as flowering in May, but it is evident that in this country its time of flowering is in September. It is a remarkably distinctive plant, forming a circle of fan-shaped foliage, and from the heel of each fan come one, two, or three flowers. We have had this plant in our possession for many years, but only succeeded in flowering it last year and the present, having

Fig. 75. — THE MANOR HOUSE, ROTHAMSTED.

Marie Louise, of which there are here several very fine healthy trees, there are very few fruit. Apricots have not been so scarce in this neighbourhood for some years. Peaches are also scarce here ; there are three trees that have a moderate crop — one Walburton Admirable (or what I have as that sort), the other two sorts I do not know. Plums, with the exception of Victoria, are very scarce ; here there are several trees of Green Gage, and I cannot see a single fruit on

any of them. The present and last year have been very bad ones for fruit growers in this neighbourhood.

Labour is dear, the crops have been light, and the importations from the Continent have been great.

The immense quantities of foreign fruit that come into the market keep down the price of home-grown, to the benefit of the consumer but to the detriment of the grower. M. Saul, Stourton[^] Yorkshire,

Lilium cordifolium. — Allow me to say that your artist has made a mistake in the portrait of *L. cordifolium* ; unlike *L. giganteum*, the stalk is not leafy, but rises bare to the height of 1 to 2 feet, and then six to eight leaves appear in a sort of rosette. This is one of the principal features in its distinction from *giganteum*, which is clothed regularly all along the

identical, I got over a quart to the root. But Sir Charles Napier was my best cropper. After many years of trial of a number of varieties, I should say that either of the two last, the former for choice, were the best when only one sort could be grown ; they are good in flavour and colour, and abundant bearers. So is the Viscomtesse, but so early that the late spring frosts spoil it, Harrison Wcir[^] Weirleighy Brenchky,

Euphorbia Myrsinites. — Perhaps no race or tribe of plants are more diversified in form and habit

than the Euphorbias. Many of them are so singular and grotesque that they appear to connect themselves with the vegetation of the coal period. They assume every possible shape and size, from the tree to the small annual. Many of the herbaceous forms are very handsome, and our native *E. Paralias* is no despicable plant, but certainly the most handsome of the herbaceous kinds is *E. Myrsinites*. I scarce know of a handsomer hardy plant than this : it throws up a number of stems about a foot long, densely clothed with bold, almost imbricated foliage, so decidedly glaucous as to be almost blue — the stem, close to the ground, giving the plant a strange, yet very handsome appearance, unlike any other plant I am ac-

changed the situation and the class of soil. At the present time it is growing in a bed between two lines of Poplars, and in a dampish part of the grounds. I send you at the same time some flowers of *Iris pumila*, which has been blooming tolerably freely for some time past with me. You will see from the specimens sent — some being over, others open, and others in bud — that the succession of bloom is likely to be continued for some time yet. P. Barr.

Flow of the Sap.— Seeing an article on this subject, I thought my experience bearing upon the same subject might be worth giving. About ten years since, I planted many young fruit trees, two of which

(Blenheim Pippin Apple) grew more freely than all the others, but neither of these two had any blossom from year to year. I was advised to root-prune them, and gave orders to a new gardener to do this. To my great annoyance he took upon himself to ring them, by cutting out the bark, about an inch wide, entirely round the collar of the stem, about 2 inches below the branches. I told him he had killed the trees. He was very indignant, and said he had done many so in his time, with great success. The next spring nearly every bud on the tree was a bloom, scarcely a leaf

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worth the name making Us appearance ; all the bloom dropped off without setting a single Apple. The next year there was a similar result, but very much more feeble, and the following year both the trees were quite dead. During this time the bark below the ring appeared to dry up, and became very thin, while that above the ring became much thicker, which appeared to me very extraordinary, and altogether to

suggest many points worthy of study to those who are interested in the subject. C, A.

Fruit of the Wild Rose.— The French have a mode of preparing the fruit of the Dog Rose as a confection for dessert and as a table sauce, but it requires a great deal of attention in consequence of the bristly hairs which line the interior of the hep. The hair and seeds have to be removed, and then the pulp has to be steeped in warm water or a little white wine for three days, until it is quite softened, when it requires bruising in a marble mortar with a wooden pestle and straining through very fine muslin or a close hair sieve. The sweetish, acidulous taste found in the pulp is said to depend on citric and malic acids. H. E. Waljicy.

The Potato Disease. — I have seen Mr. Worthington Smith's instructive illustrated contributions on the above subject. Beach Cottage having a seaside garden the care of the Potato plot there has enabled me to verify his painstaking researches. Thanks to the light of his revelation, the true nature of the disease is now discovered, but a remedy is one of the pressing wants of the time. Thinking often over Mr. Smith's investigations, the question has occurred to me several times to ask if the importance of their result might not be usefully extended over the

agricultural world and their good more widely known than they are ? I gladly lent the papers containing Mr. Smith's papers to both farmers and labourers as the best persons to be made acquainted with the welcome disclosures, but I am sorry to say with wretchedly unfruitful returns. I might as well have given them the Bible in the original tongue ; men don't like to be dumbfounded, and stubborn ignorance, ashamed, won't own its defects, so that my good intentions were baffled by bucolic stolidity and conceit, that, entrenched in old ways and self-love, refused to admit the innovations of science they could not understand. How slow is the progress of knowledge ! Believing, as I still continue to do, that the primal cause of the complaint is the coarse treatment of the root in its mode of culture, permit me to ask if it would not be possible to popularise Mr. Smith's well-tested observations and results, totally dismissing all hard words or scientific terms, and finding their equivalent in easily appreciated English names, or even local ones render his remarks comprehensible to all ? Such a work, I think, could hardly fail to be both individually and nationally common good, and "do yeoman's service," particularly if it laid the main stress on the value of insuring for the future a more cleanly and wholesome mode of culture? Unfortunately, the malady has become hereditary, and being established for forty years, its long malignant prevalence will be hard to eradicate or cure. My opinion is,

that throughout England, Scotland, and Ireland
the Potato is the victim of gross treatment,
by applying the manure to it in too direct a manner.
The Cornish mode of cultivation is as follows ; — The
workman digs a trench with a spade, and walks in
the cutting as he progresses. The result of his labour
is a shallow gutter, and, of course, detrimentally
trodden down and hardened with his feet, and in its
hollow the sets are placed at intervals, each part per-
haps fresh cut, with unhealed wounds on the sets ;
the dabs of dung (or manure of some sort) are placed
in the cutting, being smothered with corrupting fes-
tering filth, suggestive of a vegetable plague. I know
no plant that would stand such treatment and live,
and the wonder is that the Potato has not degenerated
before. In making the next parallel, the earth
that is dug out of the second groove is thrown
over the first, and that row is complete. The
manure used is a compound variety of all kinds
of refuse that the locality can furnish, putting aside
lime and guano as exceptional (though both are occa-
sionally applied). The following dressings are most
prevalent in the county. Deposits from muck-middens,
a collection of house contributions thrown out daily,
cinder-ashes, cow and horse dung, pig-dung, human
faeces, urine, soot, street or road sweepings, all left to
fester in a heap exposed to the sun ! Near the coast
seaweed is available, 'also sea-sand, often black and

putrid (sometimes shelly) decayed fish, and the salt sweepings of pilchard cellars ; all these ingredients dug in the ground and left to assimilate with it would be beneficial if put in three months before the plants, but applied to them when sown (as in the case of the Potato) the surprise is how the hardy tuber should have stood it so long. The result of my observations — unassisted by scientific research— is, that an impression has prevailed in my mind for some years that the evil of the disease is communicated by the Potato's early contamination with the manure, a deleterious applica-

tion of refuse, in which the root of no plant can be placed and survive — that is noxious to all vegetation, in the first festering fermentation of its decay, and in which ultimately, when its virulence has passed away, is shown its affinity for mildew and fungus, the first outgrowth of all mouldering corruption through the world. W. Bmane, Beach Cottage, Fowcy, Conramll.

Lapageria alba. — I have forwarded for your inspection a bunch of *Lapageria alba* flowers. I have occasionally observed clusters of four or five flowers together, but never one so large as the one I have sent you, and I shall be glad to know if such have before come under your notice. Its production I attribute to the vigorous health of the plant. I planted it nine years' since, together with one of the best variety of rosea, in a span-roofed house 20 feet

long, which have nearly ,covered the north side of the roof, and is now bespangled with these gaudy and strongly contrasted coloured flowers, the number of which can only be calculated by the hundreds and more probably thousands. It is a very general idea that alba is much more spare in its growth than rosea, which I do not find is the case when properly treated and careful vatching of the growths when emerging from the roots. We have some which come to the surface of the bed during last spring, which at first appeared exactly like real good stocks or heads of Asparagus, which are now 28 feet in length, and probably will in November have some dozens of flowers on them. R. Westcott, Raby Castle, Darlington. [A truly superb specimen. Eds.]

An Interesting Conservatory Plant : Kniphofia Macowani (Tritoma Macowani), — I have a large stock of these blooming in 4S and 60 sized pots, the plants ranging in height from 1 to 2 feet, and with graceful slender foliage. Looking at the batch this morning I could not help feeling that those who are fond of characteristic plants in their greenhouse would find this an acceptable addition at the present season. I have not yet planted any out-of-doors, but purpose doing so next season. Herr Max Leichtlin considers it hardier than Tritoma glaucescens, which has remained for many years in

my grounds without protection. It is a free. flowering plant, and, from what I have said, you may judge of its grand effect as a border plant. I send you here- with specimens of the flowers, that you may judge.

The beautiful rich soft orange spikes, with from twenty to fifty from an established stool, would be an object not to be despised in a mixed flower border, or associated with dwarf flowering shrubs in American borders or beds. P. Barr,

Mildevsr on Grapes. — A correspondent mentions, in the number for September i, having heard of a case where " scraping off the bark " of mildewed Vines — that is, in the following season — was a " perfect cure."

I have this season succeeded very fairly in saving a badly mildewed crop of Grapes in one house by wiping the berries about once a week for six weeks. The Grapes are quite saleable, and will be sold for the London market thus wiped. The bloom is gone, and they are not so large as usual, still they are ripening well, and are as fairly coloured this unfavourable season as many others not mildewed. I showed them to a good judge this week, to his immense surprise ; and one importer on a large scale smiled at the notion of much bloom remaining on any Grapes by the time they reached their destination. If mildew remains even for a very short period unnoticed on Vines it will stain the shoots, but in the older wood this would hardly be perceptible. Why not try wiping the berries

the moment you notice any mildew with soft muslin ?
If neglected, then wipe the leaves also and the wood.
By painting the canes and shoots in the winter, and
watching for any renewed symptoms next season,
there is no reason why mildew should not be stamped
out. Sudden draughts should also be avoided. These
dry roots, with a cold, damp inner temperature, favour
the introduction of this pest. Still there are mysterious
causes besides these as yet unknown. T. C. Brihaut.

Deutzia gracilis is a plant that is largely grown
for the London market, and though there are many
fine things that flower during the dull months of the
year, I find the commoner things when well done are
as greatly admired as the tenderest exotic, and a well
done *Deutzia* in any sized pot is a very interesting
object. In many places they are huddled together in
any out-of-the-way corner, on the half-starved system,
but when liberally treated, as they are by the grower
for market, they soon make lovely objects in their
wonderful 4-inch pots. They are easily propagated
by cuttings and layers, but provision must be made
according to the demand. If by cuttings, put as
many into a 4 or 6-inch pot as possible, harden well
off by May, shake all out of the pots, and plant them
in well prepared nursery beds ; if by layers, plant as
many stools as will supply the requisite number of
layers, peg the shoots all round the stock, next spring

take them up and plant in nursery rows, and treat as the cuttings : always replace those that are taken off by last year's growths ; this system gives good healthy plants. The next spring cut them all back to within 3 or 4 inches of the ground, and pinch them back twice during the summer ; the following February or March pot them in 4-inch pots in good loamy soil, and plunge in prepared beds of ashes or tan ; during the summer pinch any shoots that show signs of grossness, keep well watered, and as the season advances give occasional waterings of liquid manure. About the end of October the preparation for forcing begins, by getting as many as possible under cover from the drenching rains and frosts, introducing them in batches into a nice heat of from 45° to 55° , shutting up early with plenty of moisture till they begin to show flower, then move into a dryer and cooler house to harden off for market. When grown for private establishments they can be grown on the same principle into any sizes, by cutting well back as soon as done flowering ; give them a little heat to get a good break, harden well off, and plant out on prepared beds. By always keeping up a succession of young plants by cuttings or layers, it is not requisite to divide the old plants, which seldom give satisfaction. It is wonderful how long they can be kept in smallish pots, by plunging and liberal treatment. Lilacs, Primroses, Guelldres Roses, Callas, Cytisus racemosus,

Habrothamnus elegans, &c., do well on the same treatment. The three latter ought to be taken out of the plunging material about the end of September. The plunging system saves a great amount of labour in watering. R. W,

The Roseless Autumn. — I believe your correspondent, Mr. D. T. Fish, is right, and I speak from what I see as well as from what I hear. Letters from large and experienced growers are reaching me from all parts of England reiterating his remarks. The growth after the summer blooming has been generally fitful and uneven, and there are more wood-shoots than usual, and consequently less flowers. William Paul, Raid's Nurseries, Waltham Cross. [In our own experience summer roses were destroyed by spring frosts, autumn roses have been most abundant. Soil, ' Middlesex clay. Eds.]

The Colorado Beetle.— Ever since I saw the cut of the Potato-bug in the Gardajiers^ Chronicle of July 28, I have been wishing to say that it is in every way quite natural except that the artist was too sparing with the bugs, as we consider five or six perfect insects, with twenty-five or thirty larvaa (of different sizes) to the square inch, to be a fair average crop. But you will doubtless have abundant opportunity for observation in this line after his bugship has

established himself upon your shores. I suppose you await his arrival with considerable anxiety, but doubtless England will rise to a man to expel the invader, in which case (if every man does his duty) the victory will be an easy one. I see that Paris-green is recommended for their destruction. I am not aware of anything having been discovered up to this date that is as efficient ; 1 lb. of Paris-green to 25 lb. of rye or wheat flour, thoroughly intermixed and thinly sprinkled over the plants, is the usual method of application, and is much more economical both in time and material than mixing the Paris-green with water. Quite a large experience has taught me this. But this season I have adopted a still more economical method, as follows : — I have this season mixed Paris-green with common fine-ground plaster of Paris, in the proportion of 2 lb. of Paris-green to 250 lb. of plaster. This is applied to the plants by means of a fine flour.sieve, with a stick fastened across the top for a handle. This answers every purpose. It is fatal to the vermin, and every way satisfactory, and the advantages of plaster over flour are several : — 1, cheapness ; 2, being much heavier than flour it fixes the Paris-green, allowing none to escape on to the adjoining crops, and general safety in application ; 3, two or three such applications of plaster during the season becomes a valuable fertiliser to the land. I have applied it twice to our crops of Potatos, and have succeeded in making a thorough clearance of the bugs and larva

at each application. H. E. Chilly, Bellevue Nursery,
Patcrsoii, New fersey, U.S.A.

Hardiness of White-Flowered Plants. — I
came lately upon a rather noticeable instance of the
supposed superior hardiness of plants with white
flowers over the same varieties with coloured flowers.
I cannot say how far it is always the case. I
do not know that I ever observed it before,
though most flowers sometimes occur white. The
charming *Solanum Dulcamara* is I think rather
capricious as to soil, and here in Scotland it is
not very common, though it grows luxuriantly in
many places, but I have never seen it except near
the sea, or nearly on a level with it. But lately
passing for a good many miles through a corn
country, where I rather missed it in the hedges, and
certainly had not seen a single specimen, I was struck,
on reaching the top of a ridge, exposed to the winds

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Septejiber Z2, iS??.]

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as much as it could possibly be, and 200 or 300 feet above the sea some 5 miles off, to see the more sheltered bank of the road half-covered with the white-flowered variety of *Solanum Dulcamara*. I saw no signs of the common kind in the neighbourhood.

Striped Petunias Seeding. — I observe a query at p. 343 from a correspondent respecting the seeding of striped Petunias, My experience for several years has been that these Petunias are free seeders, especially towards the autumn after the plants have somewhat exhausted the soil and are making less growth. During September, especially if the weather be fine, they seed very freely. The striped forms having fimbriated edges, on the other hand, seed but sparsely, they make a very robust woody growth that is almost too luxuriant for the open ground except in poor soil. Striped Petunias, if a good strain, come very true from seed, and will make a most charming mass of mixed colours in a flower bed. A. D.

Sutton's Magnum Bonum Potato. — This Potato with me this season has withstood the disease better than any other variety grown here. A peck was purchased and planted in the ordinary way of field culture, making as many sets as possible. The crop was lifted to-day, and the produce from the 1 peck is about 5 bushels of large, handsome Potatoes,

and not a single diseased one was found amongst them. When cooked it is of first-class quality. In the same field, right and left of Magnum Bonum, are ten other sorts planted, and I should say, as near as possible, half the crop are diseased. In all I grow a little over 3 acres, and the other sorts less diseased are Early Don, an excellent Potato ; and the well-known Dalmahoy. Surely if any Potato will resist disease as Magnum Bonum has done, combined with productiveness and good quality, it is entitled to special notice and extended cultivation by all. Thomas Carlton^ Ashtcad Park Gardens^ Epsom,

The Potato Crop of 1877. — Having had continued rain since July 14 in North Wales, it seems to touch upon the old proverb of forty days* rain. We have had considerably more than that, but have during the last few days had splendid harvest weather. The Potato crops at this place are most extraordinary, many of Myatt's Prolific, Mona's Pride, and others, weighing a pound each ; but in all my experience of many years I never saw the disease so destructive as this year. It will be a very great loss to many of the large growers for market in the neighbourhood of Llandudno ; we see whole fields completely dried up in the foliage. The last week or ten days, it matters not whether on the mountain or in the vale, all appear the same. T. Capers.

Orchard-house Experience. — I have just read Mr. Brdhaut's very interesting article on Orchard-houses, p. 334, I also am among the ** early orchard-house workers." My trees came from Mr. Rivers in 1856, Mr. Brdhaut's houses appear to be not more than 15 feet wide, but he says, ** as to ordinary span-roofed houses, I consider those of Mr. Rivers as of the best dimensions — say, 100 feet by 30." He also states, " Cherries and Apricots are impossible, save in immense houses— they need too much air," While entirely agreeing with most of Mr. Brehaut's paper, I must demur to the last two propositions. I believe it to be true in practice, as it is in theory, that with most fruit the nearer the glass, and the freer circulation of air, the higher the flavour and the better health of the trees, and better setting of the fruit. The objection to narrow low houses is their little power of keeping out severe frost. I believe the best practice to be to have two houses, one for storing the more delicate fruit trees, such as Peaches and Nectarine?, the other for placing them to ripen their fruit. Our plan is this — we grow Peaches, Nectarines, Apricots, Cherries, Figs, Plums, Pears, and Apples, to say nothing of the Diospyros Kaku Almost all the trees are in pots, the first named five, except for a turn-out in autumn after the fruit is pulled, live in the houses, the others are only kept in till safe from frost, or, in the case of Plum?, put in in

wet weather, to prevent cracking. Our largest house is 60 feet by 20 in the clear, and 10 feet 6 inches high to the ridge-board, with raised middle bed as originally recommended. In this all the better-class fruit trees live, rather closely packed, through the cold weather. In the second house, 60 feet by 15, 6 feet 6 inches high to ridge-board, Plums, Pears, and Apples are huddled together till danger from frost is over, they are then turned out to make room for their betters. I believe in this low, narrow glass shed ; where all the trees are close to the glass, and where the air circulates freely through their leaves better results are obtained than in any wide, high houses, especially with Apricots. Our Cherry trees live in the larger house. They always bear well, and from their earliness are amongst the most popular of the orchard-house productions. I used to wonder that orchard-houses were not very much more general.

I believe the reason why they seldom succeed in great gardens to be this. They require hard, constant work and attention, and there is much less honour and glory attached to them than there is to the growing of Pines, forced Grapes, Orchid?, and stove plants, so a skilled, highly-trained gardener is apt to look down upon them. I believe the way to make them succeed is to put an under-man in charge, and lead him to take a pride in making a success. Our old trees, more than twenty years in pots, many of them

subjected in old days to experiments, chemical and mechanical, and of shapes of which the less is said the better, give regular crops. I only remember one failure, that was with a cold, sunless spring, when the blossoms did not set (a neighbour who had the dangerous luxury of a hot-water pipe turned on heat and got a crop). Some of the Pear trees have the base of their trunks more than a third the diameter of the pot. They have arrived at the full weight for a man and boy to carry, and so can have no further shifts. So far they are in perfect health. I have more than once heard orchard-houses called toys, but as long as in a cottage garden, where our orchard-houses are, we get more and better fruit than is produced in most large gardens, I shall continue to think them very satisfactory toys to play with, George F* Wilson.

Rainfall in North Derby. — I have thought that a copy of the register of rainfall here (N.E. Derbyshire, bordering on North Notts), from September 1, 1876, to the end of August, 1877, may be acceptable to your readers, which though not a chronological year includes 365 days, out of which on 230 days .01 inch or more rain fell. I will quote each month separately, the number of days on which .01 or more rain fell with the date and amount of greatest fall in twenty-four hours, and total for each month. The monthly average is 3.576 inches, or a little over

3i inches : —

September .

October

November

December .

1876.

Days.

January-

February

Llarch

April

May . .

June

July..

August

1877.

4- 59

2.12

3.82

7.C9

3-93

2.42

2.60

2.6g

3.24

2.01

2 93

5-41

In this exceptional season from seed-time to harvest the husbandman has had much need of patience for the fine weather, rather than **for the early and latter rain." The average summer heat, too, has been very low, which, following a very cold spring, has made harvest unusually late. In respect to fruit we have shared the common lot ; we had a good crop of Gooseberries and Curraats on bushes sheltered by orchard trees— though light, the latter are nearly bare of fruit, with two or three exceptions in Apples, Daches of Oldenburg, Nonsuch, and Wellington. We have a few Pears on walls of Passe Colmar and Jargonelle ; the latter bloomed and had set its fruit before the very cold frosty winds came that cut off a splendid show of bloom on most other sorts, which con-

firms what has been often noticed before, that the young fruit can withstand more cold than the blossom, especially if accompanied by wet. The Jargonelle being an early bloomer frequently gets cut off when later blooming sorts have a good crop. By way of supplement to the above account of rainfall, I may add that we have had up to the 14th inst. 3.31 inch of rain this month, of which 1.55 fell on the 2d. Harvest operations are consequently very much impeded. The disease in Potatos is developing itself very rapidly — some crops are nearly all bad. R, Kolfc'^ Cr., Sliiffyii'iUOjd Hall, mar MansficU,

Otias Of §00lvS.

Arboretum Segrezianum. Paris : Baillicre.

Under this title M. Alph. Lavallee has published a classified list of the trees and shrubs grown on his estate at Segrez, near Paris. The collection dates from 1S57, with the exception of a few fine old trees already in the park. The preface tells us of the difficulties experienced in grouping the trees and shrubs so as to place them in the situations best adapted for them. M. Lavallea's efforts have been rewarded by obtaining a nearly complete collection of all the species of trees and shrubs hardy in the centre of France. The total number of reputed species and varieties is estimated at 4267, not including mere garden varieties, of which about a thousand are grown. Of these

eighty-four are Monocotyledons, 4081 Dicotyledons, and about 160 have not been determined.

The nomenclature presented an enormous difficulty, and M. Lavalley tells us that in preparing specimens for the herbarium and for future identification, he found it the best plan to forget or to ignore the name under which he received the plant in question, keeping a record, however, of this name, the source whence obtained, the date of receipt, the place where planted, and other necessary details. In addition to catalogues and plans, each tree bears a provisional label, containing similar information, destined to be superseded by a permanent label when the correct name has been decisively made out. The difficulties which Lavalley has had to contend with in maintaining these collections in proper order are greater than those encountered in forming the collections. Without rigorous accuracy, continual revision, infinite precautions that each species should be represented by numerous examples, it would have been impossible to have preserved order amid so large a number of plants. In the formation of his arboretum, M. Lavalley has had the assistance of M. Herincq and of M. Decaisne, so that the correctness of the nomenclature may be relied on. An herbarium, a collection of books and plates relating to trees, a museum for specimens of

woods and fruits, have all been established at Segrez, and have resulted in the present catalogue, acknowledged to be imperfect, but likely to be of great service in promoting the correct nomenclature of trees, and in unravelling their intricate synonymy. Gardens and nurseries, says M. Lavallee, abound in imperfectly known species. Many reputed common do not exist in cultivation ; others, supposed to be rare, exist in profusion. Of these errors and misapprehensions M. Lavallee cites several instances which are familiar enough to all who make collections of living plants.

M. Lavallee brings a rather serious charge against quidques kortkulteurs of purposely changing the name of old and long-cultivated species, and applying to them some new name. We do not believe that such a practice is wilfully followed in this country, unless in quite exceptional cases. Another cause of complaint brought by the author against nurserymen is that if they are applied to for a particular species not in their collection, they do not scruple to send something else, possessing none of the attributes of the required species but ;the name ; thus in a plantation of twenty-six noyers (Walnuts) only two were correctly named,

M, Lavallee gives some interesting details relating to former collections of trees and shrubs in France. One of the most remarkable was that of Rene du

Bellay, Bishop of Mans, established at Towvoye, and which formed the object of the praise of the botanist Gesner. This collection owed much to Pierre Belon, a physician and traveller of the period (1555). Of these collections not a trace now exists, and even the records of the bishopric were destroyed in the first French Revolution. From the mention of this the first arboretum in France the author passes on to the history of the Jardines Plantes (which has been given in our columns) and to that of several other establishments, devoting, as is most due, some little space to the labours of Duhamel. The arboretum formed by this noted arboriculturist was situated at Vrigny and de Monceau, His brother at Denainvilliers seconded his efforts, so that in 1755 appeared the first instalments of the TraiUdes Arbres d ArbusUs qui sc adtrrnS en Fraiicc—B. work not completed till fifty years later by Loiseleur-Deslongchamps, but a veritable monument of French learning and industry. Passing over other names and establishments of minor interest to us on this side of the Channel we come to the names of Michaux, whose work on North American trees is still of very great value. The Michaux, father and son, introduced a large number of American trees to France, In iSio De Vilmorin established at Des Barres an arboretum comprising some 260 species suitable for forestry purposes. This collection is now the property of the State. About the same time the

great tree nurseries of Audibert at Tarascon, Bau-
raann of Bollwyller, Andre Leroy at Angers, and
Simon at Metz, were established. Incidentally the
author laments the too frequent dispersal of private
collections at the death of the founder, and to more
than one the epithet *saaa^c^* during some political
disturbance or other has unfortunately to be applied.

M. Lavallee's sketch of the history of arboriculture
apphes almost exclusively to those in the neighbour-
hood of Paris, or at such a distance from the metro-
polis as to enjoy a similar climate. From what we

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have said it will be seen how much of interest attaches
to the details given by M. Lavallee, an interest so
great that we could wish M. Lavallee would expand
the brief sketch here j^iven, and publish a general
history of French arboriculture, using the word in
the sense in which it is employed in this country. Of
the intrinsic merit of such a list as M. Lavallee has

given us there can be no two opinions — each species mentioned, with the authority for the name, the native country, and the synonyms. Use, not mere casual inspection, must determine the relative value of this catalogue, but it is] quite certain that all tree lovers owe a debt of gratitude to the compiler for this valuable list. Incidentally we may remark that *Vitis Weitchii* {sic} was published in these columns soon after its first introduction. It is the *Ampelopsis tricuspidata* of Siebold and Zuccarini, and the *Ampelopsis Veitchii* of the nurseries. *Cissus Roylei*, often confounded with it, is sufficiently distinct in character, and comes from a different country. Under *Acer* we find no mention of *A. Schweidleri*, under *Pyrus* or *Eriobotrya* no mention of *P. Maulei*, under *Vitis* no mention of *orientalis*, under *Quercus* no mention of *Q. pannonica*, under *Thamnocalamus Falconeri* no hint is given that this is the plant generally, but incorrectly, known as *Arundinaria falcata*. *Q. nobilis* should be referred to *Q. nigra*. The references to figures and descriptions are also not so numerous as they might be, A more complete search through the horticultural and botanical publications would have enabled the author to add many more citations and references to figures, and which would have considerably augmented the value of his catalogue.

Taking it, however, as a whole, we can but express the gratitude of lovers of trees and shrubs, and trust

soon to see a reissue in a more complete form.

Sioch and Share Investments, By Albert Shar wood.

Bazaar Office. — A little pamphlet containing just the information that is required by small investors, and which, if perused, may save much disappointment, not to say misery.

Publications Received. — Scotch Live Stock, by James Bruce (Edmonston). — Victorian Year-Book[^] for 1875, — The Clematis as a Garden Flower, new' edition, by Thomas Moore and George Jackman. — Journal of the British Dairy Farmers' Association, — The Royal Guide to the London Charities for 1877, by Herbert Fry. — TheTannahiU Bouquet, by William Elder, — Le Journal des Roses.

Reports of Societies.

Brentwood Horticultural: Septemher 6. — This society held their autumn exhibition in the grounds of Hampton House, by kind permission of the liberal proprietor, W.A. Ogg, Esq., who also lent his grounds for the spring show. The competition was generally abundant and the productions good. Especially pleased were we to see the numerous vegetables staged — and that more particularly in the cottagers' classes. Prizes which were offered for "miscellaneous stove

and greenhouse plants, foliage plants, and Ferns, arranged for effect," were won by collections of plants far beyond the average in such classes. Here instead of massing for effect somewhat small plants in groups, as is generally done, the competition was carried out in each instances with the best specimen plants arranged single and in two rows, as is the case when a given number of stove or greenhouse plants are asked for. D. McIntosh, Esq., Havering Park (gr., Mr. W. Bones), won the 1st prize, having excellent specimens of *Eucharis amazonica*, *Eougainvillea glabra*, *AUamandas*, *Erica cemula* (an excellent specimen), Ferns, &c. Major-General Fytche, C.S. I., Pyrigo Park, Havering (gr., Mr. Lane) was a good 2d, with amongst others a fine specimen and well bloomed of *Phcenocoma prolifera Barnesi*, *Croton undulatus*, *Adiantum farleyense*. Palms, &c. W. A. Ogg, Esq., Hampton House, was also a very excellent 3d, his plants being larger, though both the 2d and 3d prize plants were greatly wanting in flowers compared with their more successful compeer. Mr. Rank, Brick House, Rainham, staged some thoroughly well bloomed doflble Zonal Pelargoniums, The six Pelargoniums for beauty of foliage brought out some splendid collections, all of which were of a very high order of merit. Mr. Meadmore, Romford, was placed ist — Messrs. T. Hill, Brentwood (W. North, gr.), and Saltmarsh, Chelmsford, being respectively 2d and 3d, Fuchsias were well

shown by W. A. Ogg, Esq. (Mr. Wise, gr.). The best arranged baskets of pot plants were won by the three nurserymen, Messrs. Saltmarsh, Ford, and Meadmore, in the order here given.

Cut flowers were very numerous and good. For

twenty-four Dahlias, Messrs. Saltmarsh (1st) and Rawlings (2d) deserve every praise, their stands being very highly finished, Mr. Rawlings had the largest blooms, but the finish of those of Messrs. Saltmarsh was so good as to warrant the award. Mr. T. C. Quennell, of Brentwood, won the 3d prize well as an amateur. For twelve Dahlias, Messrs. Quennell, E. Mitchell (W. Harrington, gr.), stood respectively 1st and 2d. Mr. Atkins, Warley, was 1st with Roses, good for the season. For twelve Asters, quilled and not quilled, respectively, Messrs. Saltmarsh received 1st prizes. Their stands were splendidly grown and staged. Messrs. Harrington and Atkinson had the best amongst amateurs. The best basket of cut flowers came from Mr. Quennell, showing real taste in arrangement. The winners of the Maiden prizes for vase of cut flowers were, the Misses Wise 1st, and Soder 2d. For the prizes offered for table decorations (open) Mrs. Burley showed a splendid arrangement. Using more flowers than is customary, her display, though light and elegant, was

one of the gayest we have yet seen, yet being within the legitimate margin of taste without overcrowding. Mrs. Bailey, Brentwood, was an admirable 2d ; indeed, for an amateur, we have rarely seen better taste displayed, the only fault, if any, being that the flowers used were somewhat too dull. This the best taste possible failed to neutralise. Miss Haws won the 1st prize for bouquets.

Fruits were tolerably numerous in all but Melons and Pines. For best collection of six kinds. Pines excluded, D. McIntosh, Esq., was 1st, Major-General Fytche being 2d ; the Grapes in Mr. Bone's collection being large in bunch. Major-General Fytche also carried premier awards for black Grapes and Muscats. Fine Peaches were shown by Mr. Clark, Figs and Plums by Mr. Constable, a grand dish of Cox's Orange Pippin Apples by Mr. T. Simpson, Chelmsford, &c.

For a collection of nine sorts of vegetables Mr. J. Rank was 1st, and for six sorts Mr. Soder — the Onion?, for weight, of the latter exhibitor being very fine,

Mr. Burley, nurseryman, Brentwood, received an extra prize for a large collection of plants, including large baskets of the chaste new Pelargoniums Miss C. Quennell, white variegated foliage, and light blooms with salmon eye ; Boadicea, similar in habit, &c. ;

Mrs. Hanbury, and the popular Snowdrift. W. E,

Wellingborough Horticultural : Sept. 7. —

This, one of the great centres of the shoemaking industry, dressed itself out with becoming taste on the occasion of the above exhibition ; archways were thrown across the street, and many of the houses put on quite a festive appearance. It was held in a field in the town, and a thoroughly good show rewarded the labours of the promoters.

In the classes open to all England, stove and greenhouse plants were nicely represented, the lateness of the year considered. The best group of twelve, for which a handsome 1st prize of £10 was offered, came from Mr. J. Parker, nurseryman, Rugby, who had *Statice imbricata*, *Vinca alba*, *V. rosea*, *Dipladenia amabilis*, *Clerodendron Balfourianum*, *Allamanda Hendersoni*, *A. Schottii*, *Cycas revoluta*, *Allamanda nobilis*, &c. 2d, Mr. J. House, nurseryman, Peterborough, who was strong in fine-foliage plants, but generally weak in those in bloom, the best specimens being *Phormium tenax variegatum*, *P. Colensoi variegatum*, *Croton interruptus*, *C. pictus*, *Allamanda Hendersoni*, and *Latania borbonica*. In the class for six foliage plants Mr. House was 1st and Mr. P. Daventry 2d. With six Palms — very fair examples of good kinds — Mr. Parker was 1st and Mr. House 2d. With

six new plants Mr. J. Parker was placed 1st, with *Cupania filicifolia*, *Ixora Williamsii*, *Phyllanthus nivosus*, very nicely variegated j *Croton majesticus*, *C. Youngi*, and *C. Weismanm.* 2d, Mr. J. Jackson, Blakedown Nursery, Kidderminster, who had *Croton Weismanni*, *C. Disraeli*, *C. Voungi*, *Cocos Weddelliana*, *Livingstonia Jenkinsi*, and *Aralia elegantissima*. Exotic Ferns, as well as hardy kinds, were moderately shown.

In the cut flower classes, Mr. W. Corp, nurseryman, Oxford, set up a stand of forty-eight Roses of excellent quality from the seedling Brier, and it would appear that if autumnal Roses are to be had this stock must be mainly relied on for the purpose. The best flowers were *Madame Hunnebelle*, *Sir Garnet Wolseley*, *Madame H. Jamain*, *La France*, *Due de Rohan*, *Pierre Notting*, *Belle Lyonnaise*, *Marie Finger*, *Madame Laurent*, *Marie Rady*, *Paul Ndron*, *Avocat Duvivier*, *Fran9ois Michelon*, *Horace Vernet*, *Beauty of Waltham*, *Star of Waltham*, and *Marie Van Houtte* ; 2d, Mr. J. Bond, with some very fine flowers. Mr. Cross was 1st in two other classes, and in that for twelve Tea-scented and Noisette Roses he set up very charming examples of *Marie Van Houtte*, *Bouquet d'Or*, *Madame Bernard*, *Belle Lyonnaise*, *Devoniensis*, and *Louise de Sarvie* among others. The best thirty-six Dahlias came from Mr. P. Painter, Smallwood, and included fine blooms of *Annie Dele-*

vante (large white). Criterion, Vice-President, Mr. Saunders, Royal Queen, Perfection, Yellow Globe, and Royal Purple ; 2d, Mr. W. Jackson, Kidderminster ; 3d, Mr. G. H. Feukes, Erdington.

The other divisions of the schedule were, to a great extent, a repetition of the foregoing classes, but as far as the exhibits v/ere generally concerned in descending scales of quality ; but a good effect was secured, and the four commodious tents were completely filled.

The best collection of six dishes of fruit came from Mr. G. Day, Daventry, and consisted of good White Muscat and Black Hamburgh Grapes, Peaches, Nectarines, Melons, and Morello Cherries ; 2d, Mr. W. Watts. Mr. Day also had the best three bunches of white Grapes, consisting of Duke of Buccleuch, Bowood Muscat, and Muscat of Alexandria ; and the best three bunches of black Grapes also, in Black Hamburgh, Alicante, and Lady Downe's.

The best collection of eight kinds of vegetables came from Mr. T. Eads, gr. to J. Becke, Esq., Northampton, and consisted of fine Cauliflowers, Carrots, Beet, Turnips, Porter's Excelsior Potatos, Onions, and Cucumbers — a remarkably good even lot ; 2d, Mr. G. Day, with a very good lot also ; and the

six collections staged in this class were highly credit-
able. In all the classes vegetables were finely shown.
An extra prize was awarded to Mr. T. Eads for an
excellent collection of ten dishes of Potatos, consisting
of Fenn's Perfection, Snowflake, International Kidney,
very fine ; Bountiful, Waterloo Kidney, King of
Potatos, Model, Emperor, Porter's Excelsior, and
Schoolmaster.

Hardy fruits were well represented, the culinary
and dessert Apples being remarkably good. A pretty
Apple, named Lord Lennox, was much shown as a
dessert variety.

Collections of wild flowers were in pretty bunches
of distinct sorts, shown as they should be. Bouquets
of wild flowers were also very attractive. Collections
of Grapes were similarly shown as the wild flowers,
and two sisters, Ellen and Emily Coles, had the lead-
ing prizes in both classes. Designs in wild flowers
were in the form of gardens to villa residences.

Factory Hands* Flower and Vegetable Show
at Guide Bridge. — We are again able to speak in
terms of commendation of the results of the cottage
horticulture set on foot some few years ago by Mr,
Hugh Mason in connection with his great cotton
mills at Guide Bridge, 7 miles from Manchester.
Closely adjacent to the mills there are more than a

dozen nice little gardens, separated by hedges and paths, and let, at a merely nominal rent, to such of the workpeople as have an aptitude for the cultivation of flowers and vegetables, and who through good conduct or long service are entitled to claim priority in the privilege of possession. The most cordial encouragement is also given to the cultivation of pot plants in the windows of the workpeople who live around, so that on approaching the mills the spectacle of domestic leaf and flower is most refreshing. Why cannot every great mill-owner in the country follow this good example ! If it were only for appearance sake how much good might be effected by the placing in every cottage parlour in the land of some pretty flowering plant, or little shrub. A flower in the window sweetens the air, makes the room look graceful, gives the light of the sun as it shines through it a new charm, and helps to develop love of neatness, cleanliness, and order.

Mr. Hugh Mason's factories are called the Oxford Mills, and familiarly, in the neighbourhood, Oxford, The Oxford gardeners, with others of the workpeople who reside near, and who have independent gardens of their own — the latter formed under the inspiration of what is done close to the mill?, have constituted themselves into a little horticultural association, not with a view to any public display, but

purely for the sake of good fellowship and co-operation. Under Mr. Mason's influence every year, about this time, a show is held of the best of the produce, both garden and window, and very pretty and creditable the display has always been. The show is held in the lecture-room of the Oxford Institute, which building, we may remark, erected by Mr. Mason at his own cost, is one of the completest things we know of in regard to its providing for every kind of rational human want. There is a capital library, with news-room, of course r there are baths also, and at a little distance, in outdoor supplement, there is a spacious drying-ground for the women who work in the laundry, and a bowling-green for the men. The whole place has an air of cleanliness, neatness, and finish, such as it is seldom our good fortune to meet with in the neighbourhood of a large manufacturing establishment. The current year's show came off on Saturday, September i, and was quite equal to any of its predecessors, though in some respects declaring only too plainly the hurtful character of the recent weather. Not to mention the incessant rain, the Oxford gardeners have this year had an uncommon plague of caterpillars. The most effective of the vegetables were the Cauliflowers, all very good and meritorious. It was natural, however, that the greatest amount in prizes should go to a vegetable of humbler description — ^the immemorial

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Onion, which wa? excellently done both in purple and white. Besides these, there were Potatos, Greens, Carrots, Peas and Beans, Cucumbers, salad plants and seasoning herbs. The Oxford gardeners, of course, cannot have it all their own way. They succeed least satisfactorily peihaps with their Peas. Gardening, wherever carried on, like all other human enterprises, of course, has its failures and disappointmentF. It tries not only one's powers of perseverance, but one's patience and one's faith. Still, in the most ill-favoured of localities, and in the worst of seasons, there is always plenty to rejoice in, and more that gratifies than disappoints, and this we take to be one of the best facts or principles connected with the promotion of horticulture for the million, especially in and near our great manufacturing centres. The trials, the hopes and fears, the rewards and discomfilures connected with gardening, constitute a very salutary part of education; and as the truest and best results of education, rightly so-

called, are shoven in men becoming more manly and self-reliant, more content and more generous, it follows that a garden is one of the best schools of moral discipline. A cottage garden is not only a course of wholesome vegetable good, it does good to a man's whole character. The prizes awarded at Oxford consist, not of money, but of useful household articles, rocking-chairs, kettles, knives and forks, &c. , so that all in the family may participate. This is very wise, as it shows to all the home circle that the idea of a garden is never intended to be selfish and exclusive, but in one way or another promotive of the pleasure and welfare of all who are connected with it. The idea of a selfish garden is one of the most shocking and inconsistent things in the world. Every man, of course, has a right to do what he likes with his own — provided he likes to do with it what is right, and that which is right can never be done with a garden if, in one way or another, God's good gifts, as displayed in it, are not opened to the enjoyment of many. The window plants comprised chiefly Fuchsias, Pelargoniums, Vallotas, Agapanthus, and Japan Lilies, all very pretty and delightful to look at, the more so because so certainly the recipients of plenty of human care, for that they had been tended well-nigh as carefully as a child was quite evident. Herein is found another good use of cottage window-

gardening — it tends to awaken kindly sympathies, and with these to improve the taste. The cut flowers consisted principally of Dahlias, scarlet Gladiolus, Asters, Antirrhinums, and French Marigolds, with a sprinkling of Carnations. A tray of Roses, from somewhere close by, was also very creditable. Fruit, of course, could not be expected in quantity. Some of the Oxford gardeners have little greenhouses, in which they manage to raise a few Grapes. We would recommend them, with the kindest recognition of their industry and their desires, to try instead of Vines a Marcchal Niel Rose, for the blooms of which they would find a good market in the town, and thus add to their pecuniary profit. For the sake of decoration, Messrs. Taylor Bros, sent 150 ornamental tender plants ; and Mr. John Shaw, jun., of Bowden, a quantity of Palms and Cycads.

The Oxford Institute supports a band, which at intervals "discoursed sweet music;" and at an appropriate hour an address was given by Mr. Leo Grindon, of Manchester, on the origin, history, &c., of the best descriptions of fruits at present cultivated in Great Britain. We cannot speak in terms too high of the practical value of the work thus set going by Mr. Hugh Mason, with results already so marked. The example is worthy of imitation wherever an employer has generous instincts, and if it cannot be carried out on a scale[so extensive as at Guide Bridge,

it can at all events be tried on a smaller one, improving and extending by degrees.

Prizes are given, we must not forget to add, for the neatest and best-kept gardens. They were awarded, on this occasion, to Wm, Whittaker, Joseph Bridge, and Thomas Moss, Commendation was also given to J. A. Isherwood, {From a Correspondnt.)

Stevenage Horticultural Society : Sept 14 —

The usual autumn exhibition of this Society took place in the Town Hall on the above date, and was one of the best exhibitions the Society has held for some time past. Particularly does this remark apply to the cottagers' produce, which is the more satisfactory as the real object of the Society is to give encouragement to the many cottage and allotment gardeners in Stevenage and the surrounding villages covered by the operations of the Society. The cottagers' productions as a whole were in advance of those shown by amateur and professional gardeners.

In the class for a single plant in a pot not less than twenty-two plants were staged ; the best was a remarkable Hydrangea, showing indisputable signs of window growth — a large, well-grown, healthy, clean, bushy plant, having seven large trusses of bloom. This came from Henry Bildry. Next in importance

came some good specimens of *Vallota purpurea* in bloom, *Fuchbias*, *Coleus*, a well-grown *Gladiolus* in a pot, &c. The collections of wild flowers arranged with taste were remarkably good ; and the sauce and table Apples excellent. The basket of mixed vegetables shown by W. Hough, to which the 1st prize was awarded, was some way in advance of those shown by amateurs. The cottagers' vegetables were remarkably good, and, with the exception of the Vegetable Marrows, were such as any gardener might have sent to his employer's kitchen.

In the amateurs' and general classes the leading exhibitors were Colonel Metcalfe, C. B., Ashton House ; the Rev. J. O. Seager, Stevenage ; the Rev. J. F. G. Jenyns, Knebworth ; the Rev. J. E. Pryor, IJennington ; Lieut. -Colonel Wilkinson ; Mr. G. H. Smith, Stevenage; G. Salmon, Esq., &c. The Rev. C. E. Segar had the best basket of fruit as well as the best bunch of Grapes. Mr. G. Salmon's stand of twelve Dahlias was highly creditable, and the Asters from Colonel Metcalfe, C. B., remarkably good.

Dessert and culinary Apples were numerous and fine, and in the former the Rev. W. Jowitt staged a good dish of Early Codlin. Among vegetables, Potatos and Celery were specially fine.

The plants comprised miscellaneous groups, also Fuchsias, Coleus, Balsams, &c. ; all fair for a locality in which outdoor rather than indoor gardening appears to be most generally followed.

A leading feature is the baskets of mixed vegetables in the general class. On this occasion the best came from G. Salmon, Esq., and second best from Captain Fellowes. We were sorry to learn from the active honorary secretary, Mr. George Dunn, that the necessary support to maintain two exhibitions yearly is declining. The Society depends mainly on annual subscriptions for support, for the proceeds in the way of gate-money are very poor indeed ; and it would be a decided calamity were the shows to be discontinued through lack of public support, for they have done much to improve the social position of many of the cottagers.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

For the Week ending Wednesday, Sept. 19, 1877.

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Sept. 13. — A (lull, stormy day. Occasional slight rain. Gale at times,

— 14. — Overcast, dull, and windy throughout. Slight

shower of rain at 2 p.m.

— 15. — Generally fine, dull at times. Showery in morning.

— 16. — Dull and foggy till 11 a.m., fine and bright after.

Cool.

— 17. ^Fine, but dull and cloudy. Cool breeze.

— 18. ^A fine day, partially cloudy. Cold.

— 19, — Overcast and dull throughout. Few drops of rain

at 5 r. M.

London: Barometer. — During the week ending Saturday, September 1st, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.99 inches at the beginning of the week to 30.04 inches by the morning of the 10th, decreased to 29.75 inches by the afternoon of the 11th, increased to 30.03 inches by noon on the 13th, decreased to 29.80 inches by the morning of the 15th, and increased to 30.15 inches by the end of the week. The mean reading for the week at sea level was 29.95 inches, being 0.07 inch below that of the preceding week, and 0.13 inch below the average.

Temperature. — The highest temperatures of the air observed by day varied from 71° on the 11th to 72° on the 10th and 15th; the mean value for the week was 66½°. The lowest temperatures of the air observed by night varied from 49° on the 9th to

59° on the 14th; the mean for the week was 53°.

The mean daily range of temperature in the week was 12½°, the greatest range in the day being 18° on the 11th, and the least 7½° on the 15th.

The mean daily temperatures of the air, and the

departures from their respective averages, were as follows: — 9th, 56°.7, - 1°.4; 10th, 56°.2, - 1°8; 11th, 60°.6, - 2°.8; 12th, 59°.3, + 1°.7; 13th, 58°.3, + 0°.9; 14th, 61°.6, + 4°.4; 15th, 59°.2, + 2°.1. The mean temperature of the air for the week was 58°.8, being 1°.2 above the average of sixty years' observation?

The highest readings of a thermometer with blackened bulb in vacuo, placed in sun's rays, were 128° on the 9th, and 114° on the 12th; on the 14th it did not rise above 71°4'. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 45° on the 11th, and 45° both on the 9th and 13th. The mean of the seven low readings was 48°.

Wind. — The direction of the wind was variable, and its strength brisk. The weather during the week was dull, and the sky cloudy.

Rain fell on four days during the week; the amount measured was 0.17 inch.

England: Temperature. — The highest temperatures of the air observed by day were 72° at Cambridge, and 71° at both Blackheath and Nottingham; the highest temperature at Bradford was 62°; the mean value from all stations was 67°. The lowest

temperatures of the air observed by night were 40° at Cambridge, 41° at Hull, and 41½° at Eccles; the lowest temperature at Truro was 53"; the general mean from all stations was 47°. The range of temperature in the week was the greatest at Cambridge, 32", and the least at Plymouth, 12^°; the mean range of temperature from all stations was 20°.

The mean of the seven high day temperatures was the highest at Cambridge, 69", and at Blackheath and Norwich 66½°, and the lowest at Bradford, 60°; the mean value from all stations was 62½°. The mean of the seven low night temperatures was the lowest at Eccles, 48:½°, and Wolverhampton, 49^°; and the highest at Truro, Brighton, and Plymouth, all 56°; the general mean from all stations was 52°. The mean daily range of temperature in the week was the greatest at Cambridge, 18½° and the least at Plymouth, 55; the mean daily range from all stations was 11½°.

The mean temperature of the air for the week from all stations was 56^°, being 51* higher than the value for the corresponding week in 1876. The highest was 59^°, at Brighton, and the lowest 54!°, at "Wolverhampton and Bradford.

Rain fell on four or five days in the week at most

stations. The amounts varied from 2 inches at Hull, and 14 inch at Bristol and Plymouth, to one-tenth of an inch at Norwich ; the average fall over the country was 1 inch.

The weather during the week was generally dull and showery, and the sky cloudy. Lightning was seen at Liverpool on the nth inst.

Scotland : Temperature. — The highest temperatures of the air observed by day varied from 67° at Edinburgh to 62° at Perth ; the mean value from all stations was 64°, The lowest temperatures of the air observed by night ranged from 35° at Paisley to 42° at Greenock ; the mean from all stations was 39°. The mean range of temperature from all stations was 25.1°.

The mean temperature of the air for the week from all stations was 54°, being 3° higher than the value for the corresponding week in 1876. The highest was 55°, at Glasgow, and the lowest 53° at Paisley.

Rain. — The falls of rain varied from 2. inches at Greenock to six-tenths of an inch at Edinburgh, Aberdeen, and Leith. The average fall over the country was 1 inch.

Dublin. — The highest temperature of the air was 67°, the lowest 40:f°, the range 27", and the mean 574°. The fall of rain was 1. 16 inch.

JAMES GLAISHER.

Variorum,

Prices of Timber in Kent. — The annual sale of Oak timber, blackrinds, and Oak-top faggots upon the Surrenden-Dering estate, in the parishes of Pluckley, Little Chart, Smarden, Westwell, and Bethersden, took place on the 26th ult., when about 150 lots were submitted to public competition by Messrs. Bayley & Son, of Ashford. The timber was not of the class usually offered on this estate, as most of the last winter's falls of underwood, from which the thinnings are made, were upon the inferior woods of the estate. The company was, however, a large one, and the sale correspondingly brisk. The Oak limber ranged in price from 1s. 6d. to 2s. 6d. per foot ; blackrinds from 2s. 6d. to 9s. each ; and Oak -top faggots from 25s. to 30s. per 100. The terms of pay-

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tSEPTEMBfeR 22, 1877,

ment in this locality are, for purchases of less than
 ;^5, prompt cash ; ;^5 and upwards, half the purchase-
 money at the time of the sale, and the remainder early
 in October. The demand for timber of all kinds has
 been good throughout the season. Hop-poles have
 not, however, attained the prices of former years.
 Norwegian Fir poles, so extensively used in the best
 Hop plantations for lows, and for carrying the wire
 and string now employed in Hop-growing, have com-
 manded very high prices upon the Maidstone and
 Faversham wharves. Ordinary home-grown hop-
 poles have realised from loj-. to 36J'. per 100, accord-
 ing to length and quality of wood. Ash and Sweet
 Chestnut have been much sought after. A. J. i>., in
 " your nal of Forestry . "

Phenomena of Life. — Sufficient knowledge has
 now been acquired of vital phenomena, to justify the
 assertion that ihe notion that there is anything excep-
 tional about these phenomena receives not a particle
 of support from any known fact. On the contrary,
 there is a vast and increasing mass of evidence that

birth and death, health and disease, are as much parts of the ordinary stream of events as the rising and setting of the sun, or the changes of the moon ; and that the living body is a mechanism, the proper working of which we term health ; its disturbance, disease ; its stoppage, death. The activity of this mechanism is dependent upon many and complicated conditions, some of which are hopelessly beyond our control, while others are readily accessible, and are capable of being indefinitely modified by our own actions. The business of the hygienist and of the physician is to know the range of these modifiable conditions, and how to influence them towards the maintenance of health and the prolongation of life ; the business of the general public is to give an intelligent assent, and a ready obedience based upon that assent, to the rules laid down for their guidance by such experts. But an intelligent assent is an assent based upon knowledge, and the knowledge which is here in question means an acquaintance with the elements of physiology. It is not difficult to acquire such knowledge. What is true, to a certain extent, of all the physical sciences, is eminently characteristic of physiology — the difficulty of the subject begins beyond the stage of elementary knowledge, and increases with every stage of progress. While the most highly trained and best furnished intellect may find all its resources insufficient when it strives to reach the heights and penetrate

into the depths of the problems of physiology, the elementary and fundamental truths can be made clear to a child. Professor Huxley in- the *^ Sociriy of Arts' journal"

©nquirtes*

He that questioKstk 7/iiech shall leay-K much. — Bacon.

205. Cordons. — Will any of your correspondents kindly favour me wiith their experience as to the angle at which Pear trees are best tiained to wires in diagonal cordons ? I observe Mr. Rivers, in his Catalogue of Fruit Trees, 1076, fig. 5, p. 4, has a woodcut showing a tree trained at an angle ot 45[^]; while further on, p. 39, fig. 23 shows two trees trained at an angle of 60°. My trees have been planted and stood a few years at an angle of 60° ; if it is likely that a less angle would produce fruit belter in quality or quantity I would alter the angle, which I should not feel inclined to do without a fair prospect of improveLuent. Cordon.

206. Lady Henniker Apple. — Will any of your readers kindly inform me if they have fruited the Lady Henniker Apple, and if they thinlc it suitable for a market gardener to plant ? G. H. K.

207. Hautbois Strawberry. — I cannot get these to fruit. What management is necessary? B, [ft is

well known that many Strawberries are practically unisexual, even if both sexes be apparently present. Probably the male plants are deficient in your plantation.

Eds J - _^__^^

hTTC^pordmU

Analysis of Flowering Plants : G. N. T, Of course the composition depends not only on the particular flower but on the circumstances under which it is grown. See Watts' Dictionary of Chemist} v.

Carlisle Show. — Messrs. James Dickson & Sons, Newton Nurseries, Chester, write that they were awarded the 1st prize for a pair of Tree Ferns, *Dicksonia antarctica*, and obtained a First-class Certificate for a new variety of *Cupressus Lawsoniana*. The same firm exhibited a general collection. Under no circumstances can we undertake to mention all the awards, least of all when a telegraphic report has to be sent us as we are going to press.

Caterpillar: T. C. H. The insect had escaped from the box.

Dahlias at the Alexandra Palace. — Messrs. Rawlings write that the flower with a pin in it, which was the subject of some comment at this show, was

ijot exhibited by them, as might be inferred from a passage in our report.

Egg-fkuit Diseased ; E. H. The diseased fruit of the Egg-plant was completely traversed by the mycelium of some fungus, probably belonging to some common mould ; sucli cases are frequent.

Fungus on Violet Leaves : W. C. B. Your Violet leaves are attacked by a minute fungus, *Septoria violæ*. It is one of those pests against which there is no remedy. The spores are extremely minute and multitudinous. Pick the infected leaves and burn them. We fear, however, it is too late, and the weather is highly favourable for their development. We have something closely alUed from Scotland, if not identical. M. J. B.

Greenhouses : J. Parrott. We believe they are rateable, but as varying circumstances sometimes affect these legal matters you had better consult your solicitor.

Insects ; W. T. T. The whitish objects on the seed-heads of Rush are the cases of the larvce of a veiy small moth (*Coleophora cespitiella*). They are universally abundant on Rushes ; the larvae feed upon the seeds, and carry the cases about with them when

they move from one capsule to another. We fail to find the "very small, pale brown cocoons," unless some loose seeds of the Rush represent them,
P. McL,

Leaves for Garnishing Purposes : Olivia. The plant you mean is probably *Farfugium grande*. In winter you must take what you can get. *Aucuba*, *Mahonia*, *Magnolia*, and other evergreens will do best. If you have access to a shrubbery you only further require common sense and taste.

Oak Spangles : T. E. Badman. Very common in all seasons, but more than usually abundant this year.

Fig. 76. — OAK SPAXGLES ; 3 and 4, silk-dutton-gall.

They are the work of a gall insect, a species of cynips. {See fig. 76.)

Names of Plants : S. i, *Escallonia macrantha* ; 2, *Nepeta Mussinii* ; 3, *Capsella Bursa-pastoris* (Shepherds's Purse). — Subscriber, Co. Down. 2, *Gentiana asclepiadea* ; 3, *Silene valesia* (?). The others, the numbers of which are obliterated, are *Dianthus deltoides* and *Teucrium Chamctdrys*. Write the numbers on paper in future. — K. *Coccoloba platyclada*. — i V. B. 5, *Mesembryanthemum deltoides* ; 6, M .

echinatum. — J. G. Af. Escallonia raontevidensis ;
propagated by layers and cuttings. — Enquirer. A
species of Sanguisorba, If wild, it is S. officinalis ;
otherwise it is probably S. media, but the specimen
is insufficient. — L. M. S. Act^a spicata. — E.L.A.
The Fulham Oak.— P. S. C. Mentha arvensis.— r. S.
Newry. i, The wild Scotch Rose, Rosa spinosissima ;
2, apparently a Lespedeza, but the materials are

. insufficient. — No Signature, i, Colutea arborescens ;

2, Francoa ramosa. — T. R, i, Sedum album ; 2,
Sedum lydium ; 3, Sedum carneum variegatum ; 4,
Veronica incana ; 5, Lycopodium clavatum. — Fcchnty.
I, Nephrolepis tuberosa ; 2, Asplenium flabellifolium ;

3, Adiantum cuneatum probably, but very imperfect ;

4, Pteris tremula ; 5, Selaginella pubescens ; 6, Platy-
loma rotundifolium. — Southampton, i, Ptarmica vul-
garis ; 2, Sedum Sieboldii variegatum ; 3, Plumbago
Larpenlo? ; 4, Veronica spicata variegata ; 5, Polerium
sanguisorba ; 6, Apargia hispida, — L. H. i, Oocidium
obryzatum ; 2, Oncidium holochrysum ; 3, is curious,
but indeterminable. Why do you send such wretched
scraps? Do you think it is an easy matter to deter-
mine a miserable scrap, crushed and dried before it
reaches us? — and do you think that we have nothing
else to do ? Perhaps our time is as valuable as yours.

Poplar Cuttings : G. B, We believe you will succeed
in a warm border not too wet.

Rabbits : H. 6[^] Co. Try Mr. Tillery's plan : well mix
a quantity of cow-dung with quicklime and some train-
oil, and paint the stem of the trees with the mixture.

THAIMNOCALAMUS FALCONERI OR ARUNDINARIA FAL-
CATA : B, See Gard&7iers' C/iroiiiicle., June 16, 1877,
and numerous notices in our volume for 1876.

Tuberous Begonias : P, G. Keep them in pots of
dry earth, in a place quite safe from damp and frost.
The pots might be placed oa a dry greenhouse shelf,
or in a store-room.

»,• Correspondents are specially requested to address,
post-paid, all communications intended for publica-
tion to the ' ' Editors, " and not to any member of the
BtafF personally. The Editors would also be obliged
by such communications being sent as early in the
week as possible. Correspondents sending news-
papers should be careful to mark the paragraphs they
wish us to see. Letters relating to Advertisements,
or to the supply of the Paper, should be addressed to the
Publisher^ and not to the Editors.

^^ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Catalogues Received. — Messrs. Hooper & Co. {Covent Garden Market, London, W.C), Catalogue of Bulbs, &c. — Messrs. Edmondson Bros. {10, Dame Street, Dublin), Catalogue of Bulbs, &c. — Augusta Van Geert (Ghent, Belgium), English Edition of General Plant Catalogue. — R. B. Matthews (65 and 67, Victoria Street, Belfast), Descriptive Catalogue of Dutch Flower Roots. — Thomas Meehan (German-town Nurseries, Philadelphia), Wholesale Catalogue of Trees, Shrubs, &c. — Messrs. Daniel Bros. (Norwich), Illustrated Catalogue of Dutch Flower Roots. — W. H. Rogers, 132, High Street, Southampton), Catalogue of Dutch Bulbs, &c.— Messrs. Carter & Co. (237, High Holborn, London, W.C), Catalogue of Dutch Flower Roots. — Messrs. W. Paul & Son (Waltham Cross, Herts), Catalogue of Roses.

Errata. —We are requested to state that the Dahlia " Mr. Seaman," mentioned in our report of the Bishop Auckland show as "anew Northern flower," was sent out by Messrs. R. Edwards & Son in 1875. — In our report of the Sevenoaks Show, Miss Don Scale should have been ist for single epergne, and

Mrs. Bolton 2d.

CoMMtiNiCATiONS Rkceived. — W, Pontey (we did DOt consider
it to be better than others now in cultivation). — C. Ford. —
W. Pain.— D. T. D.— N. S.— W. D.— M.— A. G.— H. H.—
Rchb. f.— Messrs. Backhouse (thanks). -J- F. R.— E. S. D.
— T. R. (smalt box not received).— W. B. H.— G. M.— T. B.
— R. D.— E. W.— G. M., Broseley.— A. W.— A. C— W. M.
— W. B.— W. C— A. F.— T. W. W.

DIED, on September 18, aged 57, Mr. John Morse,
of The Nurseries, Dursley, Gloucestershire.

arkts.

COVENT GARDEN^ Seftcniber 20.

Business has been steady during the last few days, and
in all home-grown produce prices remain the same.
Heavy consignments of Kent Cobs have reached us, and
a slight reduction has been made to effect clearances.
James Webber, Wholesale A^ple Market,

Cut Flowers.

s. d. s. d.

Achillea, 12 bun. ., 30-90

Asters, 12 bun. .. 3 o- g o

Bouvardias, per bun. i &- 4 o

Calceolaria, p. bun. 06-10

Chrysanthem. labun. 40-60

Cornflower, 12 bun. 30-90

Dahlias, 12 bun. .. 3 o- g o

Eschscholizia, dozien

bunches . . .20-60

Eucharis, per doz. .. 4 o-iz o

Gardenia, per doz. .. 3 0-12 o

Heartsease, 12 bun. 16-60

Heliotropes, iz spc. o 5- i o

Jasmine, 12 bun. . . 40-90

Lilies (in var. 12 spr. i c- 2 o

Plants

s, d. s. d.

Balsams, per dozen 2 0-12 o

Begonia.s. per doz. .. 6 0-12 o

Bouvardias, do. ..iz 0-24 o

China Asters, dozen 3 o-iz o

Chrysanth. , per doz. 5 0-12 o

Clematis6 0-24 o

Cockscombs, per doz. 3 0-12 o

Coleus, per dozen .. 3 o- g o

Cyclamen, per doz... iS 0-24 o

Cyperus, do. . . . 4 o-iz o

Dracaina terminalis 30 0-60 o

— viridis, per doz. iS 0-24 o

Ferns, in var., p. doz. 40-..

Mignonette, 12 bun.

Myosotis, 12 bunch. 3

Pelargoniums, 12 spr. o

— zonal, 12 sprays o

Primula, double, per

bunch . . . l

Pyrethrum .. i. 4

Roses(ouldv.),i2bun. 2

— (mdoor), perdoz. i

Stephanoils, 12 spr, 4

Stocks, 12 bunches.. 4

Sunflower, 12 bun... 2

Sweet Peas, iz bun. 3

Tropteolum, 12 buii. i

d. s. d.

0-90

o- g o

6-20

3- l o

O- 2 O

0-90

0-90

6-12 O

0-13 O

0-80

0-60

c- 9 O

0-40

IN POTS.

Ficus elastica. each

Fuchsias, per dozen..

Heliotrope, per doz,

Liliuras in var., each

Mignonette, per doz.

Myrtles, do

Palms in variety.each

Pelargon,, scarlet, p.

dozen

Petunias, per doz. .,

Roses, fairy, p. doz.

Solanums

Valottapurpur., doz.

r. d. s. d.

2 6-15 o

2 0-12 o

4 0-12 o

16-60

60-90

30-90

3 6-21 o

20-90

4 0-12 o

4 0-12 o

9 0-24 o

9 0-18 o

Vegetablks.

. d. s. d.

Artichokes, English

Globe, doz. .. 3

Aubergines, p. doz. 2 o-

Beans, French, per

bushel . . S

— Scarlet Runners,

per bushel.. ..1

Beet, per doz.

Brussels Sprouts, p.

bush.

Cabbages, per doz. . .

Carrots, per bunch..

Cauliflowers, per doz.

Celery, per bundle..

Chilis, per 100

Cucumbers, each .

Endive, per doz. . _

— Batavian, p. doz. 20-30! Turnips, per bundle 04-06

Garlic, per lb. ..06-.. Vegetable Marrows,

Herbs, per bunch . . 02-04' doz. . , ..16-20

Potatos :— Essex Regents, 90s, to 100j. ; Kent Regents, 100s.

to 140^, ; Kent Kidneys, 140;, to 160f, ; Shaws, 100j. per coit,

4 o

10-20

So-..

10-20

04-06

16-40

16-20

30-..

03-10

- 2 O

s. d. s. d.

Horse Radish, p. bun. 40-..

Leeks, per bunch .. 02-04

Lettuces, per score . . 20-..

Mint, green, bunch 06-..

Mushrooms, per pott. 10-30

Onions, 12 bunches 36-..

— young, per bun. 06-..

Parsley, per bunch.. 09-..

Peas, green, p. bush 30-60

— shelled, per qt. 16-..

Radishes, per bunch. 01-03

— Spanish, doz. .. 10-..

— New Jersey, doz, 20-.,.

Salsafy, per bundle 10-..

Shallots, per lb. .. o 6- «

Spinach, per bushel 26-..

Tomatos. per doz. . . 10-20-