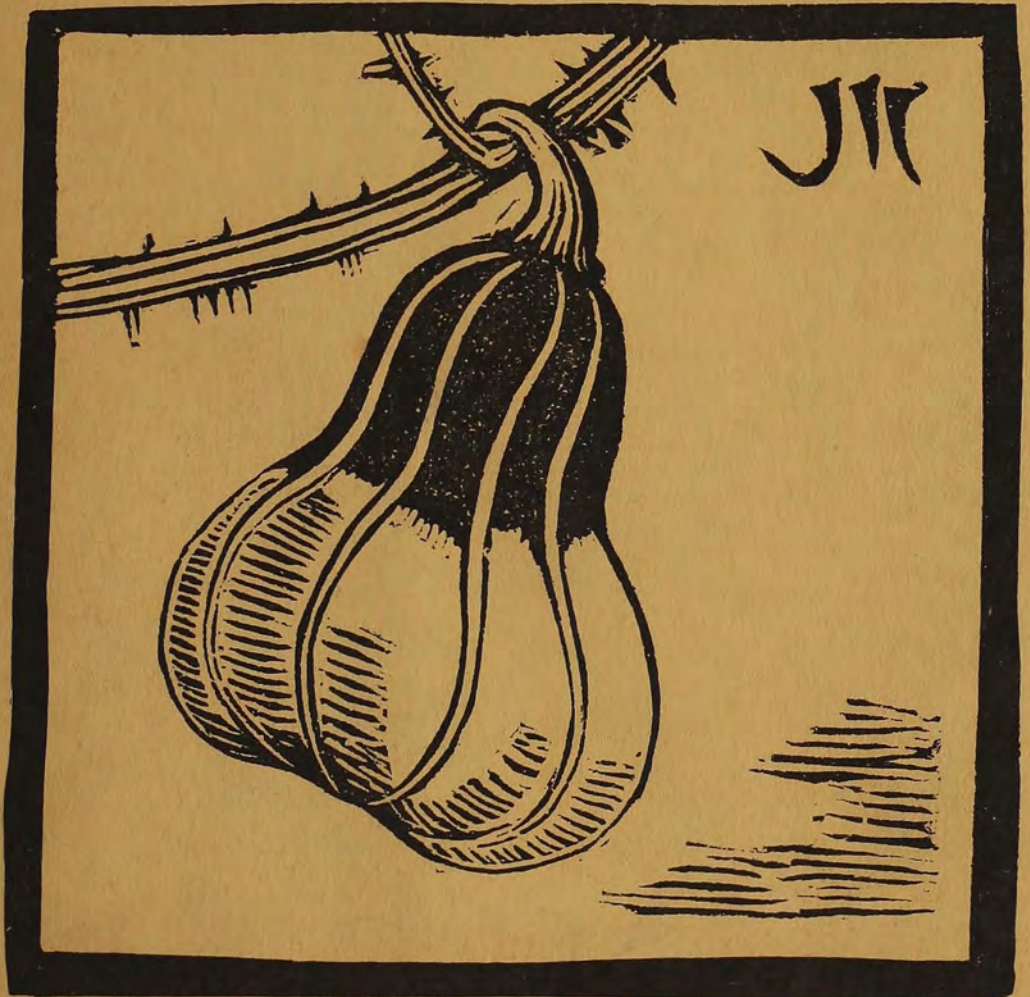


The NATIONAL
HORTICULTURAL
MAGAZINE



JOURNAL OF THE AMERICAN HORTICULTURAL SOCIETY

OCTOBER, 1934

The American Horticultural Society

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The National Horticultural Magazine

Vol. 13

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No. 4

OCTOBER, 1934

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Published quarterly by The American Horticultural Society. Publication office, 1918 Harford Ave., Baltimore, Md. Editorial office, Room 821, Washington Loan and Trust Building, Washington, D. C. Contributions from all members are cordially invited and should be sent to the Editorial office. Advertising Manager, Mr. J. S. Elms, P. O. Box 27, Kensington, Md. A subscription to the magazine is included in the annual dues of all members; to non-members the price is seventy-five cents the copy, three dollars a year.



Eric Walther

[See page 388]

Cistus purpureus

The Wild Sierras of Spain and Their Plants

BY DR. GUISEPPI

It has been said that Europe ends at the Pyrenees. But, however true this may be about other matters, it is not quite true about the flora, for some of the Pyrenean plants are to be found on Montserrat and in the Picos de Europa but south of these mountains the flora is certainly distinct from that of Europe and closer to that of Morocco and it is for this reason that the plants of Spain are so interesting, but why are they so rare in cultivation? Surely because few collectors go to Spain and I fancy for the same reason that few travelers go from England. I venture to assert that there is no land and no people so misunderstood by us as Spain and her people; and the reason for this is the hereditary dislike of the Spaniard bred in the ages long past when Spain was England's traditional enemy.

I have traveled in Spain on several occasions and have lived amongst its people in the wildest mountains and I have the further advantage of speaking Spanish, and so I claim to know a little of its glamour and beauty which has woven about me a web of enchantment.

Spain is a land of mountains and wherever you travel mountains loom far or near. The center is a high plateau with chains of mountains such as the Guadarramas, the Sierra de Gata and many others running across it and numerous chains run in all directions around the plateau. You must not imagine that the plateau is flat, for everywhere rise

hills and mountains of every variety of red and brown imaginable. Machado, the great Spanish poet, says: "It is a land of ups and downs. The roads sometimes hide the men who pass by on their donkeys. Then on a background of reddening evening light there stands out the small plebeian figures clear as a star on the golden canvas of the sunset. But if you climb up to the ridge and look over the country from the peaks where the eagles nest, there are sunflowers of crimson steel, plains of lead, rivers of silver, hemmed in by purple mountains with peaks of rosy snow."

We are not concerned with the Pyrenees, but will deal with the following ranges, the Sierra Cadir an off-shoot of the Pyrenees to the East, Montserrat, Sierra Javalambre to the west of Sangunto, Sierra Maria, Sierra Cazorla, Sierra Aznatin, Sierra Magina, and Sierra de la Pandera (the five last north of the Sierra Nevada) the Sierra Nevada, the Serrania Ronda, the Serra Estrella in Portugal, the Espiguete South of the Picos the Pena Santa de Enol and, the Pena Vieja in the Picos de Europa and finally Sierra de la Demanda near to Burgos. And what of the Spaniard himself,—he has been described by Madariaga as a man of Passion, by which he means an all round man composed of all virtues and vices and so more easily to be loved and admired by those who understand him and who have charity. He is a family man, devoted to his wife and children

far more than to his country; he loves freedom and cares not who rules him provided that he has few laws to obey. He had rather limit his wants, than increase them, and so have to work the harder and have less leisure. Time, he says, was made for man and not man for time. He has been said to be cruel, and as illustrations his treatment of the Indians in South America and of bulls have been cited. Cunningham Graham and others have showed that the Spaniard was no more cruel to the Indians than all the other nations of those days were to their subject races.

As regards bull fighting, there can be no doubt in my mind that cruelty is involved, but so it is with all blood sports. It is all a question of degree; doubtless in bull-fighting the cruelty is greater than in other blood sports but the man risks his life—gambling his courage and dexterity against the bull—whereas in such sports as stag hunting, the stag has no chance of killing his persecutor. In cruelty as in all other qualities, the Spaniard is a man of passion, a mixture of tenderness and of cruelty, of laziness and amazing spirits of energy, of epic bravery and of cowardice, all blended together inextricably.

In his ordinary life I have seldom known a Spaniard cruel to his animals.

The roads are well made, with good gradients, banked at the corners and so well marked as to be a lesson to other countries.

Food is abundant and quite good and nearly everyone of my party enjoyed the food.

The smallest inns are clean and compare very favorably with similarly placed inns in other countries.

In studying the flora we must remember that the Spanish and Balkan peninsulas are of the same geological age and closely allied plants are found in both, for example *Ramondias* in Spain, and *Ramondias*, *Haberleas* and *Jankeas* in the Balkans; *Viola cazorlensis* in Spain and *Viola delphinantha* and *roshanini* in the Balkans.

Most of the saxifrages belong to the *Ceratophyllae* and to the *Gemiferae* and not one to the *Kabschias*.

Spain is the country par excellence for *linarias*, and *erodiums*.

The flora, as I have already said, is most interesting but is not as rich as that of the Balkans.

As soon as the frontier is crossed at Puiglerda the road to Seo d'Urgel bears off to the West. This road we took and away to our South there rose the great heights of the Sierra Cadir. We slept at the little village of Martinet, in a clean inn which was a holiday resort and which was full of Spaniards who amused me after dinner with their tales. Early next morning we left on mules for the summit of Cadir the highest peak. The mountain is really an off-shoot of the Pyrenees and as might be expected the plants of the Pyrenees were found. *Sempervivum montanum* and *tectorum* were quite common on the lower rocks and were accompanied by *Sedum dasyphyllum*. The most interesting plants were *Globularia nana*, *Petrocallis pyrenaica* and *Dryas octapetala*. *Saxifraga lingulata* covered the cliffs which faced to the South and on the shady sides *Ramondia pyrenaica* was common. The Spanish botanists maintain that this form which they call *Mycoi* and we the Montserrat variety, is a separate

species and that it is found all over Catalonia. The leaves are larger and the veins are more clearly marked and the flowers distinctly larger than in the ordinary *pyrenaica* form. This is certainly the form found on Cadir.

The summit cliffs were magnificent masses of limestone and afforded glorious views of Andorra that astonishing relic of the feudal days which has been so much in the public eye recently. This was my nearest approach to Andorra this year but I know the country well from two previous visits. Andorra is not a republic but a feudal seigneurie over which two over lords claimed rights, the Bishop of Seo d'Urgel and the Count of Foix whose rights have now been bought by the French Republic. The astute Andorrans have played these rival powers off against each other very well indeed; the French and Spaniards have constructed good roads, the French have given them free postage and free education. The method of settlement of the recent dispute is indicative of Andorran pride. The French ordered an election for councillors and the Andorrans wanted to hold one of their own, and so they held their own on a certain date and returned the old councillors with the exception of one; and next day they held the French election and elected the same men and so honour was saved on both sides.

Montserrat is famous for its plants, its monastery and the weird formations of its unique mountain. From afar the amazing mountain looms an extraordinary sight always clad in a little mist. The ascent is extremely easy by car, rack railway and by a first-class path and so one

is soon up on the 5,000 feet summit. In the woods along the lower slopes is found *Campanula speciosa* which in spite of Mr. Elliott's assurances is monocarpic. The roots may be thick but as soon as the plant flowers it dies. This is evident to everyone who studies the plant on the mountain. The flower is beautiful but the leaves are coarse and uninteresting and spoil an otherwise good plant. *Erodium pteraeum* grows in the tightest cracks and is quite delightful with its fine cut leaves and pink flowers. *Saxifraga lingulata* var. *catalunica* with its short dark green leaves and chalk marks is a delightful plant. It loves the shady sides. The best plant of all is *Ramondia pyrenaica* var. *Montserrat*. This plant grows in the thick box woods in the deepest shade and I have seen clumps measuring over a yard across, made up of countless rosettes.

The Sierra Javalambre is approached from Sagunto by a westerly road. As we motored up the valley with the great chain to our south a storm could be seen playing about the summits. The upland plain over which we passed was covered with the largest clumps of *Erinacea pungens* I have ever seen, some measured two yards across and were of perfect shape. The seeds had all dropped out unfortunately. The cliffs were covered with enormous plants of *Capparis spinosa* looking perfectly beautiful with their huge white and pink flowers. The rain poured down and was accompanied with thunder and lightning, and the storm lasted all night. The little inn in the mountain village of Camarena was tiny but comfortable. Downstairs was the garage and upstairs the bedrooms opening on

both sides of a long dining-room.

The village, whose houses clustered below a cliffy mountain, was very picturesque with its brown tiles. The church was built of red bricks and had an octagonal steeple covered with colored tiles. In spite of the rain we left at 8 a. m., and found first of all the wonderful *Digitalis obscura* with a woody branching stem and flowers of red and yellow. Next we found a campanula with serrated leaves and purple bells with underground stems. This grew in a scree and is quite new to me. Higher up the mountain in the background grew huge clumps of *Saxifraga valentina* one of the *Ceratophyllae*.

This is a beautiful plant. On the summit the ground was covered with enormous clumps of *Ptilotrichum spinosum* and *Erodium cheilanthifolium*. Some of the plants must have been of great age. Their grey finely divided leaves formed a perfect setting for the beautiful pink flowers. The views at the top were magnificent. A huge expanse of brown plain crossed in every direction by brown and red mountains rewarded one's efforts.

Hurrying southwards we passed a fine village of cave dwellers at Puerta Lumbreras. The houses were hewn out of the cliff, and the white-washed doors and round white chimneys stood out boldly from the hillsides.

The crops of Spain are amazing in their numbers. Tomatoes, figs and red peppers were being dried by the wayside and opuntias and all kinds of grains were being offered for sale. We tried to sleep at Jativa but found that a bridge was broken down and the motor bus was stuck in the flooded river. We were

told to drive through, but thought better of it and turned back to sleep at Alcudia. At Maria, a little village nestling below the great Sierra Maria we slept at a little *posada*, the poorest class of Spanish inn and found the food quite good. Wandering about at night one came across men asleep in all corners on straw. At 5 a. m., I was awakened by carols and found that there was a sick man opposite to the inn and that on feast days it was the custom to sing carols at intervals all night to cure the patient! One lives and learns. The mountain was covered with interesting plants, *Erinacea pungens*, *Aphyllanthes monspeliensis*, *Vella spinosa*, *Berberis vulgaris*, *Digitalis obscura* were magnificent. Near the summit on the rocks grew the very attractive *Sarcocopnos enneaphylla*, and on the summit, *Prunus prostrata*, the delightful and rare *Globularia spinosa* with its spiny leaves which form fine rosettes, *Arenaria armeriastrum* var. *frigida* and *Erodium cheilanthifolium*.

Our drive to Cazorla was rewarded with wonderful views of the Sierra Nevada, the Sierra Magina and the Sierra Cazorla. We arrived late in the afternoon at Cazorla and were received by hundreds of children all screaming and excited. Spanish children are very badly brought up and a nuisance to everyone.

The Sierra Cazorla covers an area of over one hundred square miles and in all that area, no road or village exists. The mountains are of limestone and are covered with enormous forests of pines, both white and black being present, and among them are some very fine old trees. The Sierra Cazorla is the huge massif which lies between the

Sierra Morena in the North and the Sierra Nevada in the South, with the Sierra Magina in the West. The chain runs from southeast to northwest and is composed of three ranges, the most northwesterly above Cazorla rises to 2017 metres in the Peak of Cabañas, the most southeasterly is the Sierra Cabrilla which rises to 2,033 metres. We left on donkeys early in the morning. Donkeys are the only animals which will stand the fatigue of these mountains. It was a perfect day and as we ascended the slopes above Cazorla fine views of thousands of young olive trees were afforded us. Our guide and the horseman were friendly mortals and spent the time chatting and passing around the *bota* of wine. The *bota* is made of skin and it is an extremely difficult art to drink out of it without touching the spout with one's lips and without wetting oneself and neither of these must happen. I was a fair adept at it and was complimented as being quite a Spaniard, and so was given strips of haddock dried and salted in Newfoundland and exported to Spain. This is an acquired taste and very salty. One of our donkeys was soon called Satan. He was a great hand at braying and was determined to brush his rider off his back by rubbing against the cliffs and passing below low trees. We were soon over the first ridge and entered a confusing system of valleys. The Chorro del Mundo is an enormous amphitheatre of perfectly vertical cliffs over 800 metres in height and of great breadth, so that birds flying across seem to be flies. The sight is an awe inspiring one. We soon found the maiden hair fern, our ordinary lavender, *Trachelium coeruleum*, *Pru-*

nus prostrata, *Digitalis obscura* and on the shady cliffs huge clumps of *Saxifraga Rigoi*, one of the Gemmiferae. The plants bear huge white flowers. In the heat of the summer the plants dry up and become red but are still alive. The rocks are therefore colored red. After lunch at the Churro we continued on our way and were rewarded by the sight of our first plants of *Viola Cazorlensis* which was described by Gandoger in 1902. It is remarkable that this marvelous plant was only discovered at so late a date, especially as I found that most shady rocks were covered by countless hundreds of this remarkable plant. It closely resembles *Viola delphinantha* but differs from it, in the following aspects. *Delphinantha* is always found in cliffs, *Cazorlensis* I have found growing in moss and in the soil at the foot of the cliffs. The stems never seem so old and twisted as those of *delphinantha*; the green of the leaves has also a more coppery tint and the plant seems on the whole of lower stature. It is most floriferous and the cliffs are pink with the magnificent blooms, each with its long spur.

Wherever I went I was welcomed by this superb sight. We passed the source of the Guadalquivir, a small spring rising amidst rocks below huge pines.

After a wonderful day amidst scenery of outstanding beauty and a magnificent sunset, at 7 p. m., we arrived at a narrow defile through which we pulled our donkeys into a delightful narrow upland valley and at last at 8 p. m., we arrived at a tiny hut on the summit of Las Cabanas at nearly 8,600 feet. The hut measured 8x11 feet and was in the charge of an old man, who re-

fused us permission to sleep in it. By now the wind was rising and it was very cold and so I tried to persuade him to allow us to sleep in the hut but he refused. I therefore told him we were going to sleep in the hut and were six men. He then told us he was the watcher for fires and was on the telephone to his chief in the valley below. He rang up and we read our letter from the Spanish Ambassador in London and obtained leave to sleep in the hut. Dinner was a meagre affair of oxo, tinned tongue, bread and chocolate. Sleep was well nigh impossible for we could just lie in a row on the stone floor and could not turn. Next morning breakfast consisted of oxo, bread and uncooked ham. There was not a drop of water and so there was no washing.

We found ourselves in a sea of clouds and as the sun rose we had glorious views of valleys and mountains. At the summit I found a yellow linaria, a dark purple campanula of the Rotundifolia Section and carpets of *Convolvus cneorum*. As we descended the mountain we came across countless high white cliffs, on which grew *Viola Cazorlensis*, *Saxifraga Mycoi* and the small annual *Campanula decumbens*, with hairy grey leaves and light blue flowers. We passed several springs of cool, delightful water and found on a limestone cliff the wonderful *Hypericum ericoides* known to Linnaeus years ago but never cultivated. The little green leaves entirely covered the stems and on the tip were several delightful golden flowers. Here indeed is a remarkably handsome plant.

Next day we were off at 4 a.m., and had a delightful ride back to Cazorla, passing the Fountain of

Rechitas. Here the water poured out from below a huge boulder and provided us with a delightful bath. This was particularly grateful, for we had been walking over a 7,000 foot mountain for six hours. Here incense was being made by burning in pits cistus, rosemary and lavender.

We next ascended Aznatin, the most northerly peak of the Sierra Magina from Torres, a little mountain village where again we were persecuted by children. We found *Saxifraga camposii* one of the Ceratophyllae and a most beautiful plant, *Campanula cuatracasasii*, a new campanula with large purple bells and hairy oval leaves. This is a true saxatile plant and only grows on one cliff. The largest plant measured over a foot across. The mountain was covered with huge plants of *Prunus prostrata*, *Poterium rupicola*, a *Silene* sp. and another campanula of the Rotundifolia Section, *Arenaria tetraquetra* var. *granatensis* or as it has been called *Nevadensis*. Magnificent views of the other summits of the Sierra Magina, lay to our South, and to the principal of these the Sierra Magina, a mountain of some 7,500 feet, we now made our way. We slept in the little village of Belmez, a dirty village with an even dirtier inn. The village swarmed with children and our innkeeper had ten. As the inn only had four bedrooms and three were let, I never made out where the children slept.

The mountain is composed of dry limestone and resembled the mountains of Greece in its aridity, and here we found a little brook which after a short course disappeared underground, and upland valleys just as in the Karst country of Dalmatia

and in one was a true doline. This interested me a great deal because dolines were said to be characteristic of Dalmatia. We were accompanied by a huntsman and after ascending the mountain and enjoying the sight of wonderful plants of *Saxifraga globulifera* var. *erioblasta*, we had a delightful lunch on the mountain side. At this meal six of us ate nine huge watermelons and when I said that this was marvelous my muleteer said it was nothing as he himself could eat six at one sitting! I could write volumes about the little *Saxifraga globulifera* var. *erioblasta* which covers the cliff and boulders with its little dried rosettes resembling grey pearls and called "las Perlas" by the Spaniards. It is one of the Gemmiferae and is found in many of the Southern mountains. In the center of each apparently dead rosette is a tiny green spark of life and with a drop of rain these buds unfold into green rosettes which bear white flowers.

After the Sierra Magina we left for the Sierra de la Pandera, a mountain of 6,500 feet, another limestone mountain to the West, which had not had a botanist on it. It was a hard climb on a boiling hot day; but we were rewarded with a *Sarcocapnos*, a galium and a dianthus. We descended by a huge scree where all the stones were moving and found it very tiring, and were very grateful for the cold water at a spring. We returned to the car two upon the same horse, which reminded me of Uncle Tom Cobleigh and All!

Leaving behind these last five limestone mountains we hurried southwards to the non-limestone Sierra Nevada which we had already seen in the distance. As we

drew nearer to these mountains, the beloved of the Moors, every peak of which bears a Moorish name, we became more excited for we knew of the floral riches we were to see. The road to 10,500, only 1,000 feet below the highest peak of Veleta, is the highest in Europe and very well engineered it is. The views it affords, are also very fine. We slept in the Albergue de San Francisco which was built by a Society in Granada. It was very comfortable but only supplied coffee and potatoes, and so we lived on tin foods and for breakfast I enjoyed water. The first climb was made by my wife and myself from 7,500 where the hut is built near the summit of Veleta at 11,300 feet. We were very lucky with our plants and found a long list, *Dianthus brachyanthus alpinus* and *Dianthus langeanus*, both little beauties, *Sempervivum montanum*, *Linaria nevadensis* with yellow flowers, a dark purple flowered campanula, *Plantago nivalis* with its white leaves. *Saxifraga groenlandica*, *Digitalis nevadensis*, similar to our own foxglove, *Eryngium glacialis*, low growing and with beautiful blue flowers, *Arenaria tetraquetra* var. *granatensis* and *Arenaria armeriastrum* var. *frigida*, *Chrysanthemum radicans* with both yellow and red flowers, *Erodium cheilanthis-folium*, *Ptilotrichum purpureum* with tiny grey leaves and beautiful pink flowers, and many many others. At 11,300 it began to rain and to blow cats and dogs and in a few minutes we were sopping wet and chattering. We fled downwards and took refuge in a cave which we entered by crawling; inside, the floor was muddy and so we had to sit in the mud and eat our lunch of biscuits and sardines. This put new life into

us and as soon as the rain began to stop we hurried to the shelter where we arrived dry and hot, thanks to the high wind that blew all day.

Next day we drove early in the morning to the foot of the Veleta and ascended to the edge of the Corral, a large amphitheatre overshadowed by the Veleta. Here we found hundreds of flowers. *Senecio Boissieri* with huge golden daisies, an *Acaulis* gentian with a purple flower, *Chrysanthemum radicans*, *Eryngium glacialis* are but the best of many plants.

The views are superb. The Corral is surrounded by precipitous cliffs and across it are fine views of the summits of the Veleta, Mulhacen and the other peaks, and down in the Corral can be seen the glacier, which is very small and a barren valley which opens into greener regions at a lower level. We tried to descend into the Corral by a narrow path overhanging dreadful precipices. In places because of overhanging rocks we were compelled to bend outwards over the precipice. After a time the path ended in a landslide and, terrible tragedy, we had to climb up again but after taking a turn down the ridge we were able to ascend to the summit of the Veleta and here the views were amazingly good. The shores of the Mediterranean, with the waves beating on the coast, seemed to be but a stone's throw away. The road to Motril stretched away like a snake and countless peaks were grouped around in great glory. We descended to Lake Yeguas and back to the Albergue. Next day we had an easy day walking for some seven hours collecting and enjoying the

views. We collected *Pinguicula leptoceras*; *Sarcocapnos enneaphylla* and many other plants. The seed pod of the *Sarcocapnos* has a wonderful resemblance to a monkey's head, having a nose, two eyes and a mouth.

Next day we returned on mules to Granada, collecting on the way and obtained *Echium albicans* and many other plants. The echium is charming with its pink flowers fading blue and its charming narrow and hairy grey leaves.

The views below of the mountains and valleys and of Granada were very charming.

Our next mountain, Torrecilla, the highest summit of the Serrania de Ronda was a great disappointment for there were but few plants though the views were superb, especially that of Gibraltar with its white catchment area shining in the distance amidst the clouds. The village of Tolox was very picturesque and here we got a few delightful pictures.

We hurried on into Portugal leaving the limestone of Ronda behind and coming to a country covered with huge boulders of granite and were soon on the roads of Portugal. There was a great improvement over their condition of six years ago, except over a short stretch and we drove faster than we had expected, to a little inn high up on the flanks of the Sierra Estrella, the highest summit in Portugal. I was anxious to climb this mountain as on the previous occasion hail had prevented us. We started off in perfect but cold weather with three horsemen, one of whom spoke incessantly and never even waited for an answer, and often enough spoke whilst his colleagues were

answering. In spite of this rain of words we got to the summit and then we enjoyed a walk of three hours. We had no sooner returned to our horses than a cloud appeared and I knew that the mountain was going to avenge itself on us for its defeat. Rain poured down and a great gale blew up, so that in a very few minutes a sorry procession could be seen of three riders sopping wet and chattering on their horses, but thank heavens the horseman spoke no more! The gale blew so fiercely that suddenly I felt just as if a large hand had been placed on my horse's side and was pushing him down. I just succeeded in jumping clear before the horse was blown down! We walked after this, sadder, wetter, sorer and colder men. At the inn a large fire was lit, we got into dry clothes and after many cups of tea we were warm again. The plants collected were a purple campanula with long leaves, *Digitalis purpurea*, several sedums and *Arenaria erinacea*. The flora was poor because the mountain was of granite; for it is an undoubted fact that granite mountains have a poor flora.

We returned to Spain next day in a cold wind and dense mist, and made north to the little mountain village of Siero, the village of mud; if ever there was one. The mud was everywhere, brown, sticky and deep and whether one jumped or took long cuts, it mattered not a bit, one sank in the mud. The villagers have solved the difficulty by wearing wooden clogs with four little feet so that their feet are above even the highest mud level yet known. When they pay calls, they leave their clogs at the door and walk indoors in stockings. On the

rocks nearby I collected *Campanula arvatica*, *Draba dedeana*, *Anemone pavoniana*, a primula, *Erinus hispanicus*, *Matthiola perennis*, *Saxifraga conifera* and many other plants. The lower slopes of the mountain gave us all the plants we were accustomed to. The upper part is a sheer precipitous cliff and here we found *Erodium petraeum* and a pale pink *Linaria*. A cold wind and mist commenced and we had perforce to have lunch crouched below a high rock. On descending we were given bread, cheese and wine at our guide's house and quite a reception of the villagers was held in our honor. We then proceeded to Cavadonga and on in the car by the very well engineered road to Lake Ercima at about 5,000 feet. We found *Campanula arvatica* in various forms, *Gentiana pneumonantha depressa* which grows in the turf and is quite low in stature. *Linaria faucicola* which is never a high Alpine, *Saxifraga geoides* a new species discovered by Mr. Lacaíta. Its ivy-shaped leaves were reddish purple below and the plant was quite attractive as it grew in the cracks in the cliffs, with *Campanula arvatica*, *Sedum dasyphyllum*, ferns, *Erinus hispanicus* and *Aquilegia discolor*. We were able to go two miles above Lake Enol in the car and from that height we walked through the most beautiful alpine scenery. The mountains were as fine as the Alps in the Tyrol and were covered with a good deal of snow. We passed a typical little Scotch burn which flowed merrily into a large pool where it ended, the water evidently flowing through cracks in the bottom. We ascended by the canal of the Sargaus to the Cebollera enjoying the plants and the delightful views of rock forma-

tions until a cold wind arose and it became almost impossible to stand up against it. Among the higher plants were *Saxifraga conifera*, *Malva* sp. and *Anemone pavoniana*—amongst many others.

Our next village was that of Espinana to the South of the Picos where we slept at a tiny inn and left next day for the Pena Vieja. We stopped at the Refuge at Potes; here a first-class hut has been built with many rooms, bathrooms, dining-room and a wonderful sitting-room, with a huge fireplace, and beautifully furnished with old Spanish furniture and china. Lit with electricity and spotlessly clean, the refuge is better than most of the Swiss refuges.

We were unable to ascend to the very summit because of a recent fall of snow but we found many plants, among them *Saxifraga aretioides*, *Aquilegia discolor*, *Iberis Tenoreana* which grew in the screes and looked quite gay with its pink flowers and the best of all *Linaria flicaulis* with glaucous green leaves and the most beautiful flowers, which seemed to have all kinds of tints in its sepals. This plant is a true scree plant and a high alpine. We

rode and walked across the Massif through Sotres to Carmangisa where our car was waiting and we enjoyed most wonderful views of peaks and valleys.

Our holiday was rapidly drawing to a close and so we hurried eastwards through Burgos to Mansilla where we stayed at our last little Spanish inn and next morning rode up to the very summit of Serra de la Demanda at 7,000 feet. The mountain was a non-limestone schistous mountain, red and forbidding but affording magnificent views of a perfect sea of mountains, some of red, others of brown, all of sombre tints. The only plants I found were a high Alpine yellow linaria, *Sempervivum montanum* and a *Pinguicula* species.

The holiday had come to an end and we were returning homewards, rich in experience, sated with beauty and laden with a rich haul of rare and beautiful plants, and there came back to my memory the following beautiful Spanish lines with which I wish to end my paper.

“Blessed be he who planteth a tree and worthy be he who protects it.”



Silvia Saunders

Brachycome iberidifolia

Some Experiences with Annuals

BY HELEN M. FOX

Annuals have an important place in the garden. They mature quickly and fill in spaces left vacant by Spring bulbs or early flowering perennials such as the dicentras, erysimums, aquilegias and others, the foliage of which dies back or is cut away as the summer advances.

On the whole they are not difficult to raise. In lands where the winter is not severe they can be planted out of doors in the fall in a cold frame and moved to their permanent places in the garden in the Spring. However, here in New York I find I have better plants if they are started indoors in very early

spring. I plant them indoors in flats, then prick them out into paper pots and after they have filled these with roots move them into the borders. In this way I have secured the best results, but often there isn't time for all of this manipulation or room in the greenhouse, hotbed or cold frame and then the annuals can be planted right where they are to flower, either in late April or early May, according to the season. Certain of the annuals such as the poppies are difficult to move on account of their having tap roots but they too, if handled with skillful fingers can

be pricked out, potted and transplanted.

For the past three years I have been growing quite a few annuals heretofore unknown to me and taking notes on them and thought it might interest others to read here observations and the results of my experiences.

Gardeners as well as other people are afraid of the new and untried and keep on growing the same annuals their grandmothers had year after year. Although the plants may die, the garden is there for another year and there is no other place where one can adventure as safely into the unknown.

I am one of those gardeners who perhaps does too much adventuring and often there are so many "novelties" that there is not as much color and bloom as there might be and, at times, we seem even to be on the verge of having to pick wild flowers to decorate the table. All of this happens because every year when the new catalogues arrive, and I look through the list of "Novelties" I am a woman beset with dire temptation and almost no powers of resistance. These past years there have been several very fine new annuals, such as the dwarf petunia Pink Glory, a true dwarf with light pink small blossoms, and many others. Some of the novelties I have not liked at all, such as the new marigold, Radio, with its quill-like petals, which to me, look like the normal flower about to fade. Another unattractive much advertised newcomer is the double nasturtium, something like a wet yellow rag and not comparable to the old time ones. There are some lovely nasturtiums not well known on this side of the water, such as

Sutton's Salmon Queen which is a good shade of salmon. But beginning with A I will now describe my experiences with the annuals.

First, I recommend a violet alysum, Lilac Queen which keeps on flowering long after a hard frost and grows deeper as the season advances until it is almost purple at the feet of the chrysanthemums and dahlias.

Arctotis grandis is a handsome plant, a South African Daisy with white ray flowers and a blue disk, greyish foliage and fairly tall.

Bartonia aurea which should rightly be called *Mentzelia lindleyi* is a Californian and advertised in English catalogues. Mine were sown where they were to flower and blossomed in six weeks, but the plants are only about 12 inches high and should be much taller and perhaps if they had been potted first they would have grown to four feet which Bailey says is right for them. The blossoms resemble those of the hypericums, except that the petals have the pointed curve of a Persian arch. They are a good shade of yellow, with a dark red mark at the base of the petals, open and with numerous stamens. The stems are covered with down and the leaves not numerous, opposite, pinnately toothed and about $3\frac{1}{2}$ inches long. The flowers are $1\frac{1}{2}$ inches across. They do not close during the day, but stay open for the whole twenty-four hours and make a fine cut flower.

Asperula setosa azurea which should be called *Asperula orientalis* is a fluffy blue-flowered plant about one foot high, a relative of the sweet woodruff which it resembles only in the leaves. It self sows every year in the garden and this year it

*Silvia Saunders**Ursinia anethoides*

flowered in amongst the white aquilegias with a happy effect.

Brachycome ibiderifolia, the Swan River Daisy, comes from Australia. It looks like a miniature cineraria, only coming in paler shades. The tiny daisy-like flowers are colored, from pale lavender to deep purple, their foliage is finely cut and they are about 12 inches high, with flowers 1 inch across. The color is vivid enough and the plants sufficiently floriferous to give a definite effect. I planted mine indoors and transplanted them early in May into the garden where they made a charming foreground to iris, but they soon bloomed themselves out.

Browallia americana is blue and its var. *alba* a white-flowered old time annual, now returning to favor. Once in the garden they sow themselves. The browallia is much

branched, about 20 inches or more high, with pointed leaves $2\frac{1}{4}$ inches long and $\frac{1}{2}$ inch across. The flowers are a violet blue, with a white mark, dabbed a bit with yellow on the upper side and $\frac{3}{4}$ inch across. They are excellent cut flowers and combine well with calendulas or antirrhinums in the garden and in vases.

Echium plantagineum is an attractive member of the Boraginaceae native to Southern Europe. I sowed mine out of doors the end of May and it flowered in six weeks. According to Bailey it should be three feet high and this is only 12-15 inches. It is covered with hairiness and has tongue-shaped leaves. The flowers are pinky blue and some even white, five-parted at the end of a tube $\frac{3}{4}$ inch long; $\frac{1}{4}$ inch across at the mouth. The flowering

spike is one sided except at the top where there is a bunch of flowering buds.

An erigeron which has many names and is now *E. karvinskianus* having been called *E. mucronatus* as well as *Vittadenia*, is listed as a perennial, but I am told behaves like an annual. It flowers the first year and is a low plant for the front of the border or the rockery and has white flushed-pale-pink, daisy-like flowers $\frac{3}{4}$ inch across on stems 7 inches high. It is an exceedingly neat little plant.

Collinsia bicolor is dainty with violet and white flowers but did not last long in my garden where in times of excessive heat and drought, dainty delicate annuals have a way of just quietly drying up in spite of the water with which I try to moisten them, icy cold from an artesian well. Often, as at the present, when I am writing, I wish I could go down and hold an umbrella over them, and water them with water taken from a cistern where it would have been heated by the sun.

Heliophylla leptophylla, an unwieldy name for any plant, was started indoors and moved out into the garden from pots. It grew about 15 inches high and formed a spreading plant. It has round glaucous stems, red where the side shoots branch off and sparse linear leaves. The flowers are tiny, $\frac{5}{8}$ inch across, blue with a purplish tinge, opening flatly and having a yellowish white center and four spreading petals. They close at night and so are not good for cutting but are effective in the same misty fashion as *gypsophila*, only of course, much shorter.

Dimorphotheca aurantiaca is the yellow African daisy and a hand-

some plant. It is perennial but behaves as an annual in the northern gardens.

Gilia capitata is a charming annual with pale blue round heads about 1 inch across made up of many florets. The stem is two feet high, the leaves are thin and divided into 7-9 divisions. It has self sown in the exact place where it was originally planted. The *gilia* is an excellent cut flower.

The *linarias* were so effective at the New York Flower Show one Spring, especially the Moroccan Fairy that I tried sowing some indoors and some right out of doors where they were to flower. They did not reach the size of the flowers forced by experts but were pretty and dainty. Their foliage, too, is attractive in its slenderness.

Nemesia versicolor var. *compacta* from South Africa is attractive. I have grown the yellow, orange and blue ones. They are a little reminiscent of *antirrhinums*. The blue one has a white and pale yellow raised patch on its lower lip, which is composed of three divisions while the upper one has two. But, alas, they die away when the hot dry weather comes.

Nicotianas are graceful and exceedingly fragrant at night. *Nicotiana affinis* is their botanical name. They come in tall and dwarfer varieties and from white, through pale pinks to deep reds. These last are handsome planted in front of *Hydrangea arborescens* and next to *Campanula lactiflora*.

For years I only knew *Nigella* Miss Jekyll, but there are several others which are effective such as *Nigella hispanica* with quiet dark flowers and a packet of seeds which came to me labelled *Nigella orientalis*, a hairy



Margaret DeM. Brown

White Viscaria

plant with the strangely patterned flower somewhat like the *Nigella sativa* which is grown for its aromatic seeds, and known to the herbalists as fennel flower. *Nigella damascena* has bluish flowers and leaves cut into thread-like divisions.

Nemophila insignis is called Baby-blue-eyes, and is a low and sprawly plant with a good shade of blue, bell-shaped flowers. But it does not last well into the hot weather with me and with its dainty blue flowers is best started indoors quite early and planted out in time to accompany the late flowering yellow and white spring bulbs.

Phacelia whitlavia is a hairy purple flowered annual called California bluebell. It is a beautiful rich color and in my garden grows 9 inches

high, but is said to rise to 18 inches. The flowers are somewhat campanulate, $\frac{5}{8}$ inch long and $\frac{3}{4}$ inch across, but maybe they too are larger when the plant is taller. *Phacelia campanularia* is a bluer-flowered plant and very short stemmed and would make a lovely ground cover under other taller annuals. *Phacelis Parryi* has purple flowers $\frac{3}{4}$ inch across and grows 6-8 inches high in my garden, but 18 inches in California, where it must be as stunning as *P. whitlavia*.

Platystemon californica, called California cream cups, is pretty but exceedingly short lived.

There are several very handsome annual salvias. *Salvia splendens*, Salmon Beauty is a salmon form of the well known and much maligned



Margaret DeM. Brown

Torenia fournieri

S. splendens. Now and then a spike will be scarlet instead of salmon. There is a deep purple form now too. *Salvia patens* has the brightest blue in any flower. *Salvia horminum* Pink Gem has rose colored leaf bracts, at the termination of the stalks and Blue Beard has dark blue ones. Both are quite stunning.

Torenia fournieri although listed as a greenhouse annual does well if started indoors. It is very pretty, about one foot high, having tubular pansy colored blue-lavender flowers, with dark velvety purple at the tips of two of the three divisions of the lower lip; the central one has a

bright yellow landing place for the insects and is purple on the margins. The plants are much branched and free-flowering.

The ursinias were handsome all through May and June but then seem to have bloomed themselves into a drying stage. They made a picture with the blue and violet iris and yellow and orange erisymums. *Ursinia anethoides* is less compact while *Ursinia pulchra* has larger and lighter colored flowers and they are marked with reddish orange at the base of the orange ray florets while the *U. anethoides* has an almost black marking which is not as extensive. They are one foot or less high and



Margaret DeM. Brown

Zinnia pauciflora

exceedingly floriferous while they last.

The viscarias are handsome annuals and bloom right on into October. According to Bailey they should be called *Lychnis coeli-rosa*. They are somewhat like carnations in appearance and have an elegant and graceful shape. The stems are greyish green and have numerous side shoots, the leaves are linear, long and narrow. The flowers

born at the tips of their own stems which rise from the leaf axils have cylindrical buds and at the base of each of the five petals is a two parted projection. The flowers are $1\frac{1}{4}$ inches across. The stems are recumbent or somewhat floppy. The white ones are lovely with phlox or other warmly colored flowers, but the pale blue, pink and crimson ones are pretty too. However, it is not a good plan to mix the colors

because each is too bright to harmonize with the other.

This year I have had *Zinnia paucifolia* for the first time and think it is gay and pretty; with small flowers one inch across on much branching stems, 20-24 inches high. The flowers are a deep scarlet far daintier than the usual zinnias and not as stiff.

In other parts of the country annuals act differently. In places such as Bar Harbor they seem to grow particularly well and probably on the Northern Pacific Coast. The only way to find out how they will behave in a particular garden is to

try them. As with all other plants, if one wants to succeed with them one has to concentrate a certain amount of attention upon them, but they are well worth the effort. Beginners in gardening often think it is easier to raise perennials for their supposed permanence. All the readers of this magazine know that this is not so and that perennials have a way of becoming sick and dying like any other plants. Each has its good points. Since the annuals are perforce temporary, it is not a serious matter if occasionally there is an ugly one or one which has a weak constitution.



R. M. Adam

The City of Edinburgh from the Garden

The Royal Botanic Garden Edinburgh, Scotland

In presenting the series of pictures that follow the editor wishes to thank Sir William Wright Smith for his courtesy in sending the excellent pictures taken by Mr. Adam. For all gardeners and horticulturists, this garden is one of the most interesting, but to Americans it is of special interest because of the great number of American species that can be found in its collections and the fact that many plants introduced from China, notably the collections of the late George Forrest have come through its bounds to the

hands of plant lovers everywhere.

Compact in plan, not large in area and entirely surrounded by the city itself, the Garden is an amazing demonstration of what can be gathered and kept in health in such small limits.

No mention can be made here of its long and interesting history and of many important botanists and horticulturists that have lived and worked here, but it is interesting to remember that like many other botanic gardens it had its beginnings in the study of medicinal plants.



Part of the Arboretum in the Garden



R. M. Adam

*Part of Arboretum in the Garden
Photographed from roof of Palm House*



The Rose Garden



R. M. Adam

Collection of plants arranged according to botanical classification



The Pond



R. M. Adam

The Pond



Spring Scene. Crocus and Snowdrops under Beeches



R. M. Adam

Primula sikkimensis (left), Meconopsis betonicifolia (right) under pines



The Wild Garden
Scilla and Meconopsis under trees



R. M. Adam

The Wild Garden
Primula and Rhododendron



Rhododendron Hybrids



R. M. Adam

In the Rhododendron Collection



R. M. Adam

The Rhododendron Collection

Rhododendron insigne (immediate foreground), *R. Smirnovi* (center distance)



Herbaceous Borders



R. M. Adam

The Wall Garden



Entrance to Rock Garden



R. M. Adam

*In the Rock Garden
Leiophyllum buxifolium in immediate foreground*



Rhododendron ferrugineum in masses along the ridge in the Rock Garden



R. M. Adam

The Rock Garden



The Moraine



R. M. Adam

The Moraine



In the Rock Garden



R. M. Adam

Rock Garden. Linnaeus Memorial on right



The Rock Garden. Rhododendron sanguineum in foreground



R. M. Adam

The Rock Garden. Meconopsis integrifolia (on the right)



R. M. Adam

The South Bank of the Rock Garden

The Idealist in the Garden

To the wise and happy gardener winter is not a season of discontent or gloom; nor is it a time of idleness. For no matter whether the gardener is fortunate enough to be able to live all through the year within touch of his garden or whether he spend the winter months in the city, for those who are so inclined, there is always a pleasant round of activity and profitable work to be done. Of course, I am referring to earnest gardeners only; those who place the growing of plants among the first group of necessities in their lives, those to whom gardening is a vital expression of themselves as much as song is to the birds "who sing because they must."

This type of gardener can have no sympathy with those who complain of the dullness of this time of the year and of the bareness of the garden. With all the wealth of berried shrubs, evergreens and woody plants with colored stems no garden worthy of the name need be unattractive during the dreariest and coldest days; and there are so many eager little plants at hand which gladly hurry into bloom at the first call of mild weather and sunshine that nowadays no winter need be dull or drab. And there is the exquisite beauty of the snow when it is piled high over the brown and sleeping earth and drapes the shrubs and trees with whiteness.

Yet, how little we appreciate the snow. To many it is just so much white which will eventually end with a period of "dirty weather," that variety, which readers of Jane Austin will recall was the horror of all those

dainty and very elegant ladies who walk across her pages. Yet what a boon it is to the gardener who then feels sure that his plants are well blanketed and warm and as long as it lasts no fear need be felt regarding their safety. Of course, there is always danger in a heavy fall of snow of the damage which may be done in the breaking of evergreen boughs under its weight but what fun it is to sally forth during such a storm armed with a long pole with which to shake the snow from the heavily laden branches and to watch them spring back into their natural positions as their white burden softly floats down to earth. Only when sleet and freezing rain descends is it a time of terror and a period when prayers should be offered up, like unto times of drought, to avert the disaster.

Truly he is a happy man who can be at his garden in the snow time. To watch the whiteness transform and remake familiar objects in the landscape is a joy comparable to the beauty of summer. How black the greens of the evergreens become! How bright the red berries seem! How clear cut the stems of the trees and shrubs stand out against the whiteness! The Japanese appreciate this beauty far more than we; their literature is filled with it and the snow takes its place with the important flower festivals of the year, the cherry, the iris, the maple leaves in autumn.

There is a quaint old story which always gives me pleasure to recall of a man who was very much in love, who, writing to his beloved after a heavy

fall of snow made reference to the beauty of it. In the reply the adored one made no comment upon "the lovely marvel," which was a disaster to the fair lady for the erstwhile lover lost all interest in one who was so callous to beauty. All of which sounds rather amusing to our Western minds, and yet, might it not be to our advantage to be able to feel the spirituality of beauty as keenly?

But, alas, all winters are not snowy ones; too often the cold descends upon the garden without a protecting coverlet. Against such time we might again take a lesson from the Japanese who use homemade blankets of straw to tuck about their garden treasures during spells of severe cold. How often our barreled and burlapped plants are smothered by misplaced kindness when all the protection needed is some shelter in periods of intense cold. Many a plant would easily go through the winter if during clear and cold weather only a slight protection from the heat of the sun was given it, an evergreen bough or a screen of straw, to be removed upon the approach of the milder days. How often would a hurriedly erected windbreak save the life of some cherished shrub or some too early awakened plant; or a hastily built roof avert the formation of death dealing ice on the root stock or branches of some almost hardy thing. All of these precautionary measures are, to the happy gardener, but a part of the winter work just as spraying against insects or mildew is a portion of the summer routine. A glass winter roof over a lewisia is no more obnoxious to the sight than a Japanese beetle trap; nor is a straw or evergreen screen before a cherished holly any more of an eyesore than a wood framework which holds up an Emily Gray rose.

It is all in the way one looks at it. They are all necessary adjuncts to the health of the garden; their use justifies their existence.

Winter is also the time to study permanent forms of shelter. On one's rounds through the garden during cold weather the need of protection for this or that plant is the more easily noticed and notes can then be made and at the same time a temporary shelter provided. Often a small rugged shrub placed to the windward or sunward of some doubtfully hardy plant will be its salvation. And then there are hedges! We in America have too few of them. Aside from the privacy and greenery which they afford they are the backbone of the gardens of England. Without the shelter they give, gardens in that country would not be able to boast of many of the lovely plants which have proven hardy there. It is surprising how much protection even a hedge of deciduous material affords. Not only does it break the force of the cold winds of winter and temper the heat of the sun but it also forms a screen against the late frosts of our ever eccentric springs.

Happy, indeed, is the gardener who has or can have walls. Paradoxical as it may seem at first thought, they protect against both heat and cold at the same time. Many plants will prove hardy when grown on the north of a wall where the sun cannot awaken them from their winter's sleep while others, against the southern face, will be ever grateful for its protection from the cold. English gardening literature gives long lists of plants, both woody and herbaceous, for variously facing walls, east, west, north and south. To the adventurous gardener no more need be said of the wall themselves, but walls are composed of stones

and even a single stone may prove to be a God send.

Often a sizeable rock placed to the south of some treasure will hold the frost in the ground about the plant and so prevent its being heaved out by every thaw. Placed to the north of another plant a stone will save its life by protecting it from wind and sleet. And many a time a plant will prove to be hardy by planting its roots under a stone so that its growth comes out beyond the rock's edge but its roots are safely covered and protected from the elements.

In our open winters fortunate indeed is that gardener who is able to be with his plants the whole time and not pent up within a city miles away from them while alternate freeze and thaw are doing their best to force the roots out of the earth to a slow and certain death. Only too well do I know this having lost goodly batches of species of cyclamen, iris, campanula, etc., through not being able to go to their assistance during periods of thaw. In such weather it should be a daily duty to make the rounds of the garden carefully inspecting the welfare of the plants. At such times the gardener's work basket should contain humus, soil, dry leaves, evergreen branches, sticks and stones. These will all come into use during such pilgrimages for after pressing the root or crown of the plant back into the soil, dry earth or humus, depending upon the plant, will often be needed to tuck in about it to make it comfortable and secure. At other times a cover of leaves pinned down with sticks or a cover of evergreen twigs will add the needed protection—for such times the Christmas greens should always be carefully saved and not destroyed. Then again, a hand-size stone may be the thing to

use to give the necessary comfort to the much distressed plant.

When some newly converted gardener complains that winter is a dull season, I wonder just what kind of a garden he possesses and to what extent the garden virus has taken effect. To such a one these things may all seem wearisome toil, but surely efforts made to save plant life for later beauty should be classed as joyous labor especially as while in the accomplishing of it the gardener, if his domain is wisely planted, is coming into contact with many things which are preparing to blossom or are already in bud. This "many" must be read as meaning in comparison with the garden where nothing blooms in winter and not in its usual sense of multitudes. Yet there are a goodly number of winter blooming plants which could be added to our gardens and would more than repay us for the extra care which they would demand. A. W. Darnell in his book of *Winter Blossoms from the Outdoor Garden* gives a list which runs up into the hundreds but in spite of the fact that the title page insists that the plants described are only those which flower during December, January and February, many earlier and later blooming ones help to swell the number. While the book is written for the British Isles it stimulates the covetous gardener here into an experimental frenzy; but more of this hereafter.

So far I have spoken of the winter work for the gardener who is able to live with his garden during that season. But there is also pleasant and profitable work for those who have to dwell in the larger cities with only haphazard weekend trips to where their heart's interest lies. Most of the libraries of our larger cities have files of old garden magazines and botanical

journals which contain an inestimable wealth of material for those who are willing to look for it. During this past winter I have spent many pleasant hours with Curtis' Botanical Magazine, Seeman's Journal of Botany, The Garden, The Gardener's Chronicle and many others. These last two English magazines are crammed with interest and information for ardent gardeners.

It was pleasant to come upon the accounts of the introduction of old favorites of mine and it was surprising to learn that so many of the plants which are comparatively new to us were brought into British gardens during the period between 1830 and 1850. Caring more for natural forms of plants, species, than for horticultural hybrids, I was gratified to find that almost all of the species for which a brilliant future was forecast at the time of their introduction have fulfilled that prediction; whereas the named hybrids which have been acclaimed and raved over have, in by far the largest number of cases, slowly but surely faded away. Only the best of these man-made plants last through the first flush of their popularity, but nature's products endure, a fact which should cheer us—at least those of us with limited purses—when we lust after some much heralded iris, rose or daffodil with a frightful price mark on it.

One of the hybrids which has gloriously stood the test of time is the yellow azalea Nancy Waterer. I had known that it was an old garden plant but how old I did not know. In *The Florist and Fruitist*, London, for the year 1869 is an excellent colored plate of this treasure which the quarantine has robbed us of—excepting at a frightful price.

Speaking of colored plates, it was interesting to watch their improvement as the years went by. At first the quaint and charming ones of the period from 1830 to 1850—then a twenty or more year stretch of rather mediocre ones with here and there a surprisingly fine one; an improvement begins in the early seventies which by the opening years of the eighties had reached a perfection which might well be copied by the makers of colored plates today. Sometimes the greens are not as clear as they should be and often the blues are far too near purple to be an exact picture of the flower, perhaps they have faded but even as they are they far surpass most of the flower pictures in the magazines of today.

Some very excellent plates occur as early as the fifties; a case in point is in *The Florist and Fruitist* of 1852, a picture of two fuchsias—Duchess of Lancaster, a single red and purple bicolor, and Glory, a most lovely single with white sepals exquisitely flushed with pink and pale red corolla. Its beauty awakened a dormant fuchsia love which had been sleeping since boyhood when an old gardening neighbor who refused to be influenced by changing fashions in plants still held on to the beloved fuchsias of her girlhood days and was never tired of pointing out their excellencies to my eager admiration. It was rather of a surprise to discover during this excursion into the past, that the popularity of the fuchsia dated back to the late thirties for I had always thought that the seventies marked their heyday—perhaps we got the fever long after it raged in Europe. Anyway it was a splendid kind of sickness to have and I for one would welcome a second attack. A similar wish is registered here for the revival

of interest in that delightful old favorite, the lantana.

Perhaps I should retract that wish lest it come true, for heaven only knows what hybridists would do to the fuchsia. With our insane, and inane, lust for size, our hybridist might eventually develop one large enough to sit under during a summer shower and then one would have to lay out his garden in square miles to be in proportion to the flower. Bigger and better are two words which should seldom be joined together in a flower description for there is nowadays much too much emphasis laid on the "bigger." That brings me to make another protest against the current work of the novelty seeking hybridist. Why should they try to give us flowers which grotesquely imitate other flowers? We now have with us a scabious-flowered zinnia, a double nasturtium, a paint brush-like double cyclamen, in which the beauty of each is completely lost, becoming but a messed up raggedy bunch of color. The simple process of doubling a flower is bad enough—I can think of no flower which the doubling has really improved. Only the rose and the chrysanthemum have not suffered by it and with these the doubling has been a natural development along perfectly natural lines, so that the result is not a jar to our sense of beauty of line or of shape, simply an addition of parts. Rose-shaped flowers and composites, because of their circular boss-like form, may easily fill up their centers without wrecking the symmetry of the form as is always the result in an asymmetric flower. But even at that I still prefer the singles.

But to return to the library work. I was overjoyed to find in *The Garden*, London, for June 25, 1887, an ex-

tremely beautiful color plate of *Sternbergia lutea* and its variety *angustifolia* together with a short article on the genus. As I have written of this plant before and have been trying to find full descriptions of the several other species of this genus I shall pass on the information to others who might be as interested in this genus as I am. Here is a group of bulbs which prolong the flowering season of our gardens, one of them, *S. lutea*, is obtainable here and several others are inexpensive in Europe and should be gotten into this country as soon as possible.

Sternbergia lutea has been cultivated in European gardens for several centuries. Parkinson called it the great autumn or winter daffodil and botanically *Narcissus autumnalis major*. He comments upon the fact that it did not set seed in English gardens, and continues "although under the head there is a little green knot which peradventure would bear seed if our sharp winter did not hinder it." Dean Herbert also comments upon this seedlessness which we can also cavil at: "It is strange that no writer has ever described the seed of this plant nor have I ever seen it. Hill speaks of sowing the seed in beds as if he had readily obtained it and asserts that the seedlings vary much in the shade of yellow and he gives a figure of a double variety which is probably lost." And I add, "Praise God it is!" But, I should be willing to give a great deal to have even seen those with varying shades of yellow.

S. lutea and its varieties are native to the eastern part of the Mediterranean region. Its leaves are about half an inch wide, about a foot long when fully mature; there are 5 or 6 to each bulb and are produced at flowering time

which is usually given as October, but this article says "autumn and winter." And Darnell states that they are rarely produced after the end of November. I have never known of any in this country to flower after the middle of October. Can any southern gardener report a later flowering? This species has several varieties as would be expected in so widely distributed a plant.

S. lutea var. *angustifolia* is a form with narrower leaves and somewhat smaller flowers which are produced in more abundance. It also grows more freely than the type. Darnell gives the additional information that "established clumps of the variety *angustifolia* will always supply their beautiful Crocus-like blossoms from October to the end of January, provided they can have just a little shelter, the blossoms being of great substance stand the buffeting of the weather remarkably well." Would that we could get this plant into our gardens!

S. lutea var. *graeca* from the mountains of Greece has very narrow leaves and broader perianth segments. Darnell adds that the leaves are also very short and the flowers are almost stemless and that the flowering season is the same as that of the type.

S. lutea var. *sicula* has not only narrower leaves but also narrower and more pointed segments. No habitat is given, but reference is made to a variety unnamed, or it might mean that this variety is still being discussed—"the Cretan variety has considerably larger flowers."

S. macrantha, which also passes under the following names—*latifolia*, *stipitata* and *Clusiana* (Boissier not Ker), is a native of "Palestine, Syria, Western Persia, Asia Minor, etc."—these "etc." after the habitat of plants are always maddening with their ven-

geance. The leaves are blunt and slightly glaucous—about an inch wide when fully developed. The bright yellow flowers are produced in autumn with tubes somewhat cylindrical and two inches long, segments oblong and from one to one and a half inches broad, that stamens are about half the length of the segments. This would give a flower considerably larger than that of *lutea*. Of this species Darnell says nothing but I have seen it listed in several European catalogs.

S. colchiciflora is another old plant—"cultivated by Clusius and Parkinson, by the first as *Narcissus persicus* and by the latter under the name of the lesser autumn or winter daffodil (*N. autumnalis minor*)." This species should be eagerly sought for as it possesses a delightful fragrance "perfuming with its Jassamine-scented flowers, the fields of the Crimea." The leaves are narrow and linear, produced with the fruit in the spring for it flowers without the foliage in autumn at about the same time as *lutea*. The flowers are a "very pleasing pale or sulphur yellow"—the segments being nearly an inch and one-half long. I am wondering if it could possibly be that Hall had seed of this species and mistook them for *lutea*. It comes from the regions of the Black Sea, from the Caucasian Mountains to Crimea and is as hardy as its better known relative. I have never noticed this species listed in catalogs, nor do I find it in Bowles or Darnell. It has two varieties—*dalmatica* and *pulchella*, of which nothing is told.

S. Fischeriana is a hardy spring blooming species from the Caucasus. The eight or nine leaves are strap-shaped, about three-fourths of an inch wide and are pale green covered with white bloom. At flowering time they

are about six inches long but later they lengthen. The flowers although of a bright clear yellow are paler than those of *lutea* and when fully expanded by the sun are as much as four inches in diameter. It is said to increase very freely.

Later on in that same year, October 8, 1887, evidently in response to the article, a W. B. Hartland, of Cork, writes, "Colchicums, *Cyclamen hederifolium* and *Sternbergia angustifolia* make a pleasing effect now in my garden. The golden flowers of the *Sternbergia* seen through the Ivy leaves of the *Cyclamen* which is now in bloom form a lovely contrast of pink and yellow with white *Colchicums*." Thus far it is excellent, but he goes on to say that the *Colchicums* were spaced at even distances through the large round bed of the other two. Of all plants to be used as bedders! What those old Victorians would do! And yet who knows what our descendants shall say of our taste. The combination sounds entrancing and far be it from me to question the honorable gentlemen from Cork as to the permanence of that planting, but — *sternbergias* want a hot sunny site to flower well and *cyclamens* demand shade or semi-shade; so anyone who contemplates trying this combination should bear this in mind before he buys his *cyclamen* corms at a dollar a cormlet.

During the past winter I have studied foreign plant catalogs more than ever before, probably because I have had more English ones to pine over. Page after page of *rhododendrons* spread themselves before my coveting eyes; there were shrubs and flowering trees of which I had never even heard, and all with alluring descriptions which when looked up in *Bailey* or *Bean* lost none of their glamor; unobtainable perennials pa-

raded past my envying sight like the endless march of *Banquo's* descendants, scores of desirable bulbs which were offered for a song, but here are worth their weight in gold, if they can be had at all—all a tantalizing dream to us except through the long and patient way of raising them from seed, if obtainable. How can American horticulture advance if American gardeners are denied the privilege of trying out new plants? True, a few seep in each year but their price is usually so exorbitant that as far as the average gardener is concerned they might as well not be offered. And the result is that the nurseryman who was daring enough to get them in does not sell enough to warrant his carrying them, and the stock gradually disappears. *Viburnum fragrans* is a case in point. A few years ago small plants of it were offered at \$10.00; in England, plants one to two feet high cost about seventy-five cents. No sales were made the first year that it was offered with the result that the following season the stock was destroyed to make room for more profitable material. How can American horticulture advance if American gardeners are denied the privilege of trying out new plants?

I look forward to the time when our Society will have a trial garden of its own such as the Royal Horticultural Society has at Wisley, where new and rare plants may be tried out and then distributed to members. If a nominal price is charged for the plants, it would not be a costly undertaking as it would then be practically self-supporting. And if after a plant became established in the trade it was withdrawn from distribution, the nurserymen could have no complaint. On the contrary, they should rejoice at the free advertising the plant received through our introduction.



Arctomecon californicum—Flowers natural size

Arctomecon Californicum

BY SUSAN DELANO MCKELVEY

In 1844 Captain J. C. Frémont discovered for the first time this interesting member of the Poppy Family and in the "Botany" published with his "Report" is found a most excellent drawing of the plant. The "Index Londinensis" cites four illustrations only, including Frémont's; all are reproductions of drawings.

Mrs. Frederick M. Stone of Mil-

ton, Massachusetts, who accompanied the writer this past spring on a collecting trip to the southwest had been asked by the New York Botanical Garden to procure seeds and plants, the Garden hoping to introduce the species into cultivation. While in Las Vegas, Nevada, with the help of a local horticulturist, Mr. C. M. Owen, the plant was promptly located not far to



Arctomecon californicum Torrey

the south of that town; it was fairly plentiful and on May third was both in flower and in fruit. Mrs. Stone secured the desired material.

Pictures were taken by the author with the assistance of her chauffeur-photographer, O. E. Hamilton, and may be of interest as, or so it is believed, the first published photographs of the *Arctomecon californicum* in its native habitat. The southwest in the spring of 1934 was drought-stricken and the gypsum-clay soil which the plant evidently prefers was caked and apparently moistureless; despite this, and although showing the effect of a recent bad sandstorm, it was blooming well. Mr. Owen, however, felt that the size of the flowers and the height of the inflorescences were less vigorous than usual.

The plant forms dense clumps of leaves close to the ground and the flowers are produced above these on slender, branched stems 14-24 inches in height; the leaves are a pale sage-green color and are covered with long pale hairs; they are paddle-shaped in form, toothed at the apex; the petals, filaments and anthers are a clear bright yellow, the upper half of the pistil maroon.

Plentiful in the region where photographed the species was found also, although plants were less numerous, about ten miles to the northeast of Las Vegas, and again not far from St. Thomas, no great distance to the north of the Muddy Mountains. The elevation about Las Vegas is approximately 5,000 feet, in the last mentioned locality considerably lower, only 1,500 feet. Arnold Arboretum, Harvard University, July 27, 1934.

The Utowana Eugenia

A Shrub from the Gold Coast of West Africa; New to Cultivation

BY DAVID FAIRCHILD

In my hand I hold a hard round seed that would almost pass for a Navy bean. I have just eaten the slightly astringent, almost black fruit from which it came, and now I am going to plant it and raise another charming little *Eugenia coronata*, to add to the hundreds of its kind being tried for the first time in cultivation.

This little plant means a great deal to me; probably because, as I look at the seed in my hand, my mind returns to the day I first found it, and I remember the beautiful scene that burst upon me as I walked along the strand, looking for plants and saw across the bay, the white walls of the haunted castle of Elmina, which stand to mark the spot of the first foothold of Europeans on the Gold Coast of Africa.

This castle, built by the French in 1383, over a century before the discovery of America, changed hands repeatedly during the vicious national sea fights of later centuries between the Dutch, Portuguese, French and English.*

It is interesting to a botanist to know that the quarrels which ravaged this coast had to do, not only with gold but as much with a plant, the peppery seeds of which were called the "Grains of Paradise." These furnished one of the principal condiments for the strong drinks en-

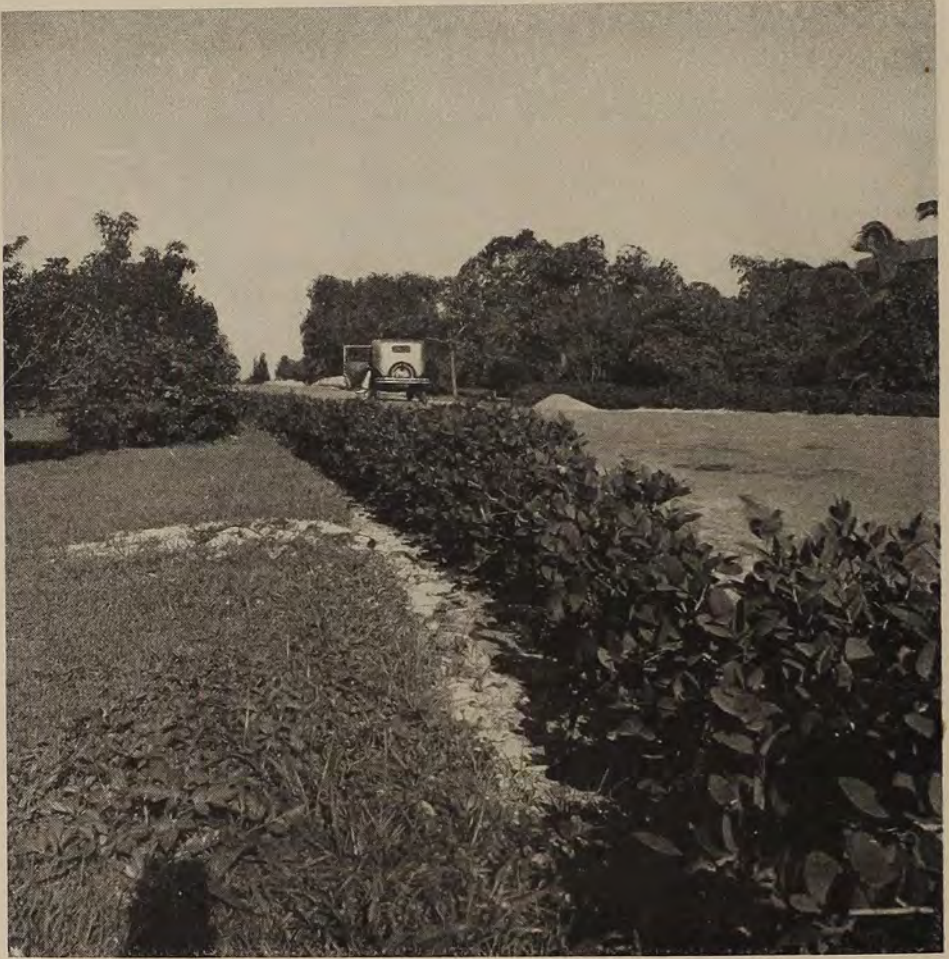
joyed by epicures during the Middle Ages. So excessively did the brewers use them to give a fictitious strength to their beers and spirits that in time a penalty of 500 Pounds was inflicted on any brewer found having "Grains of Paradise" in his possession.

Whatever may have been the true history of these grains of paradise, the fact remains that their importation in Europe gave to that part of the West coast of Africa from which they came the name of the "Grain Coast." Today they have been so long forgotten, that I don't suppose half a dozen botanists in America have even so much as heard of *Amomum grana paradisi*.

It has always seemed to me a pity that in the process of developing our gardens we have so often unconsciously removed from our plants almost all of their historical romance or human interest, as the news writers call it. I doubt if it occurs to most of those who grow plants in their yards ever to enquire where the trees and shrubs they gather about them came from. They may know the name of the nursery firm from which they bought them, but nothing more arouses their curiosity.

I am conscious that this shrub of mine will probably have all the romance brushed off of it when it appears in the nursery catalogues of the future and I shall see it listed simply as "*Eugenia coronata*, a free-flowering black fruited shrub with

*A photograph of this castle, taken from the place where the seeds of this shrub were collected, is reproduced in my *Exploring for Plants* (Macmillan Company), page 548.



The Gold Coast Eugenia as a low hedge

dark green foliage; useful for hedges, etc."

This, however, does not deter me from investing it with as much of romance as I believe should attach to its debut; whatsoever the future may hold in store for it; for I believe the facts of its arrival in America as a new garden shrub are worth recording.

It is against a dim background of bloody sea fights over the Grains of Paradise that I see my little shrub

and I take pleasure in imagining that it existed there on the strand where I found it, forming a solid cover almost down to the surf, away back in the fourteenth century when the first foreign sailors set foot on that tropical coast.

What first attracted me to it was the fact that it was growing where the salt spray, and possibly even the sea in the stormy season, must reach it. Desirable shrubs that can stand these conditions are not abundant,



Eugenia coronata

and I was on the lookout for just such plants for use on the shores of Biscayne Bay in South Florida. Then when I found that the natives recognized in it a fruiting shrub of some value I was more than ever keen to find some seeds to bring home. I found a single fruit and tasted the meager black flesh that surrounds the seed and decided it might attract the children as well as the birds of Florida; but hunt as I would, with my two carriers to help me, I could not for the life of me find more than a half dozen fruits. I thought this a bit strange, but since then I have learned that even here in Florida, where it bears large crops of fruits, the birds strip the bushes as soon as the fruits ripen.

This introduction was given the serial number of P. E. I. 73117, and a brief note about it was printed in the Inventory of New Plants Introduced, Division of Foreign Plant Exploration and Introduction of the Department of Agriculture. It carries this identifying number today.

"In my notes of March 1, 1927, I find the original description as follows: *Eugenia coronata*, Schum and Thonn. (Accession Number 1215.) An evergreen tree becoming a low, almost creeping shrub on the seacoast within reach of the salt spray. It forms on the coast near Elmina Castle masses of several acres in extent which are not over 2 to 3 feet high. Its pretty white flowers and dark red, almost black fruits are attractive. I think this would be a valuable shrub to grow on the seacoasts of Southern Florida where shrubs and trees which will stand the salt spray are in great demand. I hired natives to collect fruits but only a very few, unfortunately, were ripe. Should be propagated in greenhouses and sent to Chapman Field."

All this happened seven years ago. In the meantime we have learned more about it. Three plants arrived from six seeds sent in, and these were planted in the test nursery of the Plant Introduction Garden at Chapman Field, Florida. The soil is very rocky, and alkaline in reaction, for the rock is an oolitic limestone. From the beginning these plants

showed their ability to withstand the lime and to make a reasonably rapid growth and, what is more, to fruit heavily when only a foot or so high. The early fruiting habit has made it possible to get up a stock of young plants quickly and even to try it out as a hedge or border shrub along one of the driveways of the Garden, where, owing to the traffic from automobiles, they are often covered with limestone dust. Under these rather difficult conditions the little plants have grown and fruited abundantly, and the birds have feasted upon the fruits.

The small white flowers are not conspicuous, and the fruits are too dark a red to be showy, but the dull, dark green of the thick leaves and the general habit of the shrub make it very attractive. It is being tried on the seashore in Florida and in Nassau but there has not yet been time to demonstrate fully the behavior of the species under these conditions, although it can be said that so far its growth has been satisfactory.

Perhaps I should have waited until more complete trials had been made and until it had been demonstrated that this is really an invaluable shrub for our seacoasts before writing it up, but I am getting on in my life and cannot wait to do this; furthermore, there is the argument that a certain amount of publicity is needed now in order that a wider and more thorough trial be made to see how it will withstand the cool winters of Florida and the excessive amount of lime in its coastal soils. What it will do in Southern California is also a question that can only be answered by extensive trials.

I have not always been fortunate in my choice of common names for

plant immigrants; some that bear the names of friends of mine have gone down to oblivion, but I do not anticipate that such a fate will befall this one, for which I have chosen the name "Utowana," in honor of the Research Yacht of my friend Allison V. Armour. It was aboard this yacht and with the stimulating and helpful assistance of its owner that the Expedition of 1927, down the West Coast of Africa, was made, during which the little shrub was found, and it was in the laboratory of the Utowana that Dr. Dalziel, of the Kew Herbarium, another mem-

ber of the Expedition, identified the species.

A recent note from Dr. Dalziel says: "I have no photos of it in West Africa, nor can I find it figured in botanical literature. It would be all the more interesting to see a photo showing the success you have made of it."

With this description of its place of origin and the circumstances of its migration to America, let me leave the Utowana *Eugenia*, to its fate.

THE KAMPONG.

Coconut Grove, Florida.

Notes on Tree-Hardiness

BY LEON CROIZAT

The winter of 1933-1934 was of severity almost unmatched along our Eastern Coast. Lulled into a feeling of security by the succession of mild preceding winters landscapemen, foresters and gardeners who had used shrubs and trees native to more favored countries have found their plantings in many cases severely hurt or sadly depleted by frost-kill.

The losses of last season have served the purpose of acquainting landscape designers and silviculturists with data of the tenderness of many species and varieties. A tabulation of experiences reveals, however, much discrepancy as to how well the trees and shrubs have stood the rigor of the winter. One finds that the same species are reported "killed to the roots," or "severely damaged," or "slightly damaged," and it is not possible in the majority of cases to explain away the difference in reported behavior with errors in the naming of trees; with the cultivation of unrecognized favored varieties normally harder than the type-species themselves; with accidents of exposure.

Agriculturists of long experience know that the tenderness of plants capable of withstanding some degree of frost is relative, and will not be surprised in learning that it has been my privilege to observe at the beginning of last May two *Buxus sempervirens* growing almost side by side, of the same size, planted in the same ground and into the same soil, one unscathed and in bloom, the other one severe-

ly burned. They also know that many evergreens, likely to stand very low temperatures in their native mountains will suffer in our gardens during a cold spell, although each tree of any species may behave in its own fashion.

These examples could be multiplied and are mentioned briefly here to indicate that the tenderness of trees is relative and that the reason of the difference of behavior during cold weather may not be ascertained, after all, only through the study of the mechanism and nature of the lesions apparently due to the frost. If it is true that results of far reaching moment often are achieved as the result of researches narrowed to a limited field of inquiry one can not help thinking, nevertheless, that little progress in the understanding of the question at hand is made in the minute study how cells fare and eventually are decomposed under the impact of severe cold.

Freezing in the living organism is a complex phenomenon which involves passing from life to death, the inability of a living tissue to come back to normalcy of function after a period of duress, and its final decomposition into inert chemical elements. To enounce the facts in so broad a sense seems naive. Yet it is necessary to state them. Exactly as the microscopic study of the lesions caused by frost-bite or by pneumonia does not explain why certain favored individuals are immune from them or more resistant against them, so the knowl-

edge of what goes on within one cell or a group of cells does not account for the fact that cells nearby, or cells of the same nature belonging to another organism of the same species exhibit wholly different vital coefficients.

In the light of experience, the reason a plant dies from frost and the reason another one of like kind survives involves the consideration of questions of individual body-resistance, and suggests that it is necessary to broaden the field of inquiry in the effort to take in in a constructive sense factors which may be of a greater importance, possibly, than the action of frost itself. Of late we have learned something of the subject of general resistance in animals, and without following in the tracks of Sir Bose or speaking here of the function of endocrines we may surmise that plants and animals, both being alike cellular organisms, are related also in the field of individual and specific resistance against external injurious agents.

The experiments consummated in the laboratory often exclude the free play of elements present in nature or assume likeness of effect as identity of cause. In certain cases the result of patient investigations concludes with the statement of evident and already well known facts. N. A. Maximow, for instance, in his paper "Internal factors of frost and drought resistance" (in "Protoplasma," 1929) recognizes that analogy exists between frost and drought resistance. Since he himself warns that analogy is not identity I feel free to note that the analogy of effects of drought and cold is familiar to any one who has observed a tropical landscape in periods of

drought (the "winter" of many Southern American countries), it closely paralleling in a sense landscapes familiar during February in our northern lands. This, of course, is not analogy of resistance but analogy of aspect. As to the fact, however, that cells are dormant in winter on account of dehydration with the protoplasm being able to withstand it, it may be said that intelligent experimenters with and growers of succulent plants, particularly of species from the southern hemisphere, know well that the specimens can be put to rest in summertime as affectively as our native plants rest in winter. For this it is sufficient to place them in full sun and water them just enough to keep them alive. The action of cold and heat, in association with conditions of drought, indeed, appear to be equally potent so that the study of what goes on within the cell-walls would seem to require undivided extension into the data of vegetative cycles, adaptation, morphology, phylogenetics, soil chemistry and the like.

These considerations suggest that the question of winter-hardiness is not wholly one of frost-action and indicate that in the field of practical cultivation much can be accomplished through thoughtful care of specimens in order that their individual and specific "coefficient of body-resistance" may be increased through selective reproduction of favored strains and efficient methods of handling.

The data published by Theodor Basiner in 1861 ("Bulletin de la Société Impériale des Naturalistes de Moscou," Tome XXXIV, No. 2, pp. 481-489) may be of actual interest as they contribute something

to our understanding of the subject in its theoretical and practical sense.

In the early spring following an extremely cold winter (during which in not less than five occasions temperature below 35 F^{hr}. were recorded) Basiner observed that ash, cherry, pear, apple trees and maples of the School of Forestry of Kief (Ucraina, Southern Russia.) were damaged in a peculiar way. These trees, mostly 4-6, some 8-10 years old, exhibited at the trunk at an height of from 2 to 4 feet a ring of bark turned sickly, grey-brown and exuding a brownish fluid. Below 2 feet and above 4 feet the trees were sound. At the end of May, somewhat later than the undamaged trees, the plants that suffered in this manner brought forth leaves and in some cases flowers, which, however soon withered as they could not be fed from the roots. A new growth of branches took place below the damaged spots.

Basiner concluded that since the extreme cold had been accomplished by clear skies and absence of wind, and had been preceded by the fall of snow lying 1½-3 feet deep upon the ground at the time of the coldest snap, the lesions must be attributed to the warming up of the trunks by reflected sun-rays from the snow. To justify his conclusion Basiner notes that the upper branches of the affected trees had not suffered; that trees screened by other vegetation at the southern and eastern side were not damaged; that specimens of *Catalpa syringae-folia* and *Sophora japonica*, protected with a thin straw-mattress, altogether pervious to cold, had pulled through unscathed. If it is true, which the conscientious Basiner notes, that Peach-trees and *Hybiscus syriacus*

also so protected had died, only a few sprouting back from their roots in the spring, the facts tend to bear out Basiner's contention that the warming up of the trees by sun-rays reflected upon the snow, this taking place at the most unseasonable time, may have been the essential cause of the damage. Basiner's added suggestion that snow lying under and around valuable specimens should be covered with manure, ashes or soil does not seem to be worthless, as the baneful effect of a sudden warming up of tree parts during the cold weather has been noted by many observers.

Basiner further notes that the trees that stood better the rigors of that memorable winter were those from the southern, comparatively temperate zone, belonging to species that do not stand the normally milder winter in Petrograd. Amongst the trees that did not suffer or were damaged only in part, or in single specimens Basiner lists, *Populus nigra* var. *pyramidalis*, *Populus dilatata*, *Juglans regia*, *Morus alba*, *Fagus sylvatica*, *Rhus cotinus*, *Rhus typhina*, *Eleagnus angustifolia*, *Syringa chinensis*, *Ampelopsis hederacea*, *Staphylea trifolia*, *Acer negundo*, *Robinia pseudoacacia*, *Robinia viscosa*, *Robinia hispida*, *Tamarix gallica*, *Amorpha fruticosa*, *Colutea arborescens*. Covered entirely by snow young specimens of notoriously tender species, *Buxus sempervirens*, *Taxus baccata*, *Zelkova crenata*, *Koelreuteria paniculata*, *Paliurus aculeatus*, *Jasminum fruticans* did not suffer at all.

To this table Basiner appends the remark that *Fraxinus* and *Acer pseudoplatanus*, trees from the north, found up to the 60th parallel, fared badly, and quotes Hartig (in "Vollstaendige Naturgeschichte der forst-

lichen Kulturpflanzen Deutschlands," 1851) to the effect that in Germany trees of those genera and species often are damaged by frost up to the age of 10-15 years.

In the conclusions of his study Basiner says that the trees from the southern temperate zone that stood the terrific cold in Kief can not be grown in Petrograd, not because of the severity of Petrograd's climate but because the growing season in that season is too short for these trees to evolve their normal growth-cycle. This, in my judgment, is a thoughtful observation of far reaching practical import as again it tells that to be winter-hardy under conditions of abnormal severity a tree must have been afforded the opportunity of developing normally and fully, to say must have been planted right, in the soil that suits its best without attempts at late cultivation or unseasonal transplanting. In other words the "body-resistance" of the tree must be built up because tenderness in winter may be as much the result of improper soil and faulty meth-

ods of cultivation as the outcome of too cold a spell.

The fact that trees from temperate zones went undamaged through the winter of which Basiner writes while trees from the north suffered heavily, tends to imply that in the former the mechanism of adaptation to changes in temperature is endowed with greater elasticity than in the latter. It is well known that plant-life which has evolved resistance against extremes of any kind (e. g., *Cactus* against drought) fares badly when its environment is changed. The same is observed of animals and man does not escape its rule. Basiner's parting remark that plants obey the laws that govern animals, and that trees and men are unequally capable of answering to cultivation and culture, some responding to it more readily and fully than other ones although all of them may come from the same parts, seems to me a cold, matter-of-fact statement rather than the utterance of a poetic thought worth of a pupil of Buffon or Rousseau but not of a student of Pasteur.



Chinese Hairy Chestnut, age about 20 years, bagged for breeding purposes, Bell, Md. This tree, known as O-16, has never blighted and bears regular crops of large nuts.

Blight Resistant Oriental Chestnuts in the Eastern United States

BY H. P. STOKES, Virginia

The destruction of the native American chestnut forests by the Oriental chestnut bark disease was doubtless the greatest catastrophe that ever befell the forests of America, except, of course, the white man himself. Unable to wipe out the disease, or even control its spread, the federal government early set about to overcome the staggering loss by introducing blight-resistant species.

As early as 1901, three years before the discovery of chestnut blight on American soil, G. D. Brill, of the office of Foreign Plant Introduction, Bureau of Plant Industry, had done ex-

tensive exploration work in China and had sent back seed and root cuttings growing there. When it became apparent that the American chestnut was threatened with destruction the work was speeded up and was still further hastened when, in 1914, it was found that the disease was of Chinese origin, in the reasonable hope that Chinese species might prove resistant to it.

Of the four species found in China and the one in Japan, the Chinese hairy chestnut, *Castanea mollissima*, is the most promising from a horticultural standpoint. In size, form and habit of growth it is similar to a well grown

apple tree, though rather larger and more upright. Bearing begins at from five to seven years from seed. The twigs, which contribute to the name of the species, are covered with fine dark hairs and are grayish in color. The leaves are similar in size to those of the American chestnut, but are a darker green and with more wrinkled surface. The dead leaves hang on the trees all the winter, after the manner of the white oak. The burrs contain from one to three nuts and are covered with stiffer spines than are the American species. Ripening begins in southwest Virginia early in September, considerably in advance of the native nuts, and possibly for that reason are much freer from attacks of the chestnut weevil.

The seedling trees vary widely in bearing habits and the size of nuts produced. As an average the nuts run somewhat larger than the American chestnut, with quality about the same. Select specimens produce nuts as large as the European chestnuts found on our eastern coast, and in sweetness and texture surpass any chestnut ever sampled by the writer. Some of these select trees are now being propagated as horticultural strains. No difficulty has been experienced in grafting and budding the *mollissima* on its own roots, but for the writer it has consistently refused to accept the stock of the Japanese chestnut. Curiously enough, in spite of this refusal, it readily hybridizes with the Japanese, which characteristic seems common among all chestnuts. The tree is blight and drought resistant to a high degree.

The Japanese species, *Castanea crenata*, produces the largest of all chestnuts. The tree is similar in size and habit of growth to the Chinese. The twigs are slender and reddish-brown

in color. The leaves are small, slender and fall in the autumn. The wild seedling nuts are about the same size as those of the Chinese seedlings, but the genius of the Japanese has produced horticultural strains with nuts two inches across. In flavor they are inferior to the American and Chinese species, but are superior to those of Europe. Among the Japanese they are a common article of diet and make a really palatable dish, either boiled or roasted.

Heavy crops are the rule and no chestnut, except some hybrids, comes into bearing at such an early age. From a nursery row grown from seed planted in the spring of 1932 the writer picked a mature nut in the autumn of 1933, a period of eighteen months. Like the Chinese chestnut the Japanese is highly blight resistant but does not withstand extreme drought so well.

In 1912 an experimental chestnut orchard was established at Bell, Md., fifteen miles northeast of Washington, D. C. This planting consisted of both foreign and domestic varieties as well as many hybrids, the result of Dr. Van Fleet's careful work. Inasmuch as the planting was experimental no effort was made to protect the trees from blight infection from the surrounding native chestnut growth. As a result of this and other experiments it has been demonstrated that not only the Chinese hairy chestnut and the Japanese chestnut, but also numerous hybrids are highly resistant to the disease. Now, after more than twenty years, the native growth has entirely disappeared while many of the trees planted by Dr. Van Fleet are growing vigorously and bearing regular crops.

The hybrids resulting from the various crosses show many interesting

variations. Some are low-growing, sprawling shrubs; others are large, vigorous trees. There is also much variation in foliage, fruit and resistance to disease. The presence of the blood of the alder-leaved chinkapin, *Castanea alnifolia*, is evidenced by a tendency to blossom and bear continuously throughout the season. The nuts occurring in masses, are usually small and of little value.

One hybrid, a cross between the Chinese hairy chestnut and the American chinkapin, *Castanea pumila*, and designated as S-8 in government records, is worthy of more than passing notice. The tree is thrifty, blight resistant and bears regular crops of nuts of good size and quality.

It grafts and buds readily on any stock on which the writer has tried it and bears at a very early age. Being self-sterile it requires cross-pollination. Both Chinese and Japanese species are self-fertile so far as the writer has observed.

It must not be understood that Oriental chestnuts are immune to blight. Explorers of the U. S. Department of Agriculture have found evidence that the disease has probably existed in China for centuries, with the Chinese chestnut as its host. The Chinese carefully cut away the diseased bark of

domestic trees, evidence of such surgery being found on trees judged to be from two to three hundred years old.

Experience in this country has proved that some trees are stricken and die from the disease; some are attacked but recover of themselves, while other trees, equally exposed, have never been attacked. The fact that the trees have withstood the disease for a long period in the Orient indicates that they will do so in this country. Furthermore, selection and propagation of trees that have not been subject to attack will in all probability result in strains wholly immune to the blight.

The writer does not believe that either the Chinese hairy chestnut or the Japanese chestnut will ever be able to compete successfully with our more vigorous native growth as a forest tree, but does believe that select horticultural strains offer real possibilities as a profitable orchard crop. It may be confidently stated that the difficulties facing the orchardist in planting Oriental chestnuts are certainly no greater than those facing the grower of apples at the present time. The tree is quite as hardy as the apple, the fruit certainly much less susceptible to the attack of insect pests and it will be many years before the domestic supply can meet present demands.



K. F. McCusker

Going South

Collecting Plants Beyond the Frontier in Northern British Columbia

BY MARY G. HENRY

PART IV

After riding 18 miles, the night of September 6th found us camped on the south fork of the Sikanni Chief River, with charred wrecks of trees all about us and a threatening sky overhead.

The morning had dawned gray and bleak, with a temperature of 18 degrees at six, and except for a brief rift in the clouds in early afternoon, the day had been a dark and cheerless one.

We were due to cross over the Caribou Pass the next day, and from time to time during the evening we examined the sky as the gathering dark clouds unmistakably foretold a storm. After leaving this camp there was no fit place to stop until we crossed the

Pass and dropped down to timberline on the other side, a distance of 17 miles.

We retired about ten. Shortly after midnight I awoke and heard a scarcely audible pattering on the tent. I reached my hand outside and, as I guessed, the ground was covered with snow.

I started a fire at five-thirty. It was still snowing and the cook-tent across the stream seemed a long way off. After breakfast we packed up as fast as we could under the trying circumstances.

It was eight-thirty before we were in our saddles, and the snow was falling fast. We forded the river and rode for some time through burnt timber. We



Mary G. Henry

Caribou Pass

were rising higher every minute, and in consequence the temperature fell rapidly. The snow was dry and very slippery and by this time most of us were on foot and leading our horses, in an effort to keep warm.

Suddenly I found myself flat on the ground, with my face buried in the snow. I got up quickly, inwardly rejoicing that no one had seen my predicament. I had to let go my horse when I fell and it was not easy to catch him, for as soon as I ran up abreast of him, he put on extra speed and left me away behind. Finally I got him cornered against two of the other horses and managed to grab a rein.

By the time we were above timberline the wind was blowing very hard and howling around the mountain tops, and it had become very, very cold. A

real young blizzard was on in earnest and scarcely a word was spoken by anyone as we pushed ahead as best we could.

An enormous, freshly made footprint crossing our trail told us that a grizzly was not far off, a sheep could be seen on a nearby mountainside, and now and then a few almost snow-white ptarmigan fluttered away. These last looked so small and helpless, and yet they were perfectly able to cope with the situation that was anything but easy for us.

This was one place we could not stop; we had no choice, we just had to go ahead. So on and on we went with a sort of dogged determination and I wondered when, if ever, we would reach the summit of the Pass. We were walking right into the teeth of the

gale and we were so cold we could hardly speak, and the snow continued to fall.

An indefinite period of time passed, and still we climbed and climbed.

Finally we started on the last long pull toward the final ridge and it surely did seem a long way off.

Thanks to a kind Providence, we reached the top of the Caribou Pass, altitude 6,000 feet, and were over, at last!

The wind was still blowing, but less fiercely, and fortunately the violent gale had ceased. It was intensely cold, but the snow was lessening and had become very fine, so we could see quite plainly the beautiful white mountains which rose about us on all sides.

It was truly a most magnificent spectacle. We seemed to be right in the center of a wonderful white world. There was not a particle of uncovered earth, and except for black, perpendicular patches of rock on the mountains, snow covered everything. This was the most wintry place I ever saw.

Still on foot, we dropped slowly down to a broad Alpine meadow about 1,000 feet below the Pass. The snow had entirely ceased and much of the ground was bare. Our way was over a stretch of sphagnum moss, almost a bog. It was very soft and wet and we sank ankle deep at every step. Our horses had scarcely carried us all day, so we mounted them once more, rode over the soft ground and around the shoulder of a mountain.

We descended rapidly to a lower level and in a little while the sun appeared from under a cloud and shone brightly.

It was hard to believe that only a few miles back there was a blizzard on the Pass.

Behind us we could see nothing;

dark clouds hung low over the mountains, while straight in front of us the on the green earth everywhere as far sky was blue and the sun was shining as we could see.

I do not ever remember to have been so pleased with, and so grateful for, its delicious life-giving warmth.

After our exciting day we celebrated in the evening by having an extra big camp fire. But our greatest celebration came in a way we least expected. It came from overhead. After retiring for the night, someone called to look out, and as we did heads emerged from all the other tents too. The "Northern Lights" were the finest we had ever seen. At first several wide rays of light appeared in the sky and then these vanished completely, when the whole horizon became illuminated with a pale green glow. Only for a few minutes, however, as long narrow darts of light, that seemed to reach from heaven to earth, took their place in the sky, while just above the mountain tops was a distinct rosy radiation. We all stood speechless in admiration of all this unexpected glory. Various other darts and dashes came and went. Sometimes the change came suddenly and sometimes the lights simply seemed to fade away. The wonder and magnificence of such splendor in the sky was very compelling.

In about half an hour all was as before and we returned to earth again, when a realization came that it was freezing hard, and we were all decidedly chilly, so we rolled into our sleeping bags once more and closed our eyes for the night.

The following day while riding along the upper Graham River, in an open meadow, we scared up a flock of Blue Grouse and to our great surprise one was pure white.

Norman, Jr., went after it with his



Mary G. Henry

Exploring a trapper's cache

.45 and in a short time tied it on his saddle along with two others. He is a remarkably good shot. Lately he brought in 19 blue grouse, spruce hens, and ptarmigan with the heads shot off 18 of the 19, which amazed the cook, as a .45 caliber Colt is no easy weapon to handle.

Howard, too, shoots well. When he

was about to purchase a pistol to take along on the trip, Norman, Jr., suggested one like his own. Whereupon I asked him if he did not think Howard too small for such a big weapon. I cannot forget his reply, "A .45 will make him as big as anybody." Next day Howard had one of his own.

Early in the season we met many of



Mary G. Henry

Chum and I leading the pack

these birds with pretty little families toddling after them. We never molested one then. But by this time the young were quite grown up, and as they were excellent eating, they formed

a welcome addition to our very restricted fare.

While our tent was being set up, September 8th, I wandered about in search of plants as usual, and ran



Mary G. Henry

Mt. Laurier

across Howard with his .22 caliber pistol, looking for Blue Grouse. I joined him and we soon ran into some of these birds. He insisted that I shoot first, so when I dropped two with three shots Howard was more pleased than if he had done it himself. He then shot a third. This was enough for a nice breakfast.

On September 9th we crossed Laurier Pass, which is nobly guarded by Mt. Laurier, and I saw the first plants of *Rhododendron albiflorum* I had seen this summer. This was near the Pass. There were also *Phyllodoce empetriiformis*, *Sorbus dumosa*, with its handsome ripe red fruit hanging in clusters, and a *Sambucus sp.*, also with red berries.

I climbed another mountain on September 10th. In many places it was so steep it was all I could do to reach up some of the high rocks over which we had to go, but luckily there was

usually a crack in the rock, or root of some sort in which I could get my toe and scramble up. We struggled through a dark, dense forest of balsam. Just above timber line the surface of the mountain, where there were no rocks, was covered by deep, dry lichen with patches of *Dryas integrifolia*, *Vaccinium Vitis-Idaea* and *Arctostaphylos rubra*. Underneath the ground was pure peat.

As morning passed the sky became overcast, and soon we saw a storm was imminent, so we made a bee-line for the summit. It was all very steep and, as we were traveling as fast as we could, we rose rapidly. High up we crossed a stretch of broken, stony shale and, in spite of the lateness of the season, there were growing in it a gorgeous array of polemonium, myosotis, and saxifrage, all in their prime of life. The wind was swirling around the mountain top and rain soon started



Mary G. Henry

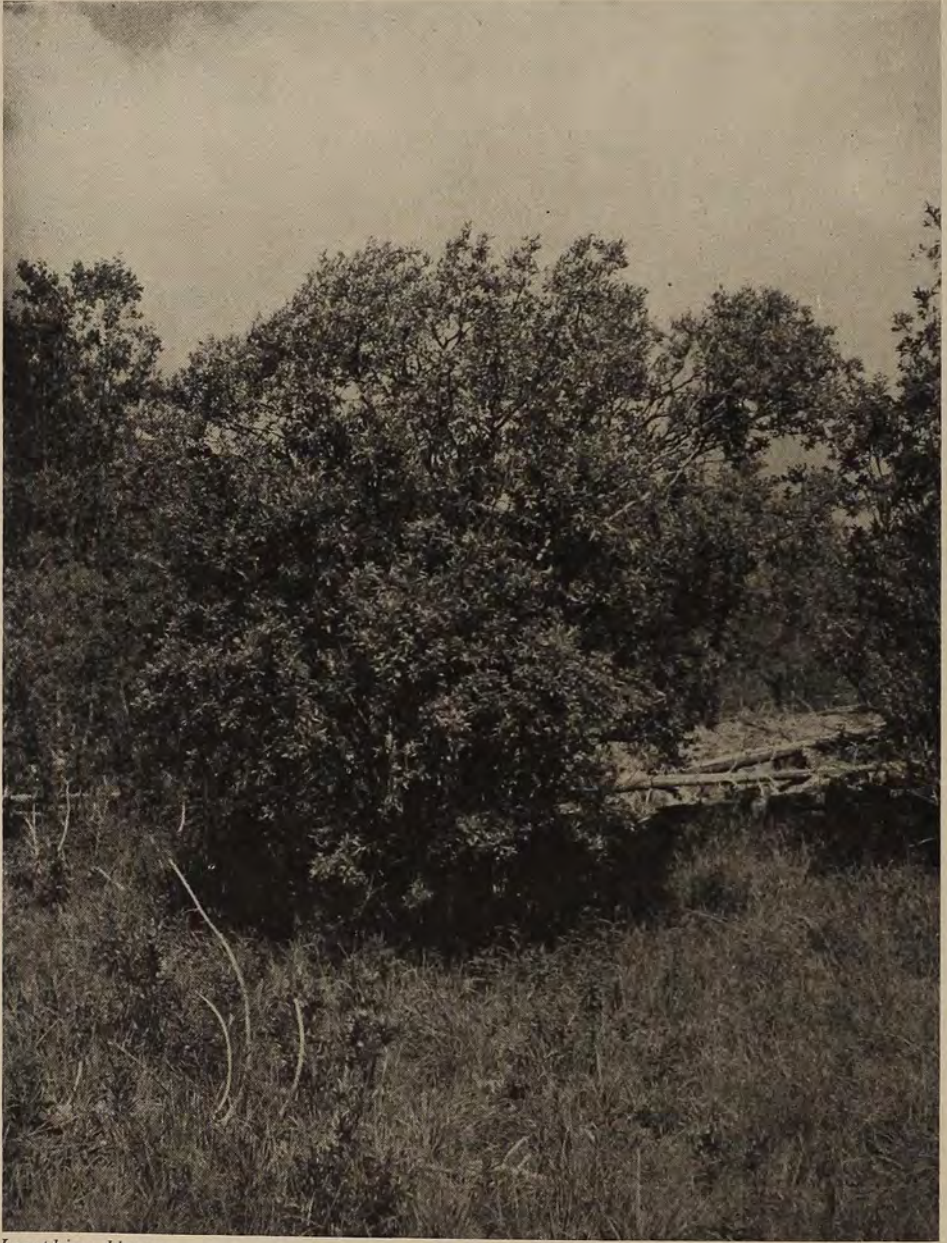
Dryas integrifolia, snow a few feet away

and drove in our faces, no matter which way we turned. Near the summit under foot the wet, hard peat was covered with a dwarf *Salix*, and every now and then appeared a deep blue bell of *Campanula lasiocarpa*.

When we reached the top the icy wind blew so hard my vision was impaired and I had to flatten myself on the ground beside a big rock in order to obtain a view. Luckily the rain soon stopped. A tiny saxifrage was in bloom up here. What brave little plants these mountain flowers are! We had made good time on the way up so the day was yet young, and I told McCusker, who accompanied me, I would like to go up a few small nearby peaks, before returning. There was nothing different in the flower line, but the sky had now cleared and I surely did

enjoy the afternoon. I do take great pleasure in finding the wonderful mountain flowers, but somehow I notice that on the days I find scarcely a plant to dig or a flower to press, the pure joy of climbing seems just as keen, so dearly do I love romping up and down the mountains with their rigid, dwarfed and stunted balsams clinging tightly to their sides at timber line, with tiny willows climbing as high as they can, and with beautiful alpine flowers growing in all the possible and impossible places they can find.

Time came to return but I did not choose the shortest way home. There was a big meadow, altitude 5,000 feet, just above timber line, and to my surprise numerous aconites and delphiniums, even at this late date, were still



Josephine Henry

Salix brachycarpa, a 12-foot specimen growing near Graham River

in full bloom. We came to timber about 500 feet below this. We aimed for, and soon reached, a ravine and, as we hoped, at the bottom of it there was water. The stream was a tiny one, not

very much more than a trickle, and the side walls were of almost perpendicular rock. We slid down. Tall firs quite high above us had the effect of making the little ravine seem deeper than it

really was, and the pale blue sky seemed very far away. Straight out in front of us and looking at the mountain on the opposite side of the valley was the only way we could see. The view was restricted, yes, but it was not the less beautiful because of this. There was a little shelf of rock and I just naturally sank down on it. The streamlet was trickling by, only a few inches away, and the sparkling water tasted good: I was not tired, I never did seem to be tired, but I just wanted the luxury of sitting still and enjoying the fragrance of the firs and the simple but rich beauty about me.

I see it all now, even as I saw it then, and know I can never forget.

In a short time we continued down the ravine and, as sometimes happens, the stream disappeared underground. In some places the rocks were quite sheer, but it was an easy matter to drop down these. Going up this way would have been more difficult. The descent did not take long.

We enjoyed our huge camp fire immensely in the evening and we thought the Victrola sounded particularly beautiful in that narrow valley; with abrupt mountains rising on either side. We had learned from previous trips that a Victrola is at its best with a camp fire in the foreground and black darkness beyond, and even an ordinary, everyday melody sounded wonderfully lovely in the calm shade of a tall fir tree or the purple shadow of a mountainside.

We came to the Graham River again next day, and I can never forget how cunning the little squirrels were. They were especially thick in pine forests above the river where the ground was hard and dry, and were evidently filling their larder in anticipation of a long winter. They were all busy at the same occupation,

which was drying out toadstools, preparatory to storing them for the winter, and they all used exactly the same method of drying. We saw them again and again carrying toadstools up the tree trunks, and then, after going out cautiously along a limb, place the toadstool carefully where it could not be spilled by the wind; and upon several occasions we saw these most intelligent little animals jump up and down briskly on the branch beside it, undoubtedly to see if the toadstool was sufficiently steady to withstand the vicissitudes to which it would be liable during its period of drying out.

The morning of September 14th was cold, very cold indeed, so I was not surprised when I crept out of my sleeping-bag and looked at the thermometer with my flashlight, to see that it registered but 12 degrees. Frost was on everything in sight, so thick it almost looked like snow. The tents, ropes, the trees, each twig with all its needles, and every blade of grass were all sparkling wonderfully with millions of tiny crystals, and the dark sky was full of shining stars. No sound had yet disturbed the early morning stillness. In a few minutes I heard Cliff busying himself in the cook-tent, and soon Norman was bustling about and in a short time he had a big blaze before our tent.

Another mountain today; it was my last this summer. I started out about nine accompanied, as usual, by McCusker. We followed a moose and deer trail that led us up along a stream. There was a good bit of muskeg and in places I sank in almost to my knees; in other places the trees grew so densely that it was difficult to penetrate the forest. It was dark—so dark and so cold I rather suspected that the ground might be frozen not



Josephine Henry

Looking over my precious cans of plants

far from the surface. I was, therefore, not surprised to note that the trees were balsams. Every now and then we came across a few plants of *Rhododendron albiflorum*; the bloom of course had long since passed.

We soon left the trail and took a more direct way to the top. It was very steep and, thank goodness, the trees were not growing so closely, but the deep soft moss slowed us up considerably.

Before long we were on the edge of the forest. The much smaller trees about us were quite scattered, and prostrate junipers were much in evidence. Beneath our feet the ground was hard, stony, and dry. As we went higher we came to large fine patches of *Vaccinium Vitis-Idaea*, and in moister, peaty pockets there were some *Phyllodoce empetriformis*.

The sky soon began to cloud up

rapidly and as we watched, a storm was gathering up the valley. We were above timber line in a short time, climbing up over rocks. These rocks were big and we could not see much ahead. Suddenly we had to stop. A steep precipice with perpendicular walls about 500 feet deep or more was right before us. It was strewn with quantities of enormous squarish, broken rocks, many as large as small houses. We looked over and saw that it was impossible to cross this wild abyss. It was necessary to descend into a little valley slightly to the north, and then to start upwards again. It was slow work clambering over the huge rocks. We traversed a knoll that was covered with hard peat between the outcropping stones, and I was immensely pleased to see *Loiseleuria procumbens* growing profusely all around us. This tiny shrublet is



Mary G. Henry

Cassiope on Mt. Laurier

related to the rhododendrons, and, when I first knew it, used to be called *Azalea procumbens*. It is a darling, semi-creeping little thing, and only rises about 2-4 inches from the ground. The almost microscopic flower buds were in place and ready to unfold the following spring into tiny pink azalea flowers. The small, hard, evergreen leaves were scarcely $\frac{1}{4}$ inch long and $\frac{1}{16}$ inch wide. *Loiseleuria procumbens* is a circumpolar species. I have seen it growing in the Swiss Alps. It is a most choice small shrub. This was a good opportunity for me to dig some nice plants, for the hard peat would make good balls. *Campanula lasiocarpa* was here too, and even at this late season it was displaying its splendid deep blue bells, so large for such a tiny plant. *Dryas integrifolia* formed wide patches all about where there was some mois-

ture in the ground, and where it grows it is one of the finest carpeting plants I have ever seen. As it was necessary to return this way, I postponed my digging until then.

The sky soon became intensely black overhead, and in a couple of minutes such a heavy fall of snow set in we could hardly see more than a few feet before us.

McCusker glanced around for shelter and we soon came to an overhanging rock that gave us the protection we needed. Our sandwiches then emerged, for it was time to eat, and by the time our short meal was over the snow had lessened sufficiently to see ahead, so we continued our way.

We crossed over a crevice in the rocks; it seemed to go down to China! We then descended slowly, for the going was hard, but when we came to smaller rocks we could travel

faster, though some of the stones were loose and had a way of going from beneath our feet. The snow had nearly stopped by this time, and was melting almost as fast as it fell. We soon aimed upwards towards the top again from another angle, but this, too, was steep. We headed for a slide which looked fairly firm from a distance, but upon approaching saw it was composed of a sort of loose, very coarse gravel which slid at the slightest touch. The worst of it was that it kept on sliding and gathering momentum until fairly large rocks were caught up, and the reverberation it made must have sounded for miles. We quickly crossed this difficult place.

The steep climbing made us very warm. We were nearing the summit rapidly and just below it we reached an alpine meadow which was fairly level. We stopped a few minutes, sat on the snow, and scanned the mountain tops with glasses for a sign of the other members of our party, who were scattered over the mountainsides, but saw no life of any kind.

In the north the sky showed us the blackest gathering of clouds we had seen all summer, so we knew another storm was brewing. But why look at the dark side? Overhead was a small blue patch, and in it the sun was shining brightly. Of course it could not be for long, but it surely was the "silver lining" I had hoped for all day.

Many of the mountain tops were hidden by snowstorms. Each mountain, strange to say, seemed to gather a storm of its own. The huge black cloud we had been watching was coming up the valley and told us that our storm would strike us soon. The snow-white mountains all about seemed to be playing "hide-and-peek" in the clouds; sometimes some were completely hidden while others seemed on

guard, and then the situation changed, for the hiding ones emerged as the others disappeared. We sat and enjoyed all this wild, weird grandeur—indeed I was quite spellbound by it all. But I did not want to fail to reach the summit, and I knew we could not grope our way through the snowstorm that was rapidly approaching us. So we arose and hurried to the top.

The intense sun that shone for about 20 minutes had melted much of the snow and bared the ground in small patches so I could see what was underfoot. The surface was covered with a typical Alpine turf composed of dryas, antennaria, vaccinium, etc., intermixed with several kinds of lichen. Through these *Anemone*, *Aconitum delphinifolium*, *potentilla* and *Oxytropis arctobia* were scattered. Gray rocks showed in many places.

In a short time we stood on the summit. Mountains were rising all around us, but many mountain tops were still hidden from sight by the clouds. The altitude of the mountains was lower here than in the country farther north, though of course we had been travelling really in the eastern slopes of the Rockies all summer, and not in the highest ranges.

I was wondering, as I stood here on my last mountain top of this season, when I would be standing on my next mountain. I hoped it would be the coming year. But next season was a long way off and I knew full well "There's many a slip." I was going to have the fun of planning, anyhow—nothing could spoil that. Then, even if I never reached my beloved Northland again, I should always remember how intensely I had enjoyed even the mere thought of going.

I hoped the next trip would be farther north and that we would



Josephine Henry

Mary Gibson Henry

start from Alaska and cross the mountains from West to East. I wanted to aim straight (of course our trail would be far from straight) for Mt. Mary Henry, and I hoped there would be time to climb twice as many moun-

tains as there was this summer. How I thrilled to think of the days I should spend on the trail, hoping it would be early in the year when there would be those grand long days that start at 3 or 4 in the morning,

and with ever changing, magnificent scenery continue the round of the sun in the sky until she dips her fiery sphere behind the farthest mountain's skyline, about 11 P. M., new flowers opening on the mountains, meadows of fallen sky, and thousands that bloom between. Hours, days, even weeks, perhaps, of this gorgeous bliss!

As every rainbow has its "pot of gold," so every trip has its "pot of gold" too. And often, like the one at the foot of the rainbow, it is never, never reached. But there is something that always makes me hope and spurs me on, and it is: When I cannot reach the "pot of gold" I am after, another always springs up and takes its place.

A powerful philosophy is necessary to carry us through life, and when we cannot get exactly what we want, we needs must make the best of what is ours already and be thankful, remembering always that "a bird in the hand is worth two in the bush." (My own version of this little axiom is, "A bush in the hand is worth two birds in a bush.")

So if the "Tropical Valley" was not all, in my great enthusiasm, I hoped it would be, the marvelous scenery and transcending beauty of the flowers every day this summer made the trip vastly worthwhile for me; aside from many other reasons we all enjoyed it too. It is true that, unquestionably, our trifling discomforts tended to accentuate an appreciation of the fact that the best times are only to be had by contrast, and we enjoy good times a hundredfold when hard work brings them to us.

But next time the "pot of gold" I will be after will be, I hope, a visit to my own mountain, for such it will always be to me, Mt. Mary Henry. And, oh, how I hoped this time I

would reach my goal. I longed to see her snow-mantled pile nearby. I wanted to meander leisurely around her base and to climb, as fast as I could, her sides. I longed to sleep on her rocks, and to see the first rays of the rising sun turn her sides to a scarlet like molten metal, and the last rays of the sun at night to make her glow like gold. And then, at last, when shadows come, peeping from my sleeping-bag for one long last look before I closed my eyes, I wanted to see her dark blue form being gathered into the night.

All these thoughts made me feel very quiet, and I lingered here for some time in complete silence. At last I turned around, and slowly drank deeply of all I saw about me and, for the storm was almost on us then, we descended as fast as we could.

The cold wind was blowing hard and in a moment I could scarcely see through the driving snow. We did not stop this time, for we were anxious to get to a lower altitude, so we hurried on over the slippery snow. In a little while the storm abated. McCusker was ahead and making haste down over a loose slide of gravel and small stones, from which the snow, on this lower level, was fast disappearing. The slide was perhaps a hundred feet long, and the minute we set our feet on it, it began to move. I was about 50 feet behind, almost running and trying hard not to lose my balance.

Something made me look up. The biggest black bear I ever saw was standing on the little knoll we were aiming for. For the fraction of a minute he did not move. Halted in his stride, with one hind foot behind the other, his inky body formed a striking figure against the snow-flecked rocks. A wild animal seen in his native lair is always an extraordi-



Mary G. Henry

Abies lasiocarpa, dark green form, 30-40 feet tall, altitude 4,000 feet

narily handsome sight, and this one was no exception. Rocks and small stones dislodged by our feet, as we made our way over the "slide," were still rolling noisily down the mountain, and the bear, deciding we were not to be trusted, ran lithely like a cat and disappeared quickly over the far side of the knoll, which we reached a few minutes afterwards.

I dug up the *Loiseleuria procumbens* and *Campanula lasiocarpa*. We then made our way rapidly over the slippery rocks, and soon we were in the cold, dark balsam forest again. It was rather surprising to me to learn that these *Abies lasiocarpa*, 30 to 40 feet tall, covered with such deep green leaves, are the same species as the very different looking prostrate or semi-prostrate *Abies lasiocarpa* that grew at timber line and that were as

blue, or bluer, than any Koster's spruce.

I was of course by this time quite thoroughly soaked, for I had neither coat nor sweater and my bare hands, roughed and torn by the rocks, were as red as my shirt.

After following down the stream we came to a slight rise in the ground where about a dozen huge spruces grew closely together. Soon there was a slender streak of smoke and the delicious aroma of burning spruce needles rose slowly in the still air. After drying out a bit we continued our way, and returned to camp in time for supper, when it began to snow and, as Chandlee said, "The flakes were as large as eggs."

He, too, had seen a big black bear and its hide was now hanging near his tent.



Mary G. Henry

Abies lasiocarpa, prostrate blue form, timberline, altitude 4,600 feet

Next day we awoke to find everything covered with snow and it was all very white and very beautiful. The horses were easy to round up, for they had stayed nearby, and we had

heard their bells tinkling all through the night. We started our ride at eight and our trail, a well beaten one from now on, was a gradual descent all day towards the Peace River.

The spruce trees became much larger at a lower elevation and formed a close and massive forest. As the way was downhill we covered the ground fairly quickly, most of us on foot. It was with a pang, when we came to the brow of a hill, that I saw the broad valley of the Peace with its noble river flowing down the centre and nestled on its banks a ranch.

Our trip was almost at an end. The mountains had been our home these eleven weeks. The floor of the forest or the alpine meadow had been our bed, and we had lived amid all the beauty of an untarnished world. Our faces were tanned by sun and wind and as we walked we trod easily, for we had tramped many, many miles.

Our way took us along the Peace River for two days. *Spirea lucida* was growing plentifully on the high bank, the flowers of course long past. It is a pretty, dainty little shrub. *Rosa acicularis* was very ornamental with its handsome red stems and prickles, and good sized clusters of fruit of the same color. The forests were composed of spruce and poplar mostly, with a few birches in places, and there were a very limited number of *Larix laricina*. *Prunus demissa* and *P. pennsylvanica* were carrying ripe fruit, and so was *Amelanchier florida*. *Lonicera glaucescens* bore an abundant crop of its pretty orange berries. There were many shrubby willows, *Salix brachycarpa* and *S. arbusculoides* being always plentiful. *Cornus stolonifera* and *Viburnum pauciflorum* formed much of the shrubbery. *Shepherdia argentea*, always a most beautiful small tree, was entirely satisfying when covered with its small yellow bells which emitted a heavy, sweet, honey-like fragrance. It was more, far more than satisfying later, for its little olive-like fruits of almost pure

silver and its leaves that, too, appeared almost as if of the same precious metal, made this shrub stand out as one of the most beautiful things I know at this season of the year. Roses were growing in almost every dry open space. Seed stalks of *Delphinium scopulorum glaucum* showed up in nearly every meadow and also usually in half shady places, as did those of *Aconitum delphinifolium*. Polemoniums were conspicuous by their absence, and *Smilacina racemosa* thrived under the trees. *Allium schoenoprasum sibiricum* was in bloom in wet sand. *Erigeron philadelphicum* was also in flower, and *Aster Richardsonii*, 3 inches high, covered with its showy lavender flowers, was forming fine mats and creeping down the bank.

After breakfast Josephine and I strolled up the river for a few miles. When we started out we had only intended going a short distance, but, as was so often the case, the farther we wandered the farther we wanted to go. A river bank with moist and sandy soil, like an open book for those who care to read the writing, tells the story of its most recent four-footed visitors. Here there were tracks of a deer, and we saw how it had walked timidly to the water, and then having been suddenly disturbed, its running footsteps disappeared into the forest. In a little while there were the imprints a good-sized bear had made. At first alone, and then we saw in a minute where she had coaxed her young one from the forest. And then, being in the open, she must have remained quite still, for the little toe marks of her baby showed where it played about her for some time while she—all mothers are alike—looked on with pride.

As we followed these and many



B. H. Chandlee

Norman Henry riding through young forest of spruce and white poplar, near Peace River.

others we saw that a coyote, a prairie wolf, had been slinking along in hiding amongst the shoulder high willows, waiting, following and watching for its prey. There were moose tracks, too, many of them.

So we wandered on and on until I realized regretfully, after rounding one corner after another, that considerable time had elapsed and we must return;

in fact, two hours passed before we regained camp.

We rode along the river more or less all day, and camped just above the Peace River Canyon. I found a nice fossil on the beach here, which reminded me that I had heard that the remains of a dinosaur skeleton had been taken from the Canyon some years ago.



K. F. McCusker

The little town of Hudson Hope, B. C.

September 17th I mounted Chum and sadly started on this, our last day's ride. We had been close companions for 80 days and the thought of parting really hurt.

We passed through some primitive ranches off and on all day. In one place *Vaccinium canadense* grew abundantly and it was decked in all its splendid autumn red. *Cornus canadensis* was carrying its tiny burden of brilliant scarlet fruits.

About three o'clock we came to the top of the hill that we must descend to reach the little town of Hudson Hope. After turning a corner we easily saw the handful of houses that told us our trip was over, and we were back in the arms of civilization once more. Yes, it was hard to believe, for the 80 days had all slid by surprisingly and amazingly fast. Slowly we rode down the long hill, in single file as was our custom. Our tents were set up right in the middle of the tiny town. We came to a halt. I dismounted. All best friends must part.

We had struggled over many, many weary but happy miles together, through heat and cold, and storm and sunshine, and then Chum, dear Chum, I put my face against his soft black cheek and kissed his nose good-bye. After covering over 1,000 miles our journey was ended.

No one of the sixteen of us was sick a minute, nor did we have one unpleasant incident of any kind the entire 80 days. The scenery and the flowers every day were beautiful beyond my fondest expectations. I had hoped that a rise in temperature, even of a few degrees, might have made more difference in the plant life near the hot springs. However, my family and I have no regrets; it was just these thoughts that gave us the best and most interesting trip we ever had.

After supper the evening passed quickly until, though the glowing embers that had been logs coaxed us to linger, we at last bid each other good-night.

The following morning, September

18th, Cliff called us at 3:40 for breakfast and we were sorry to see it was cloudy. Of course it was pitch black, but there were lighted candles in the breakfast tent and these gave a pleasant, cheerful glow. It was still dark when I stepped outside to finish stowing my plants in packing cases, by the firelight, for the days were very short. Our belongings were few and by about six we were all packed and ready to go.

A wagon had arrived to cart our duffle down the hill, in order to load it into the little open boat that was to take us down the Peace River. I turned and watched them pile our last things on the wagon. Our tents were empty, our fires were not burning, and in a minute we were all moving away ourselves. The others were ahead.

Mechanically I picked up my coats to follow them. The best trip I ever had in my life was over. No more swims in icy lakes and rivers night or morning. No more going to bed by the flickering light of a flame. I thought of how I loved to get up at break of day and, stepping from my tent, see the mountains all about me with the rising sun shining on their snowy heights. And I thought, too, of the wonderful days I spent hours and hours wandering around, wading streams, and climbing up and down the many hills and dips, before I reached the mountains' tops. And I saw again the marvelous panoramas that lay unfolded before my eyes, and the flowers that grew at my feet!

* * *

I appreciate tremendously the privileges that have been mine and the power I had to enjoy.

Log:

Left Ft. St. John July 1st, 1931.
Rode north along Halfway River.
Arrived Redfern Lake July 14th.

Crossed Prophet River July 19th.

Crossed Musqua River July 23rd.

Crossed Howard River July 26th (lat. 58° , long. 123° 44', altitude 2,550 feet).

Crossed Henry River July 30th (lat. 58° 30', long. 123° 56', altitude 2,300 feet).

Crossed Norman River August 4th (altitude 2,830 feet).

Saw Mt. Mary Henry August 5th (lat. 58° 35', long. 124° 30', altitude 9,000 feet).

Crossed Tetsa River August 6th (Met Sikanni Indians and Chief's son, who led us to Hot Springs on Toad River).

Crossed Racing River at junction of Toad River and visited so-called Tropical Valley August 9th (lat. 59° 59' 7", long. 125° 25', altitude 2,150 feet). Valley about three-quarter mile long and one-quarter mile wide.

Left Racing River August 11th.

Saw Mt. Gibson August 13th (lat. 57° 53', long. 124° 25', altitude 9,000 feet).

Visited Lake Mary August 19th (lat. 58° 24', long. 124° 25', 5 miles long, altitude 4,100 feet).

Visited Lake Josephine August 20th, one mile west of Lake Mary, 10 miles long.

Crossed Henry River August 22nd.

Crossed Howard River August 25th.

Crossed Musqua River August 26th.

Crossed Prophet River August 30th.

Crossed Halfway River September 8th.

Continued south via Laurier Pass, Graham River, and Aylard Creek.

Returned Hudson Hope September 17th.

I made a collection of herbarium specimens for the Royal Botanic Garden, Edinburgh, and another for the Academy of Natural Sciences, Phila-

delphia, gathered 76 packages of seeds for the Royal Botanic Garden, and brought home about 50 cans of living plants for my experimental garden in Gladwyne, Pa.

I am indebted to Sir William Wright Smith, Royal Botanic Garden, and Dr.

Francis W. Pennell, Academy of Natural Sciences, and Dr. Alfred Rehder and Dr. Hugh A. Raup, of the Arnold Arboretum, who have identified these plants; especially to Dr. Raup, who has made such a careful study and revision of my specimens.

Perennials for Cut Flowers

BY STEPHEN F. HAMBLIN

The truism that you cannot eat your cake and have it applies especially to cutting flowers from the hardy border. If you cut from your border when in bloom, except very sparingly, you just spoil the picture. Cut flowers for the house and to give to friends must be grown elsewhere. As a lover of perennials I insist that most cut flowers be raised from annuals, in rows among the beans and beets in the vegetable garden, given the same culture and gathered in the same generous way. There is no sacredness about an annual. Yank it up and lop off its top with the same abandon as you do to a cabbage or a carrot. But to cut the flowers of hardy perennials from their well ordered array in the show border, that is a crime against nature and art. A person who will cut stalks of lily or priceless iris for an admiring friend is either most reckless or generous. Unless cut with great care, their presence will be sadly missed through all their appointed days. Few perennials outlast their welcome in the flower border.

Of course almost any perennial flower may be cut. Some do not

stand up well even in water, some last but a few hours or close up as soon as removed from sunshine. As flowers for the house are much in demand these days, it is good planning to grow some especially for cutting only, so you may pick them all if needed. It is suggested that these plants be grown in a special place, in the vegetable or herb garden, given plenty of food and attention so that they will produce abundantly. They should be of good root increase so that they will withstand the plucking, of easy culture and inexpensive to buy as plants or seeds, and of course they should have an appeal to you for use in the house. There should be variety in form and colors, but fragrance often is of minor importance. Only one fragrant flower should be used at a time.

In March and earliest April I would have large patches of the little snow-drop and blue Siberian squills. Pull the little flowers right out and place with their own or special foliage. After the usual florists' flowers of the winter these fresh from nature are most welcome. I like to hunt for the

almost stemless flowers of the sweet violet (*Viola odorata*) and try to arrange them in a flat dish. They have a fragrance that those grown in the frames or greenhouse seem to lack. For wallflower effects plant the two perennials, *Cheiranthus alpinus* and *Erysimum ochroleucum*, or related kinds. They are as easy to grow as their cousin the radish, and they give glorious orange and yellow very early in the spring. Of the spring anemones the best to pick is the European wood anemone (*Anemone nemorosa*), of which there are color varieties and double forms. These increase rather rapidly to large mats, but the pasque-flower and blue Greek windflower do not. Put in plenty of narcissus of the cheaper kinds. I like, particularly, Angel's-tears (*Narcissus triandrus*), but alas, I have not as yet any quantity so I can but admire in place and would not dream of cutting.

In early May I range the swamps to pick a few marsh marigold (*Caltha palustris*). Some day I hope to have a brook with enough of these plants so that I can reap my own. With them I must have plenty of orange and yellow trollius, huge clumps by the brookside. I want primroses enough so that I can pick freely with a clear conscience, not the few hard-earned plants that I now have. For gathering I prefer oxlip (*Primula elatior*) in yellow and orange, and cowslip (*P. veris*) in those and other colors. Somehow I do not care to pick polyanthus (*P. polyantha*), there is so much bulk to choose from that I hesitate and pass them by for the more graceful oxlip and cowslip. Of the Japanese kinds I hope to pick handfuls of Siebold's primrose (*P. Sieboldii*) with big open flowers like lavender phlox. And with these there should be a huge colony of its Ameri-

can cousin, shooting star (*Dodecatheon meadia*). These are wonderful in a bowl with orange oxlips, and they will grow in the wet grass together. Blue phlox (*Phlox divaricata*), in blue, rose and white, as well as in violet shades, will grow just as well in a row among the vegetables as in its native woods. It is the most graceful of all kinds of phlox for bouquets. The clusters of the tall sorts of summer are too big and compact to be pleasing when cut. For tall bouquets cut freely Dame's rocket (*Hesperis matronalis*) which is mostly biennial, but seeds freely among the currants and in the garden corners. This is the fragrant flower of this season, but on other days pull plenty of lily-of-the-valley, with foliage of fringed bleeding heart (*Dicentra eximia*), or a few of the purpled-rose flowers may be mixed with the white of the convallaria. Just put this under a tree and the big colony will furnish special ferny foliage all summer. If you wish to anticipate the Japanese anemone of autumn, get a long row of snowdrop anemone (*A. sylvestris*) with white nodding flowers, or the more prolific native meadow anemone (*A. canadensis*) which spreads rapidly. The violet of the month is tufted pansy (*Viola cornuta*) in its wild purple or white forms, or its named "Jersey" varieties, and with this plenty of the white Allegheny foamflower (*Tiarella cordifolia*) the best and most prolific of the saxifrage family of spring. If daisies are your love, begin now to cut the yellow ones of doricum, particularly the Caucasian leopard's bane (*D. caucasicum*), for this is more vigorous and productive, though not as large, as the others.

In June there is plenty to cut so I will but suggest. Have columbine (*Aquilegia*) in many kinds in rows

among the beets, and cut very freely. Don't pick our little red one from the woods. Raise the red long-spurred hybrids from seed and gather until you are satisfied. The best campanula to cut is peachleaf bellflower (*C. persicifolia*), even the large-flowered and double forms. These last well in water, while other species wither in water and refuse to open any more buds. The big delphiniums have to be cut with an axe and displayed from the umbrella stand, unless side shoots are picked. I prefer the lower Siberian larkspur (*D. grandiflorum*), for not only is a whole stem in scale with most containers, but the colors range from blues to violet and rose and white and if freely cut, they will be produced well into August. The earlier hybrid of the tall garden phlox (*P. Arendsii*) and the tall *P. glaberrima*, as Miss Lingard, are more graceful than the larger hybrids. These will last many days in water, though casting their old flowers upon the table. This is the month of pinks, and I feel free to cut as many as I wish of the old grass or garden pink (*Dianthus plumarius*), but I like the taller fringed lilac pink (*D. superbus*) and the little maiden pink (*D. deltoides*). These three will give you the whole range of pinks for cutting, unless you like the tight heads of sweet-william. Pick freely the red little spires of coral bells (*Heuchera sanguinea*), and for fleecy white to accompany them try *Galium boreale* or *Asperula hexaphylla*, the bedstraws that precede baby's breath. My favorite cut flower of early summer is Caucasian scabiosa in blue and white, more pleasing than the composites in form. But if you want daisies, there are red and rose ones from painted lady or pyrethrum (*Chrysanthemum coccineum*), and I would cut the

double forms if I had any to spare, while the big white Shasta daisy now begins its two months of display.

With the heat of July the crop of flowers decreases, unless this eventuality is foreseen. Larkspur is gone, but clambering monkshod (*Aconitum uncinatum*) makes tall graceful violet sprays of larkspur like flowers, with plenty of white baby's breath for companion, even the named double forms. Of lilies I can bear to cut little coral lily (*Lilium tenuifolium*) for it is slender and swaying, and so readily an easily is it increased even from seed that I can afford a long row of it. For company when cut or in its row in the garden I like various kinds of thalictrum, in white, rose, purple or yellow. For decorative effect when cut the flowers of this season are the meadow rues (*Thalictrum*), and I like them all as composition helpers. The gem of all in color is Yunnan meadow rue (*T. dipterocarpum*) with violet blossoms, but I have never had enough of it to dare cut it. Either I or the plant must be at fault, for this is the one species that does not grow well for me. When you get acquainted with pentstemons and have increased them to rows, you will like the baby foxgloves for cutting. There is a long color range in the tall kinds, reds, violets, blues and to white. From a damp spot I like to gather purple loosestrife (*Lythrum salicaria*) and the white spires (with drooping tip) of the clethra loosestrife (*Lysimachia clethroides*). A special effect this month is the individual blossom of white plantainlily (*Hosta plantaginea*, or *Funkia grandiflora*) set in a flat dish among Maidenhair or other foliage. Each lasts only the day, but the fragrance cools the whole room. Now the daisies increase, as gaillardia in orange-brown and yellow, coreopsis in

yellow, echinacea in queer rose-purple tones appear with more to come soon in August. The best composite to cut is achillea, The Pearl, or its other forms. Here this plant redeems itself. In the garden its roots are a pest, and I once said that I would not plant it on my enemy's grave, but a bouquet of it with some larger colored flower would be an appropriate offering to my most intimate friend.

The list in August is even shorter. I love to pick cardinalflower, so I make myself grow it in quantity. The only requirement is perpetual water. The white form of the large blue lobelia (*Lobelia siphilitica alba*) makes a good companion; blue I like less. There are big blue perennial salvias, but they wilt unless plopped into water at once. I admire the orange color of the old blackberry-lily (*Belamcanda chinensis*) but I pick but little, waiting for the blackberry seed heads for winter bouquets. By mid-month the Hupeh anemone (*A. hupehensis*) begins to be plentiful, and I can enjoy this for many weeks. This is the month of sea holly (*Eryngium*) in many kinds of blue and pale straw. In the garden they are a bit queer, but cut they are quite decorative. Their running mate for oddity are the globethistles (*Echinops*), those animated golfballs in blue or green-yellow. Now there are plenty of daisies, such as stokesia, rudbeckia (try the more slender *Lepachys pinnata*) heli-

anthus, heliopsis, etc., and the earlier asters, like Italian aster (*Aster amellus*) with big blue heads, or white upland aster (*A. ptarmicoides*) that resembles achillea, The Pearl.

In September I can revel in sprays of Japanese anemone in all the named kinds, until frost cuts them down. If you have luck with this plant, then have great rows of all its kinds. For cutting it is a relief from the endless composites that are everywhere now. I like *Helenium autumnale* in yellow or its maroon forms. It hardly seems a cousin of boltonia and the many asters. These do not last well unless cut in the evening and put in water at once; and in hot dry rooms they wither in one day. Of the Asters the most lasting is the New England, and its deep red-purple forms make a startling contrast with the white kinds. Chrysanthemums of course finish the season, and if the double garden kinds are not wanted then the single white daisies of *C. sibiricum* or the taller *C. uliginosum* make pleasant companions to pink anemones. And last I go into our wet meadows and pick a few of our closed gentian (just a few, for I have no wet spot of my own), to enjoy their clear near-blue color and imagine that I have rescued them from the autumn frost.

STEPHEN F. HAMBLIN.

The Lexington (Mass.)
Botanic Garden.

A Book or Two

Trees of the Southeastern States. By William Chambers Coker and Henry Roland Totten. The University of North Carolina Press, Chapel Hill, 1934. 399 pages, illustrated. Price \$2.00.

The area covered by this book is Virginia, the two Carolinas, Georgia, and northern Florida. The author states that 227 native trees and 21 foreign trees are described, nearly all of which are illustrated by excellent drawings of foliage, flowers, and fruits. A key to the genera at the beginning of the descriptive text and keys to the species of each genus in the text make the book really usable. Under each species, in addition to the formal description, there is a discussion of the local distribution and interesting notes on the uses of the tree, together with brief characterizations of the better known varieties. The book has real value as a popular, yet technically reliable account of the trees of the region covered.

P. R.

The Home Gardener's Pronouncing Dictionary. Alfred C. Hottes, Editor, Meredith Publishing Company, Des Moines, Iowa. 100 pages, illustrated.

A very useful handbook in a new edition. The introduction is most entertaining and gives a definite statement as to the authorities followed. The entries include common names, generic names, specific names and botanical terms in common use. In most cases there are short notes to give the

characterization of the genera. There are good cross references.

Ferns of the Northwest. By Theodore C. Frye, Ph. D. Metropolitan Press, Portland, Oregon, 1934. 178 pages, illustrated. \$2.00.

This is a book for botanists rather than gardeners, but now that gardeners are finding out for themselves the interest of botanical reference works, such a statement is no longer a hindrance, but an invitation. The group covered includes club mosses, quillworts, horsetails and the other related families. The area treated includes Washington, Oregon, Idaho, Montana and Wyoming.

There are keys for the families, the genera and the species, all of them simple enough to be used by the amateur who will study the text and use the glossary.

The descriptions follow the usual botanical pattern but many comments and remarks make for easier reading and the localities cited should intrigue the roaming gardener within the area treated.

How to Arrange Flowers. By Dorothy Biddle. Doubleday, Doran, Garden City, Long Island, New York. 96 pages, illustrated. \$1.00.

This is a very small book, very simply written with a few half tones and many line drawings. It touches on all the phases of flower arrangement that the beginner needs to know from the cutting of the blooms to their inevitable final exhibition.

The Gardener's Pocketbook

Cistus purpureus Lambert (*frontis-piece*)

The rich floral province generally understood under the name Mediterranean Region contains many fine things, not the least important of which is the genus *Cistus*. Various species of this have long been grown here in California, where they seem to thrive in a climate so much like that of their home.

In view of this fact it is rather surprising that *Cistus purpureus*, here pictured, should have remained unknown in our local gardens for so long. It is easily the finest of the genus, its clear "Rose-color" blossoms averaging 2½ inches in diameter, being produced in abundance through a long blooming season. In contradistinction to most other rose-colored species of *Cistus* the flowers of this one lack that particular shade of magenta-rose disliked by many gardeners, but are indeed a clean rose, set off by the central tuft of golden yellow stamens and the dark maroon blotch at the base of each petal. Even if the flowers are fugitive, lasting as a rule a single day, they are so numerous and showy that few flowering shrubs equal this in merit; and it well deserves to be counted among the best newly introduced ornamentals in the collections of Golden Gate Park.

Cistus purpureus Lam. is a hybrid, between *C. ladaniferus* and *C. villosus*, the blotched petals and large flowers showing the influence of the former parent, and the rose-color being traceable to the latter species.

ERIC WALTHER

San Francisco, Calif.

Correction

On page 232 of the July issue of the magazine, in the pictures of Peony Species, the legend reads, *Pæonia triternata*. It should be *Veitchii*, for *triternata* is properly figured on the preceding page. On page 220 the legend should be *Pæonia trollioides* (Forrestii). For these errors, our apologies.

Rock Garden Veronicas (see page 389)

It would be a happy chance if it were possible to be more specific as to the name of the veronica in the picture, but unfortunately it is wiser to say only that it represents one of the several forms of *V. Teucrium* that are to be found in cultivation, all of them plants that delight the beginning rock gardener and win half-hearted praise from the expert when they spread out their pools of clear lavender-blue in the early summer. They are not plants for the choicest of places nor for the cultivator who delights only in accomplishing the nearly impossible, for there is no trick at all to their cultivation in any decent sunny spot where they can be allowed to spread out their annual growth that should be cut away after flowering to make room for new growths. The illustration is about half natural size and shows the prodigality of the flowering, the pattern of the buds and flowers that completely hide the leafy stems beneath. Like many other such plants, the color varies among seedlings with individual plants that tend toward rose color and an occasional white, as well as the usual range of lavender blues. Seedlings also vary in habit and stature and many individuals have been se-



Michael Carron

Garden form of *Veronica teucrium*

[See page 388]

lected to fit special purposes and please special tastes. There is no difficulty in propagation by division in summer after flowering so that if a particularly pleasing individual appears in a garden it can be increased at will.

Here the plants flower while there are still masses of the warm purplish pink armeria in flower, to make a vivid combination with the cool clear color of the veronicas, but if other sequences are wanted gray foliage and lemon yellow are happy combinations.

Washington, D. C.

Phlox glaberrima (See page 391)

Among the species phloxes that do not appear in gardens as often as they might is this low growing sort that fills in the flowering season after the earlier species have passed their prime. The illustration shows well enough the size and type of the flowers and inflorescence and it might even be guessed that the color is one of those tender and somewhat neutralized pinkish lavenders that fall into the group of phlox purples of the color charts. Some of these are difficult to place with other colors but if it will be remembered that they have a touch of gray in their make-up, no trouble should follow, for one will then choose lavenders that will absorb the bluish cast of the flower and make it a clearer pink. Otherwise one might use the palest of yellows, preferably a yellow in which there was no hint either of green or of orange. White flowers and gray foliage of course need no recommendations.

The color of this phlox should by no means be confused with the more magenta hues of the true *P. amoena* or the more vivid pink of *P. ovata*, nor should it be supposed to resemble some

of the faded colors that appear among seedlings of the tall garden phloxes that come into bloom while this is still in flower.

Here there has been no difficulty in growing the plant in the ordinary border where it has a reasonable amount of full sunlight for part of the day. In another garden where shade from neighboring trees has become too dense, the plants have dwindled and grown poor and must be rescued, although all about it in the same situation the familiar *P. divaricata* spreads and self sows with almost alarming rapidity.

Washington, D. C.

Phaedranassa viridiflora Baker (See page 393)

It is with some hesitation that the plant figured is given this name rather than *P. chloracra* Herb., inasmuch as the note in Bailey's Cyclopedia of Horticulture says that *viridiflora* may be rarely a variety of the latter species. In our plant the flowers are certainly "mostly green" but the leaves are by no means solitary. In addition the bulbs come to us from Peru, while the species is usually mentioned as only from Ecuador.

In any case its inclusion here is more to make it a matter of record than anything else, for as grown in the North in cool greenhouse conditions it has little to make one wish to give it room instead of more floriferous plants, for early autumn flowering. Possibly if its resting period were regulated, as can be done so many amaryllids, it might be brought to flowering at a time when such blooms are scarce.

Curtis Botanical Magazine Tab. 5361 gives a good color plate of *P. chloracra* under the name *P. obtusa*,



Lilian A. Guernsey

Phlox glaberrima

[See page 390]

except that the pattern on the lobes is not as sharply defined as might be. The photograph here shown, indicates the pattern very clearly. In our plants the ground color was a creamy white with greenish over pattern. Only toward the bases of the tubes was there any suggestion of reddish orange coloring and this very faint.

Two Hardy Indigoferas

Among the shrubs that come and go in cultivation are many plants of possibly secondary interest for which a word might be said from time to time, lest they be lost permanently. Two such are *Indigofera Kirilowii* and *Potanini*, relatives of the indigo, but hardier—the first coming from Korea and North China and the latter from China.

The first makes a shrub up to four feet, but in our garden it rarely exceeds three feet and in the most severe winters dies back to the ground, only to grow up again with full vigor and abundant flowering. In some ways its leaves suggest those of the locust tree and its racemes of rose pink flowers rise clearly above the foliage masses.

In several European catalogues white forms of *I. Kirilowii* have been noted. Possibly white flowers might be even more charming in the masses of cool green foliage but unless they are more freely produced than the pink ones, they might be lost.

The second has made for us a rather stiff upright shrub about five feet tall with such delicate and airy compound leaves that the structure of the plant is not obscured. Its flowers are rather small but the racemes are so freely produced that the whole shrub is filled with rosy masses of bloom. As an added virtue, they appear in midsum-

mer with irregular flowering thereafter until September by which time they are replaced by the stiff and slender pods that carry the seed.

So far *I. Kirilowii* has yielded fine harvests. As seed is the easiest means of propagation, one might hope for as abundant crops on the first species.

Although some indigoferas are rather weedy and of more use as forage plants in the South, it is a temptation to read of the Chinese, *I. dosua* even if it is an Indian species, for the flowers are reported as red. Remembering the contrast in pinks and rose and dull red in the flowers of *Botanini*, one wonders what nuance of color might be supplied here.

Possibly some of our readers can comment on other indigoferas they have grown or on the northern limits of hardiness of these two species?

Washington, D. C.

Fritillaria lilacea (See page 394)

One of the interesting endemic bulbs of coastal central California is *Fritillaria liliacea*. It is quite local, limited in area and nowhere common. It inhabits the same territory as *Iris longipetala*, choosing with precision the spots which provide for its needs, but never making such dense colonies as the iris. Both grow in thick grass and prefer a heavy loam which will absorb its full share of the winter rains—this being the only moisture which our climate provides.

The fritillary inclines to open wind-swept hill-tops rather than low swards, and though the general locality is exposed the flower itself is usually sheltered by tall grass and is sometimes hard to find.

The flower-stalk varies from a



Lilian A. Guernsey

Phædranassa viridiflora

[See page 390]



Lewis Josselyn

[See page 392]

Fritillaria liliacea

few inches to a foot in height, depending on the amount of rain vouchsafed to it. The narrow leaves grow part way up the stem and larger ones form a basal tuft. The flowers are bell-shaped and wide-mouthed and ride their stems with jaunty perkiness. The flower itself is green and white, with a green gland at the base of each petal, the interior of the corolla flecked with brown and the petals clearing toward the tips to pure cream. The whole effect is of delicate cream and green. It is a gladdening experience to suddenly happen on a March or early April colony of these charming fritillaries.

LESTER ROWNTREE.

Carmel, California.

Lilium tenuifolium Fisch. (See page 395.)

Why this lily was called "Coral Lily" I do not understand, for the color is the vivid shiny red of Chinese lacquer and many visitors who see it in flower ask me what the name of the lacquer red lily is. Since I have been growing both the type and Golden Gleam, the two may have crossed, for I have shades varying from a fairly dark red to a much lighter tone. However, this may happen wherever *tenuifolium*s are grown in quantity from seed and may have nothing to do with crossing.

L. tenuifolium is one of the easiest lilies to raise from seed, coming up like thin blades of grass within two weeks after sowing. If one is sowing one's



Margaret De M. Brown

Lilium tenuifolium

[See page 394]

own seed it should be done sparsely, for every seed will germinate. I find sowing out of doors in the autumn is not as good as I used to think, for last year I lost all my fall sown lilies. Now, I plant either indoors in February or March, or out of doors in early April, or even later in the summer.

The lily produces a few flowers the second summer and reaches maturity the third year. It is a dainty lily not over three feet or three and one-half feet high; the stem has slender linear leaves which have an upward swirling movement, to the right, and are thickest and longest at the center of the stem. The flowers are vivid scarlet, reflexed and waxy, and measure one and one-half inches across. The segments are reflexed and overlap. Inside, the flower is marked a pale flesh at the base of the segments, and there are tiny ridges in the red waxy part. The filaments are a muddy flesh color and the anthers are covered with lacquer red pollen. It has a slight and unpleasant odor.

This year, somehow and quite unintentionally, some *Lysimachia nummularia* crept in under these lilies and made a perfect foil and ground cover for them with its flat leaves and yellow blossoms. The blue-flowered annual *Asperula orientalis* goes well with it, too.

The late E. H. Wilson says the lily is triennial, but I do not think this is true, for I have had some of the lilies in my garden much longer. Some of them do die out after a few years, but this may be due to a mite on the roots. Many lilies live a fairly short time, that is, not over ten years, and should have their stock increased from time to time.

HELEN M. FOX.

Foxden, Peekskill, N. Y.

Saponaria ocymoides splendens—Linn.

(See page 397.)

When in need of a rock plant for sunny dry places that will grow over and down large rocks or cover a large area from a small space for root, nothing will quite fill the purpose as this type of *Saponaria*. It has a long taproot that will sometimes attain a depth of eighteen inches in light sandy soil, but is usually about a foot. There seems to be no particular soil requirements unless it could be that the flowers seem to be deeper pink when grown in soil that is slightly alkaline. Full sun is desired for best growth and bloom.

The top spreads fairly flat from the crown a radius of six inches to two feet, depending on the age of the plant and the fertility of the soil. A two year old plant in ordinary garden soil should be very nearly four feet in diameter. Through June and July *Saponaria ocymoides splendens* is entirely covered with clear rosy pink flowers about one-fourth of an inch across. This plant is a good follow up for Arabis, Subulata Phloxes or early rock garden bulbs. In using it to follow bulbs it also makes a good ground cover to hide the ripening foliage that often is a problem. A delightful combination is with *Nepeta mussini* and *Phlox nivalis alba*.

Saponaria ocymoides splendens is an introduction from the sunny slopes of southern Europe where it is found in abundance in the Alps. Whole barren mountain sides in Engadine are covered with its rosy pink which gives the appearance of crimson from a distance. There is a white form, *Saponaria ocymoides splendens alba*, and many intermediates are often found among



Michael Carron

Saponaria onymoides splendens

[See page 396]

seedlings. I notice some nurseries are offering special color variations and selections.

IVAN N. ANDERSON.

Ballston, Virginia.

Verbena bonariensis. (See page 399.)

In recent years there has been something of a revival of interest in verbenas other than the usual garden type, that has brought back to notice some of the forgotten species. Among these is the South American subject of this note. Although this is listed as perennial or annual, it is much safer to consider it an annual, for such winters as that of 1933-34 make it so, although there was a plentiful supply of seedlings from the seed that fell in the beds.

Seeds germinate readily under ordinary treatment and soon grow into vigorous upright branching plants about four feet high with typical coarse leaves and rough square stems. The crowded heads produce innumerable small buddleia-like flowers of deep lavender with reddish purple tubes that add to the intensity of the color. The plants begin to flower by midsummer and continue until frost.

Although there are myriads of flowers, the plant makes a rather misty mass of color such as one gets from thalictrums or eupatoriums, rather than definite color masses such as come from phlox or delphinium. For this reason it is best to use six or seven plants in a clump and to use many clumps through the back portions of the border. Since it is in flower with the phloxes and continues well into the season of perennial asters and Japanese anemones, some combinations are obvious. Last season chance

brought into contrast with a pyracantha loaded with orange scarlet berries and although the effect was striking it was not unlovely. Other annuals that harmonize or contrast well might include cosmos, petunias and plume coxcombs, while gayer contrasts might come from zinnias or African marigolds.

Washington, D. C.

Four Rocky Mountain Plants



Primula angustifolia

The tiniest thing in primulas. Each plant a dainty little miss sending up perfect, clear rosy pink flowers with a clean white centre the whole plant under two inches high and three inches diameter. These alpine primulas carry their color well perhaps because they have such good substance and unusual texture. They seem to be adaptable if not overfed, but they insist on grit and leaf mold and on moisture at the roots.

Now that most of us use tile for sub-irrigation of our rock gardens, we can give these a sure-wet spot near a tile.



Lilian A. Guernsey

Verbena bonariensis (natural size)

[See page 398]



Primula Parryi

This is always a surprise when we find it at home. It is so entirely different in character and size from all other alpine vegetation. Lush foliage more than a foot high and large clear polyanthus primula flowers three-fourths to an inch in diameter on 15-inch stems seems so incongruous in a region of low-growing brilliant-colored small things. The color is from deep rose to purple crimson with a clear creamy eye. In substance it suggests a *Primula auricula*.

Erratic in distribution we find it anywhere from timberline where there is plenty of humus all the way up to the highest point where any vegetation appears, with no apparent soil except disintegrated granite but always where its toes are moist. Water runs into the hole at once when we have dug it.

Eritrichium argenteum

The most coveted of all the jewels in the crown of the high mountains. Even Farrer's own description is inadequate.

The more I collect and grow native plants from widely varying conditions, the more I tend to the conviction that they don't care a hoot

for all this fuss we make about sun or shade, heat or cold, high or low altitude but they do care very decidedly about the physical content and the condition of the medium in which their roots are.

This eritrichium sulked in one part of the moraine with a surface of two inches of leafmold. Only forty feet away in the same moraine it took hold and seems at home in a mixture of sand and gravel, no leafmold, no soil—always with moisture from below and at no time dependent on fortuitous showers or overhead sprinkling.

Mertensia alpina

While this alpine mertensia bears a strong family resemblance to its sisters and its cousins and its aunts of varying rankness, it is fine enough in texture and satisfyingly compact for the smallest rock garden.

The foliage is typical mertensia blue green. The flowers in terminal clusters of bluest sky-blue appear to weight the outer stems and pull them downwards so it's well to plant them by the higher crags in the alpine garden.

Certain of the subalpine mertensias are to be found straying up into alpine regions in Colorado but the true *Mertensia alpina* seems to be rare except on Pike's Peak where one finds whole drifts of it at 12,000 to 13,000 feet.

It transplants readily but takes sometime to feel enough at home to bloom and probably it appreciates semi-shade in low altitudes. It seems to like plenty of moisture but like all the Rocky Mountain things, it must have its toes in gravel to be happy.

KATHLEEN N. MARRIAGE.
Colorado Springs, Colo.



E. L. Crandall

Oriental Cherry, Gyoiko (half natural size)

[See page 402]

Prunus serrulata Lindl. Oriental cherry. Variety Gyoiko. (See page 401.)

The vast majority of flowers make their appeal almost entirely through their attractive coloring, either as individuals or by reason of their mass effect. Occasionally, however, one finds examples of flowers with a quite different sort of appeal, not so much dependent on beauty itself as on some curious departure from the conventional idea of what constitutes beauty.

The oriental cherry variety Gyoiko certainly falls within this class. The Japanese name means "imperial yellowish costume," and refers to the peculiar yellowish green color of the flowers. Except for the color of the flowers, this variety does not differ in general habit from many of the more commonly grown Oriental cherries. The upright-spreading tree is generally less than 20 feet high, with brown twigs and dark-gray bark, and the young foliage, which appears at about the time that the flowers are nearly at their prime, is bronze green. The youngest flower buds are pale pink, with the calyx deep reddish brown, and the narrowly triangular sepals entire or occasionally somewhat serrate. The semi-double flowers, with about 15 broadly oval, emarginate petals, are approximately one and one-half inches across. In color they are light yellowish green, irregularly striped with deeper green. The pink color seen in the young buds is visible at the tips of a few of the petals, and there are sometimes narrow deep pink stripes running down the centers of the petals. The flowers of this rather odd variety assume a delicate pink color just before falling, as if they had indeed finally repented of their unconventional behavior.

Gyoiko, which is fairly well known on both Coasts, but not common, is one of a group of closely related forms that have greenish or yellowish green flowers. Another of these is Ukon, the Japanese equivalent for "yellowish," which is very similar in general aspect to Gyoiko, but has larger, light greenish yellow flowers without the deeper green stripes or the narrow red stripes on the petals. In the arboretum of the New York Botanical Garden there is a tree of Ukon standing on a knoll close to a number of evergreen trees. When the afternoon sun shines on the pale yellow-green of this tree, against the dark background, the effect is very striking.

A form of Ukon with paler yellowish green flowers has been distinguished by the Japanese authority Miyoshi under the name Asagi, or "light-green." For all practical purposes, however, these two varieties are synonymous.

There is another variety, Kaba-zakura, or "vinous pink," that has clusters of semi-double flowers. The outer petals are greenish, stained with deep pink, while the inner petals are pale greenish yellow. Besides these, there are several other very closely related and scarcely distinguishable forms in this group, including Shin-nishiki and Kiriginu.

PAUL RUSSELL.

Washington, D. C.

Zinnia angustifolia (See page 403.)

Today the word zinnia calls to mind some of the many improved strains of garden zinnias that are such improvements in color and form over the wild *Zinnia elegans*. Less often one finds the wild species represented.



Lilian A. Guernsey

Zinnia angustifolia (natural size)

[See page 402]

Accident rather than design led to the finding of the subject of this note, which is one of the smaller forms with colors that trespass into the field of the French marigolds but with a pattern of their own. The illustration shows clearly enough what this is but does not suggest the velvety richness of the petal texture nor the curious way in which color suffuses over the light margins as the flower ages. Like all zinnias, it is of the easiest culture and rewards the grower abundantly with flowers from midsummer until frost. Washington, D. C.

COMMENT

Am interested in the Notes on Winter Injury in the April number just received. It is surprising to learn the *Pyracantha yunnanensis* of such size were killed to the ground near Washington, when here where it was very much colder (30 miles west of Philadelphia, in a valley), mine was not hurt at all, but *Cotoneaster salicifolia*, some 10 to 15 feet, were. I had hopes of their showing life, so did not cut down at once, and finally some shoots appeared at the base of their trunks, which were some seven inches circumference.

Unfortunately, when cut down they were not protected by wire, and some ubiquitous chickens scratched and bit off these shoots. I am hoping more will come, but shall miss the fine bronze foliage that made a striking note in winter arrangements of evergreens. Photinia also succumbed; it was placed as were the Cotoneasters on the north side of a five foot stone wall and somewhat shaded by a privet hedge across the fifteen foot roadway.

Our tall privet hedges also suffered, but we have not cut them down, training the new shoots up, hoping to keep their height. I dislike privet so much, as it requires trimming four times a year, and wish we had started Yew, for by this time, some twenty years, we could have had a good sized hedge and so much labor saved.

Campanula lactiflora. It was nice to see this good plant mentioned. Some years ago, an American friend who had lived years in England was in my garden here and said *Campanula lactiflora* would flourish in several damp shady places on my stream. Later she sent me a quantity of seed, both of it and *C. latifolia*, writing both were rather hard to transplant and to establish.

The usual vicissitudes occurred, but at last I had them established in various places in the garden, and then these last three years they have had to fight for themselves. Of the two *C. latifolia* is the better garden plant. Its purple variety is very sturdy and comes up amongst grass in the most obliging manner. It grows to about four feet and its long tubular bells are very effective. The white variety is more beautiful and just for that reason is not so strong in growth; it somewhat resembles a stalk of lily when its whiteness gleams against a green background. *C. lactiflora* is of a bluish milky white and never stands upright, but flops about and quite resents staking. I did not get it established on the stream, however, so it may do better in a damper place, for my one surviving clump is in an extremely dry one.

FRANCES EDGE McILVAINE.
Downingtown, Pa.

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Notice to Members, October 1934

Article 5, Section 1, of the By-Laws of this Society directs the Secretary to send all voting members, not less than 90 days before the date of the annual election of officers, a list of the offices to be filled, together with the names of those whose terms expire. The following list contains the information required:

<i>Offices to be filled</i>	<i>Present Incumbent</i>	<i>Director (for two years)</i>
PRESIDENT	MR. ROBERT PYLE	MR. F. J. CRIDER
1ST VICE-PRESIDENT	MR. KNOWLES A. RYERSON	MRS. MORTIMER J. FOX
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SECRETARY	MR. C. C. THOMAS	MRS. SILAS B. WATERS
TREASURER	MR. ROY PIERCE	DR. EARL B. WHITE

Article 7, Section 1, provides that any voting member may submit to the Secretary, not later than two months before the annual meeting, nominations for Officers and Directors. Names must be submitted to the Secretary by December 12, 1934.

The attention of members is called to the desirability of inviting new members to join the Society. Find one new member for 1935 and send in the membership with your own renewal now.

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C. C. THOMAS, *Secretary,*

211 Spruce Street, Takoma Park, D. C.

The Editor asks for a brief word on the Secretary's page in order to express his personal appreciation to the members for their patience over the delay of the April and July issues of the magazine. This was due entirely to the pressure of personal work which made service for the magazine impossible during the midnight hours. This pressure is now relieved and we hope for no further irregularities. Please notice the new editorial address: B. Y. Morrison, Room 821, Washington Loan and Trust Company Building, Washington, D. C.

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For its members the society publishes *THE NATIONAL HORTICULTURAL MAGAZINE*, at the present time a quarterly of increasing importance among the horticultural publications of the day and destined to fill an even larger role as the society grows. It is published during the months of January, April, July and October and is written by and for members. Under the present organization of the society with special committees appointed for the furthering of special plant projects the members will receive advance material on narcissus, tulips, lilies, rock garden plants, conifers, nuts, and rhododendrons. Membership in the society, therefore, brings one the advantages of memberships in many societies. In addition to these special projects, the usual garden subjects are covered and particular attention is paid to new or little known plants that are not commonly described elsewhere.

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