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# TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND

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(Continued from page 87)

PART II. JOURNAL OF THE SUMMER OF 1925

(Plates 153-155)

We did not have to draft a party to botanize the Straits Coast of Newfoundland in 1925. Long and I already knew the endless possibilities of the region; Wiegand, who had been with me on two of my five trips to the island, was ready to return; Ludlow Griscom had tested western Newfoundland, from Bay St. George to Bay of Islands, and had seen the coast farther north and, consequently, needed no urging to join the party for his July vacation; and Stanley Pease, who had been with me on two early trips to Gaspé, with Long and me in Nova Scotia and with Griscom and me on the Mt. Logan trip of 1923, was ready to go also for July. I was fortunate in securing aid from the Milton Fund for Research at Harvard and Wiegand had a similar grant from Cornell; so we were able to take two student-assistants. Dunbar, unfortunately, was unable to go, so I selected Frank A. Gilbert, Jr. and Wiegand took Neil Hotchkiss.

Long and I had estimated, after our experience of 1924, that simply to touch the flora of the Long Range and of the West Coast would require 10 expert collectors 50 years of close botanizing, since our experience coincided with Wiegand's and mine in 1910 and with Mackenzie's and Griscom's, that practically every cranny has an isolated or endemic specialty. Already Curtiss and Lunt (1912) had got a few of the specialties of the Cod Roy region; Mackenzie and Griscom had taken the cream of the flora of Cape St. George; LaPylaie and

many others had botanized the head of Bay St. George; three parties had been on Table Mountain at Port-à-Port; many parties had done the simplest and most obvious things about the Bay of Islands; three parties had already looked at the easiest mountains of Bonne Bay; Wiegand had had a few days at Cow Head; La Pylaie and our earlier parties had sampled the shore of Ingornachoix Bay and we had very slightly sampled the southwestern shore of the Straits. But when the sharp-edged tablelands with their V-shaped gulches, forming a vast range 300–350 miles long and perhaps 15 miles broad, were taken into account and when we saw from the steamer most interesting areas of foreland and islands quite unknown to the botanist, the little excursions already made into western Newfoundland seemed very little indeed and we had visions of our party of 1925 penetrating in pairs or trios many untouched mountain-ravines.

But north of St. Paul's Inlet the Long Range recedes from the coast and gradually becomes visible only as a distant range of hills; and its only considerable spur approaching the coast north of Parsons Pond is on St. John Bay where the Highlands of St. John, with long east-and-west axes, present steep limestone escarpments, rising 1900 feet from the Gulf, the South Summit of the charts locally known as Doctor Hill, the North Summit as Bard Harbor Hill. North of that are lower wooded ridges, but from St. Margaret's Bay to the Straits the whole coastal region is essentially flat.

All being fresh from sedentary city life, we had planned, before undertaking a strenuous campaign in the unmapped mountains, with the necessary heavy packing and the endless tugging through puckerbrush, to harden ourselves by botanizing a few days in the level region near Flower Cove. So, after spending the forenoon unpacking and organizing at Mrs. Whalen's (Aunt Eliza's), where we had practically the whole house, including a fine kitchen-range for drying our paper, we started out on Friday afternoon, July 10, for our first collecting of the summer in the immediate neighborhood. season had been very backward, flocks of icebergs lingered in the Straits and the spring-flowering species were just out, many willows, violets (Viola nephrophylla Greene and V. labradorica Schrank), "Wild Hyacinth" (Smilacina trifolia, deliciously fragrant) and the various Drabas (Draba incana L., rupestris R. Br., hirta L. and megasperma Fern. & Knowlt.) and Saxifrages (Saxifraga oppositifolia, aizoides, Aizoon and caespitosa).

In groups of two, three or four we scoured the country for four days, eastward to Sandy Cove, southward to Ice Point in St. Barbe Bay and as far as a mile from the shore back of Savage Cove. The specialties which Long, Dunbar and I had got in 1924 were, of course, still interesting, particularly as we could now secure in anthesis species formerly collected in fruit; and Long and I were a bit chagrined by the number of conspicuous plants now making a brave show, which we had previously quite overlooked. Practically all turfy or springy areas were white with the arctic cress, Cardamine pratensis var. angustifolia Hook., which we had never known from south of northernmost Labrador,1 or golden-yellow with mats of the arcticalpine Potentilla alpestris Hall. f., a species of the European alps, Greenland and northern Labrador which Wiegand had got in fruit on Pointe Riche in 1910 and Mackenzie and Griscom had found on Cape St. George. So abundant did it eventually prove to be wherever we went, eastward to Cape Bauld, southward to St. John's Island, that it easily takes rank as one of the common species of northwestern Newfoundland. Carex bicolor, too, which was so very rare the year before, soon became a sort of joke, for it was brought in by every party and proved to be of general range, though always somewhat localized, in wet depressions or along rills in the limestone gravel eastward to Pistolet Bay and south to Ingornachoix Bay; and Comandra Richardsiana Fern., which in 1924 was practically all sterile, was flowering profusely and was everywhere characteristic of peaty knolls in the tundra or of turfy borders of limestone gravel-barrens. The "chunky" little variety of Habenaria viridis, which Miss Priest had found, proved to be dominant and growing by thousands, especially on turfy or peaty borders of beaches or on turfy slopes near the sea, always associated with extreme boreal species. We began collecting a series in all stages from bud to fruit and we gradually extended the range of the plant eastward to Pistolet Bay. A detailed study subsequently shows that in its technical characters this common plant of northern Newfoundland is exactly intermediate between true H. viridis of Europe and the eastern American and eastern Asiatic H. bracteata Muhl. and that outside Newfoundland it is found from Bering Strait southward along the Rocky Mountains. It will be further discussed in Part III.

Another orchid which promptly challenged attention was *Habenaria* <sup>1</sup> See Fernald, Rhodora, xxii. 14 (1920).

obtusata (Pursh) Richardson. This ordinarily unvarying plant of mossy woods was very variable along the Straits, the most characteristic extreme being a plant with crowded flowers and a yellowish tone, thus suggesting H. clavellata (Michx.) Spreng., instead of having the loose raceme and green color of the wide-ranging H. obtusata. We consequently devoted much attention to this series and it has been necessary to set off as a variety the plant with crowded racemes; and in the course of this study it has become apparent that one of the rarest orchids of Europe, the little plant of Finmark in arctic Scandinavia, which, since its discovery nearly a century ago by Blytt, has there passed as H. obtusata, is a very distinct, but heretofore unrecognized species.

On a visit to the Rock Marsh, Griscom, Gilbert and I found the little orchid known in America as Malaxis monophyllos (L.) Sw. or Microstylis monophyllos (L.) Lindl. so abundant in a springy swale that it would have been possible to collect many thousands of speci-When we first came across the plant, in Newfoundland confined to the limestones of the West Coast, it was only in bud, but later in the season a good series in flower was secured, including occasional individuals with two leaves instead of the conventional solitary one. And the most interesting thing about it is that, when the plants are carefully studied, although they are quite like the plant of continental eastern America, they stand out from the Eurasian Malaxis monophyllos on practically every character. Most significant is the fact that the Eurasian plant has the flowers resupinate or up-sidedown, so that the lip points up; while in the plant of eastern America the flowers are in normal position, with drooping lip. Asa Gray recognized this difference in 1835 when he described the American species as Microstylis brachypoda. Subsequent students of the orchids seem never to have compared the flowers of these plants, and for ninety years Gray's youthful discovery has been quite overlooked; even the name, which appears in Index Kewensis, being ignored in Ames's Enumeration of the Orchids of the United States and Canada (1924). The characters of the two species will be further elucidated in Part III.

One party, then another, proceeded to find in the dryish tundra a Coral-root which was perplexing—and very tantalizing, since it was always found as a solitary individual or in one case, when Pease and Griscom brought it in from the tundra back of Big Brook, as two plants. It did not look like Corallorrhiza trifida Chatelain, the small

early-flowering species found generally over Newfoundland and across Canada and the northern States. C. trifida in the flowering condition is yellowish or yellowish-green, its flowers yellowish or merely with purple-tipped sepals and with a white lip, which is without coloring except for a few somewhat indefinite basal spots of purple, and the column is strongly bent forward. The plant which was troubling us had more purple; the stem and the basal sheaths purpletinged, the sepals purple or brown, these and the petals broader and blunter than in C. trifida; the lip larger and with long rows of purple dots below the marginal notches; and the column was more erect. Bachelot de la Pylaie, in describing his botanizing trip in 1816 into the interior of northern Newfoundland, back of Havre du Croc (Croc Harbor), referred to "Le Corallorhiza occidentalis N[obis]. voisin de l'Halleri." C. Halleri is a later name for C. trifida, so that La Pylaie was doubtless finding the same plant which, more than a century later, was puzzling us. La Pylaie's name was accompanied by no description and consequently has no nomenclatorial status. rare plant of the tundra of northern Newfoundland is, however, a very close match for the beautiful plate accompanying the original description of the Scandinavian C. ericetorum Drejer in Flora Danica, xiv. fasc xl. 7, t. MMCCCLXIV (1843). In Europe, C. ericetorum is treated as a variety of C. trifida, as C. innata R. Br., var. ericetorum (Drej.) Reichenb. f. Ic. Fl. Germ. xiii. 160, t. 139, figs. I and II (1851), C. innata R. Br. being a long-used but later name for C. trifida. From our field-experience with the two we are not yet clear whether it should be merged with C. trifida or maintained as a species. three collections, of four specimens, brought in seemed wholly distinct; and we can only hope that some other season the plant may flower in such quantity as to give us a good series.

But these preliminary days of hardening in the neighborhood of Flower Cove were not devoted primarily to the orchids. The willows were in perfection of flowering and we were able to get for the first time good staminate material of Salix calcicola; and a number of other willows were new to us or at least to the known flora of Newfoundland. Sunday, after the conventional heavy dinner, Griscom and I started for a brisk non-botanical walk to Sandy Cove and back. We adhered very faithfully to the non-botanical programme, but at Sandy Cove I could not resist the temptation to look on the rocky

<sup>&</sup>lt;sup>1</sup> La Pylaie, Voyage a l'Ile de Terre-Neuve, 86 (1825).

crest for the *Braya* which, a year before, Long had discovered there in fruit. It was now in full bloom, with large white petals tinged outside with blue-violet; and later in the season we found it in profusion on the gravel- and rock-barren of Savage Point and in less abundance on Yankee Point. When Long first found a few over-ripe specimens in 1924 and thus made us all late to Mrs. Richards' supper, I called it *B. purpurascens* (R. Br.) Bunge, a wide-ranging arctic species; but now, with a splendid series in all stages from bud to ripe fruit, it stands apart as a perfectly distinct species with which it is only right to associate the name of its discoverer; for, if there is a keener collector or discoverer of rare and local plants than Bayard Long, I have yet to meet him.

We were having such superlative success that already the exploration of the Long Range to the south was being pushed forward to an indefinite future; and Griscom, remembering that from earliest boyhood he had had a yearning to stand on Cape Norman, called attention to the fact that Howley's geological map showed that the rock of the eastern end of the Straits, from Pistolet Bay, just beyond Cape Norman, eastward was "serpentine, etc." The serpentine barrens of Mt. Albert in Gaspé and of Blomidon on the Bay of Islands, as well as the serpentines about Bonne Bay, are all famous for their rare and localized or endemic species and, consequently, the infection rapidly spread and we all yearned to stand as promptly as possible on Cape Norman and to explore the serpentine barrens which we pictured as occurring just beyond. So arrangements were made with "Lo" Whalen to start by motor-boat as soon as possible after Sunday for Cook Harbor (or Brandy Harbor), just beyond Cape Norman, on Pistolet Bay. Monday and Tuesday, however, there was a northeast storm and, assured that no small boat could live on the Straits, we continued local collecting and on Tuesday three parties went out.

Long and I tried our luck on the barrens a mile back of Savage Cove, Griscom and Pease walked strenuously eastward to Payne's (pronounced Pine's) Cove, and Wiegand, Gilbert and Hotchkiss proceeded by motor-boat with Lo Whalen along the sheltered west coast as far as Ice Point. Long and I had plenty to occupy us. Taraxacum was in full flower and it was more than obvious that we did not at all understand the indigenous species and must collect good series of specimens; and Salix was in a similar plight. In making our way around one large pond in the limestone-barren we found our-

selves struggling through a thicket of a coarse willow suggesting the common Salix discolor Muhl. of more southern latitudes. But this shrub of Savage Cove had its long black-scaled caterpillar-like aments on elongate leafy-bracted peduncles and expanding with the leaves,—surely not S. discolor which is a "pussy willow," with aments sessile and expanding long before the leaves. The affinity of the large shrub with long-peduncled aments is not quite clear. In some characters it belongs with S. discolor, in others it is nearer the European S. phylicifolia L. and its American representative, S. planifolia Pursh; but it is clearly a new species, an addition to the already extensive list of Newfoundland endemics. At another point, where an ice-cold rill entered a pond, there was an extensive "salicetum," with the beautiful S. myrtillifolia Anderss. with lustrous dark-green closely crenulate leaves, the Rocky Mountain S. Bebbiana var. perrostrata (Rydb.) Schneider (new to Newfoundland) and a third species, a handsome large shrub with foliage as white as in S. candida but with quite distinct habit and with very long styles, S. cryptodonta Fernald, which had been known only from the type-region on the Humber, 150 miles to the south.

When we at last got through the belt of scrub-spruce and bog-ponds and came to the deeply shattered rock-pavement (plate 153, fig. 2) of the limestone barren, which is apparently an eastward extension of the Rock Marsh, we had thrill after thrill. The Yellow Lady's Slipper colored the peaty borders of the barren with hundreds or perhaps thousands of fully expanded flowers. We had previously had it from limestone barrens farther south and even from the highest point of Newfoundland, the summit of Lewis Hills; when we got back to the house Wiegand's party had also brought in a collection of it; and during the following week we saw it in profusion with arcticalpine plants on many of the barrens eastward to Pistolet Bay. were impressed by its few leaves and especially by its consistently short, broad and flat purplish petals; the Newfoundland plant, in the thousands of individuals we saw, rarely showing any tendency to the elongate curling petals of continental Cypripedium parviflorum Salisb. In fact, the larger specimens are, in their broad flat petals, so like some plates of the European C. Calceolus L. that, without examination of the staminodium, one would as quickly place them with the European as with the American species. In the form of its staminodium the plant of the Newfoundland limestones is somewhat different from either but, as I suggest in the more detailed discussion of the plant in Part III, it may well be that C. Calceolus, C. parviflorum and the plant of unglaciated areas of western Newfoundland are geographic phases of one circumpolar type.

The damp gravelly pockets were full of Antennaria cana, which we had all seen for the first time this season on Savage Point the day before but here much more abundant and from now on to be found everywhere eastward along the Straits; and equally abundant was a small pink-flowered Braya with pilose pods, obviously quite different from the larger white-flowered plant with glabrous pods which we had been getting. This made a third species of this arctic-alpine genus for western Newfoundland and when we got back we found that Wiegand's party had been collecting the same thing on Ice Point and during the succeeding weeks we found it general in limestone gravel all the way to Pistolet Bay. It proves to be the plant collected by Drummond on the Rocky Mountains of Alberta and described by Hooker as B. alpina β. americana. It is certainly rare in Alberta, the only material I have seen being some collected by the late Stewardson Brown, perhaps at Drummond's own station. But the extensive series from northwestern Newfoundland clearly demonstrates that it is a species quite distinct from B. alpina Sternb. & Hoppe of the European alps and likewise distinct from B. siliquosa Bunge, the Siberian species to which Schulz<sup>1</sup> refers B. alpina β. americana.

A turfy and bushy island on the rock-barren was the home of a beautiful Arnica, thousands of sterile plants; but this was evidently an off year, for we could get barely a dozen individuals which showed any sign of flowering. Arnica in Newfoundland had heretofore been known only from the region of Port-à-Port Bay and Cape St. George: A. chionopappa Fernald, A. pulchella Fernald and A. terrae-novae Fernald. This was a very large but not specially exuberant colony of A. terrae-novae and its discovery merely started the season, for from now on almost every different area explored, from Ha-Ha Mountain on the east to St. John's Island at the southwest, yielded its own peculiar Arnica as well as its Antennaria, Taraxacum and Euphrasia. In the wetter mossy pockets we spied some stiff bronze or purplish racemes, fruiting plants of the arctic Pedicularis flammea L., already known from the Shickshocks but new to Newfoundland. Wiegand's party had gleaned the best plants from Deadman's Cove, Anchor

O. E. Schulz in Engler, Pflanzenr. iv<sup>105</sup>, 231 (1924).

Point and Ice Point, extensions southward of many of our good finds, including the most southern colony yet known of the pink-flowered Braya, and northern extensions of Antennaria straminea and of A. albicans Fernald, the latter previously known only from Table Mt., Port-à-Port Bay; and Griscom and Pease, who had gone merely to stretch their legs, brought in a bunch of the beautiful rosy-pink Orchis rotundifolia Pursh, which colored the wet barren near Shoal Cove, another species new to Newfoundland, since the old record in Hooker's Flora Boreali-Americana, Dr. S. F. Blake informs me, was based on material of Habenaria obtusata. They also had splendid clumps of the European Poa alpina var. frigida which Long, Dunbar and I had added to the North American flora in 1924.

Wednesday, the 15th, started in as a "civil" day, so, as soon as we could get the presses filled with ventilators and stacked as near as we dared to the kitchen-range, we loaded Lo's boat with presses, paper, food, sleeping bags, etc. and headed down the Straits for Cook Harbor. In the eighteen miles from Flower Cove to Eddies Cove there are shelters or good harbors every mile or two and, of course, fishing colonies of considerable size. Then, beyond Eddies Cove, for sixteen miles to Big Brook, comes the Long Straight Coast, with no shelters for boats, a cliff-wall comparatively low at the west, but at "the Highlands" reaching an altitude of about 100 feet. A small boat caught there by a storm is completely at the mercy of the waves and cliffs; consequently the Straits fishermen have learned never to try the trip between Eddies Cove and Big Brook, Boat Harbor or Cook Harbor except on quiet water. During the late forenoon as we chugged along this coast, with endless fascinating limestone barrens, wild cliffs (the haunts of innumerable shore birds) and occasional waterfalls, we longed to get ashore to explore; but it was necessary to make all speed northeastward while the water was good. Soon after noon, however, the sea had become a little rough; our boat was too small for its load and the captain announced that nothing could make him go beyond Big Brook (where he had cousins). So Big Brook it had to be. But if we had not put in there we should perhaps never have known Tom Diamond and his good wife. Tom Diamond is one of the best known characters on the Straits, the friend of everyone from "the Harbor" (Flower Cove) to Brandy Harbor, a red-headed giant brim-full of Gaelic or Celtic good-humor, and picturesque in his fishing clothes; his back hair clipped short, his front hair unbarbered, and a long forelock projecting from under his cap and flapping about his face to brush away the flies. He and his brother are the only settlers on this cove; they want no one else, for there would be too much crowding of cod-traps.

The wind was increasing and there were three or four hours to supper-time, so we all started botanizing; Wiegand, Gilbert and Hotchkiss eastward along the shore, Pease and Griscom to "the Highlands" three or four miles to the east, and Long and I straight back to the The cliffs forming the escarpment back from the shore were a fascinating alpine garden but covered mostly with luxuriant colonies of species we already had. Here, however, was the big-flowered woolly Cerastium alpinum var. lanatum which was new to us, and here were new troubles in Poa, Salix and Cochlearia. But leaving the escarpment, which properly belonged to Wiegand's assignment, Long and I went back over the crest. Here were many of the good things of Flower Cove and Savage Cove—the pink-flowered Braya, Pedicularis flammea, Potentilla alpestris, etc., and, for the first time north of Port-à-Port Bay, the unique Antennaria eucosma Fern. & Wieg., with blackish heads and erect spear-like white leaves. But, naturally, we were looking for novelties and we were not at all disappointed. The peaty border of a pool had a low cotton grass which looked unfamiliar, much lower and stiffer than Eriophorum opacum, which abounds along the Straits, and, since I had once made a revision of the American species of Eriophorum, but did not know this one, we were greatly excited. Subsequently we collected it eastward to Pistolet Bay and westward to Savage Cove and, as I have already shown, it proves to be the true E. callitrix Cham., the rarest of Old World cotton grasses, heretofore known only from the type-region, St. Lawrence Bay on the west side of Bering Straits. With Eriophorum callitrix were the very rare Carex capitata L., new to Newfoundland, and a pretty Primula with non-farinose leaves, deep-crimson flowers and purple-tinged scapes, a plant we afterward found in better development at the margin of Big Brook, thence eastward to Pistolet Bay. This proves to be P. sibirica Jacq., var. arctica Pax, heretofore reported only from Kamtchatka and arctic Europe, but represented in the Gray Herbarium from the Canadian Rockies as well. The Alpine Bearberry on the knolls attracted us by its unusually thin and only slightly rugose leaves and a little investigation

<sup>&</sup>lt;sup>1</sup> Fernald, Rhodora, xxvii. 205 (1925).

showed that we were getting Arctostaphylos rubra (Rehder & Wilson) Fernald, the species with bright-red berries, known from limestones of Siberia, China, the Canadian Rocky Mountains, Anticosti and the Mingan Islands but not previously from Newfoundland, although its occurrence there was wholly to be expected; but, now that we had "spotted it," it was found everywhere, eastward to Burnt Cape, where the berries were ripe, and westward to Yankee Point. Its berries are smaller, thinner-skinned and much earlier to ripen than the purple-black berries of A. alpina.

Returning for supper, we found that the official time at Big Brook was slower than at Eddies Cove, and so much slower than that at Flower Cove, by which our watches had been set, that we still had an hour for another turn, so we headed for the mouth of Big Brook. There we were joined by Wiegand and his group and we all set to work collecting a fine series of Primula sibirica var. arctica and then turned our attention to Epilobium Drummondii Hausskn., a characteristic Rocky Mountain species, known in eastern America only from the Torngat Mountains of northern Labrador and from the Shickshocks in Gaspé. In the thicket of Salix cordifolia and S. calcicola there was a strange Hieracium, still very immature and mentally noted to be remembered on the next call at Big Brook, but the most shaggily villous species we had ever met. When we got back to the house Griscom and Pease had come in from "the Highlands" with many of the same species we had all been getting, including a fine lot of Carex capitata and a very densely matted Asplenium with almost leathery fronds. It proves to be nothing but A. viride Huds., but along the Straits it forms turf so dense and firm that it takes vigorous cutting to get out chunks of the sod; and the fronds, growing in almost full exposure to the sea-fogs and winds, are so tough that the carpet can be walked upon without being seriously injured.

It took all the evening to put up our material and, after a good night on our air-mattresses, we awoke to find the sea still dark and choppy, offering no immediate hope of our rounding Boat Harbor Point. So we sought new areas to explore. Griscom and Pease, as usual, were given the "long-legged" assignment, this time to go as far into the interior as possible; Long and Gilbert crossed Big Brook and worked around the shore westward to Mile Brook; and Wiegand, Hotchkiss and I headed eastward toward Lower Cove. All three

<sup>&</sup>lt;sup>1</sup> See Fernald, Mem. Am. Acad. xv. 314 (1925).

parties brought in better material of Antennaria eucosma and collections of Tanacetum huronense var, terrae-novae, which was now making conspicuous carpets of white plumes with occasional large gold buttons in the turfy slopes all along the Straits. Our party became much absorbed in Taraxacum, Cochlearia and Draba: and in the turf some rods back from the beach we found great carpets, now in full bloom, of the "Sea Purslane," Arenaria peploides var. diffusa, much smaller and with less rigid branches than in var. robusta Fern. of the New England strands. Another plant which greatly pleased us was Carex Deweyana Schwein. This species is common in Canada and the northern States, but its status in Newfoundland was doubtful. There was an unverified record from Bay St. George, and Griscom and I had got a cow-bitten young sprig of it near Savage Cove; but here at Big Brook it was abundant, along with arctic types. We tried to make it something better, but it proves to be very characteristic C. Deweyana. On the high limestone cliffs near "the Highlands" there was a strange prostrate willow, resembling the arctic S. anglorum Cham. but differing from it and from its known southern varieties (of the serpentine mountains of Bonne Bay and Bay of Islands and the serpentine Mt. Albert in Gaspé) in its much smaller leaves, its very short aments and its tiny capsules, only 3 or 4 mm. long, another Newfoundland endemic, later found on Cape Norman and to the west toward Eddies Cove.

The other two parties brought in full boxes. Both of them had plenty of Orchis rotundifolia and of Lesquerella arctica (Wormskj.) Wats., the latter a silvery rosette-plant with golden flowers and plump fruits, already known from the southwest coast and, now that it had begun to show, soon found to be generally distributed in limestone gravels from Burnt Cape in Pistolet Bay south to St. John Bay, thence, as our earlier collections show, to Bay St. George. and Pease also displayed a collection of a tiny Epilobium, hardly in flower but, with its basal rosette, remote linear leaves and few flowers, clearly E. davuricum Fisch., new to Newfoundland and one of the rarest of species, heretofore represented in the Gray Herbarium by only a few poor bits; but now, after the season is closed, illustrated by full sheets, collected all along the northwest side of Newfoundland, from Cap Dégrat to St. John's Island. After supper the water was quiet and Tom Diamond said that we could easily make Cook Harbor in three hours, but he had reckoned without our skipper. Lo had

renewed his fund of conversation at Big Brook and when we rounded the point and came abreast of Boat Harbor (where he had more cousins) we suddenly headed in. Upon our protesting that we were going to Cook Harbor we were given the alternative of going in to Boat Harbor for the night or being landed on the nearest shore, to hunt for another boat. This was unpleasant but we were helpless under existing circumstances; so Boat Harbor it was. The two households of Woodwards, who form a clan-like colony at Boat Harbor, took us in for the night and it was toward 11 o'clock before we had visited enough to be allowed to retire. About 2 A.M., after a threehour struggle with "scarlet runners' (Cimex), we heard Lo's voice from down stairs, "Mr. Fernald, it's a clever morning." When we came down, everyone was about and at the day's occupations; the men had gone out to the cod-traps, the women were getting breakfast; and by 6 o'clock we had rounded Cape Norman, a great bare limestone wall with fantastically weathered strata, and were actually heading into Cook Harbor. A chance to spread our mattresses on the floor was secured at Skipper John Decker's and, after discharging our cargo, we put across the bay to the nearest point which Howley's map indicated as "serpentine, etc."

In the brilliant morning light Burnt Cape, separating Pistolet Bay from Ha-Ha Bay, was purplish or reddish-brown, and, encouraged by the geological map, we expected soon to be on a second, though small, Mt. Albert or Blomidon. Gradually, however, as we neared Burnt Cape, the reddish-brown color so characteristic of the weathered serpentine barrens of Gaspé and Newfoundland faded and when we came close under the Cape it had assumed a very familiar slate-gray tone, the color of most Silurian limestones of Newfoundland. That it was not serpentine was altogether too obvious and we could see no distinction between this and the limestone we had left the night before at Big Brook. Landing at a sheltered point on the east side of the Cape, toward Raleigh (pronounced Rally), we told Lo to come back for us at 2 p.m. It was now 9 o'clock and, since we had so obviously been fooled as to the character of the rock, we could certainly get all that was worth while from it and eat our lunches in five hours.

Griscom, Pease and Hotchkiss were to work northward around the tip of the Cape, and the rest of the party started due west to make a sort of cross-section. In two minutes the shouting began. "Carex concinna." "Yes, we're getting it too, and the queer Asplenium."

"Here's Polystichum Lonchitis." "What's the other Carex?" "What's the Habenaria?" And so on until the parties were out of hearing. Carex concinna R. Br. had only once been found in Newfoundland and then very little of it, on Cape St. George. Polystichum Lonchitis is frequent on the West Coast but we had not met it before this season. The "other" Carex proves to be true C. livida (Wahlenb.) Willd., a rare and poorly understood plant of northern Europe and Alberta, here found for the first time in eastern America.1 The Habenaria was a very distinct plant with slender greenish-yellow spiciform racemes, emitting a delicious fragrance of vanilla, the lip three-toothed, clearly the plant which I had very recently received from Greenland as Habenaria albida (L.) R. Br., now found for the first time in North America. The plant abounded in damp glades and on open peaty slopes where Long, Gilbert and I had become anchored and where we spent much of the forenoon, but it must be somewhat localized, for, when Griscom (who had an eye open particularly for orchids), Pease and Hotchkiss joined us in the afternoon, they had seen nothing of the sort. Subsequently they got plenty of it, on Cook Point or on Cape Norman and later in the month we stretched its range to the western end of the Straits. Habenaria albida of continental Europe is appropriately named for its tiny whitish flowers. The flowers of our plant no one would intentionally call white; they are stramineous and much larger than in H. albida, and in details they show many departures from it, and it seems very clear that the plant of the Faroe Islands, Iceland and Greenland, which has passed as H. albida, is a separate species, now found in profusion in northwestern Newfoundland.

Wiegand had got beyond reach, so that we now had at least three different parties out and, when Griscom and Pease appeared at 1 o'clock, Hotchkiss was separated from them. In this way the northern half of Burnt Cape got a preliminary searching. Long and I, having learned from many experiences the importance of raking the ground for the less obvious species, initiated Gilbert into this art, bending over or crouching and creeping gnome-like over the grayish or whitish angular gravel. At first we should have said that there were absolutely no plants there, but our eyes were soon accustomed to the neutral color, and tufts of Festuca supina Schur, the tiny Poa alpina var. brevifolia Gaudin of the Swiss Alps, new to North America

<sup>1</sup> See Fernald, RHODORA, XXVIII. 5 (1926).

and very distinct with its distichous blunt leaves only a centimeter or so long, Carex glacialis, Antennaria cana, Lesquerella arctica and other canescent or cinerous species began to appear. Thus we spent the late forenoon and very soon we were getting a singular little gray Potentilla, with deeply lacerate leaflets and tiny cream-colored petals. In the field I took it to be the arctic P. pulchella R. Br., but it proves to be very different in many details; and after a study of the three monographs, of Lehmann, Wolf and Rydberg, and the critical notes on arctic species by Simmons and others, and an examination with Dr. Rydberg of the species of this affinity, it becomes apparent that Burnt Cape has an endemic species of Potentilla. Further up the slope Wiegand was collecting Antennaria—the third and fourth species from Burnt Cape, and there we came upon a veritable garden of Orchis rotundifolia, the pink flowers making a vague lilac color as seen from a long distance away. In a bushy glade we found a colony of Epilobium alpinum L. (E. anagallidifolium Lam.), common enough on the Tabletop Mts., Gaspé, but new to Newfoundland.

When the scattered members of the party assembled at the crest there was some delay over Arnica terrae-novae and A. chionopappa; and I was picking from the crevices a Taraxacum which, in its small blackish involucres, was unlike anything we had seen before. Griscom and Pease, as already stated, had lost Hotchkiss, but he was now They had, of course, many of our good things, and two more Antennarias; but they were specially excited over a strange Oxytropis with deep violet corollas and reflexed fruits, and no wonder! It was O. foliolosa Hook., described from the mountains of Alberta but now known very locally southward to the high mountains of Colorado, here found for the first time in the East. We had landed on Burnt Cape with grave doubt, disappointed that it was not serpentine, but now that it approached 2 o'clock and we had planned to look at Ha-Ha Point, it was necessary to abandon the most thrilling spot thus far found. So, reluctantly, we descended the slope to the waiting motor-boat. When we got back to the belt of gravel where the new Potentilla grew, Long began to direct his eyes and nose into the gravel and he soon held up Crepis nana! Crepis nana Richardson is one of the characteristic plants of the cordilleran region of North America, otherwise known only on the Arctic coast of America, on the Altai of Siberia and on the Torngats of northern Labrador; but here it was on Burnt Cape, and, true to form, Long was holding up the procession by finding a "thriller" after it was time to quit. No one objected, however, and we all fell on our hands and knees and crawled over the gravel until we had sufficient material so that our herbaria could each have a bit; but there are no duplicates for distribution, for *Crepis nana* is either the rarest plant of Burnt Cape or we did not find its real home. Farther down the slope, near the upper border of the beach, we could not pass without collecting *Astragalus alpinus* L. and *A. eucosmus* Robinson. We already knew them from Newfoundland but these were the first specimens (though by no means the last) for 1925.

Crossing Ha-Ha Bay, we landed at the base of Ha-Ha Mountain (plate 153, fig. 1), a ragged trap bluff only a few hundred feet high but fantastic in its irregularity, the unplaned rock-spurs projecting at various angles and indicating a lack of glacial scouring. We could spare only an hour, so every minute counted. Griscom and Pease tackled a steep chimney and promptly came upon the tiny gray Draba nivalis Lilj. of the Arctic and the Shickshock Mts., but new to Newfoundland, and Ranunculus pedatifidus var. leiocarpus (Trautv.) Fern. (R. affinis R. Br.), another Arctic species, heretofore unknown south of the Torngat region. It occurs on precipitous walls where Long (plate 153, fig. 3) insisted on climbing for some on a later trip. Griscom and Pease also added to the fast growing series of Taraxacum and I was particularly delighted to have them bring back the big Oxytropis campestris var. johannensis Fern., the plant so characteristic of gravels along the St. John River in Maine and New Brunswick. the foot of the steep slope we were getting another plant which greatly pleased me, Streptopus oreopolus Fern, which is so characteristic of subalpine meadows in the Shickshock Mts. of Gaspé and which we had supposed to be endemic to that area. And the springy meadow at the foot of the slope was a sight never to be forgotten, a blaze of orange, white, violet and pink in great masses, with three species of Taraxacum, Cerastium alpinum var. lanatum, Arabis alpina, Astragalus eucosmus, Iris setosa var. canadensis, Hedysarum alpinum, Epilobium latifolium and dozens of others, with the flexuous blackish tops of Carex atratiformis nodding everywhere and strange willows forming large clumps still in flower, at least two of them new to science.

It was hard to leave, but we must get back to Cook Harbor for supper. Our boxes were jammed tight-full; we had scarcely slept the night before and had breakfasted at daybreak and it would be midnight before we could get the specimens into paper. So, although we knew that there was plenty more to do on Ha-Ha Mountain and Ha-Ha Point, just as there was on Burnt Cape, we had to be satisfied. And on the whole we ought to be. When we finally dropped to sleep our day had been twenty-two hours long and we knew that we had practically all the Antennarias of Western Newfoundland, A. eucosma, A. cana, A. straminea, A. albicans and A. spathulata Fernald; and A. spathulata var. continentis Fern. & St. John, a plant previously known only from the Labrador; and we had collected at least twenty-five species new to Newfoundland, including a number new to science, others new to America, others the first time east of the Rockies and others the first time except in Gaspé, Anticosti or northern New Brunswick and northern Maine. In the current idiom, that was some day!

Saturday our presses kept us busy until noon. We did not have driers enough and it required special pains to keep the specimens from sweating and darkening. When we sat down to dinner Hotchkiss was missing. But he soon came in from a short stroll back of the village, with a bouquet of the vanilla-scented Habenaria and a bronzy-purple plant with velvety purple-black flowers, quite new to us but obviously the arctic Bartsia alpina L. Mrs. Decker and her daughter could not appreciate our enthusiasm, for "Velvet Bells" (Bartsia) was a common plant in their experience and the yellowish-green "Smell Bottle" (Habenaria) was likewise an old story; but we hurried through dinner and got out as soon as possible. Long and Pease were to be landed on Schooner (or Brandy) Island; Wiegand, Griscom and Hotchkiss were to be taken to Cape Norman, and Gilbert and I were to spend the afternoon on Cook Point, back of Cook Harbor.

Many of the good things of Burnt Cape were also on Cook Point, but we were not sufficiently hardened as to pass untouched Habenaria viridis, Eriophorum callitrix, Carex bicolor, Primula sibirica var. arctica, and other species which, a few days before had been so exciting. Another Taraxacum, Arnica terrae-novae again and, of course, Bartsia alpina absorbed much of our attention. Besides Antennaria albicans we got A. vexillifera Fernald, a species supposed to be endemic to the Shickshock Mts.; and, on the turfy upper margin of the strand of Norman Cove, Gilbert and I found a single individual of Oxytropis foliolosa. We began a long search for another but quite in vain; or,

at least, during the search we suddenly found ourselves in a dense carpet, like a lawn, of a repent Astragalus, the slender freely forking branches extensively creeping and bearing exquisite lilac flowers, some clustered at the tips of long capillary peduncles, some almost sessile in the axils. The plant was fascinating and quite strange and when we got back, late to supper, the rest of the party were inclined to jeer because we had so much of it. But the 34 full sheets (and 35 more with fruit, collected on a later trip) will all be in demand, for it is a beautiful new species of the west-American subgenus Homalobus and its nearest relative is the very local Astragalus yukonis Jones.

Both the other parties had been collecting the Bartsia, Habenaria "albida," and the usual series of choice but not novel species. Cape Norman had yielded very large material of the pink-flowered Braya, Arnica pulchella (the first time except on Table Mt., Port-à-Port) and some perplexing willows. And Long and Pease had found Oxytropis foliolosa on Schooner Island. They had a splendid collection of the most beautiful Antennaria yet collected of the alpina-series, a plant with unusually broad leaves and extraordinary large blackish heads: and just as they were hurrying to jump aboard the motor-boat for the return trip Long, again true to form, spied a strange Cerastium in a crevice and had barely time to snatch a single piece before the boat swashed away from the shore, Cerastium Regelii Ostenfield, a rare species of arctic Eurasia with flowers much smaller than in C. alpinum, the short calyx-lobes rounded. We have only one small piece but, as Long says, "we at least know where to go for it in While waiting for Gilbert and me to come to supper the others had wandered along the shore at Cook Harbor and had gathered a quantity of Hymenolobus procumbens (L.) Nutt., new to us but already known from the Straits, the only region of eastern America where it grows.

Sunday morning the water was quiet and it seemed the part of wisdom to get our skipper and his boat headed around Cape Norman and turned toward home, so by 6 o'clock we were off. Griscom, skeptical, after our having used three days to make the "easy half-aday's run" from Flower Cove to Cook Harbor, and wanting to get back promptly, walked; and he showed his wisdom for, as soon as Boat Harbor came in sight, the motor-boat was headed in and we knew that protest was useless. We must spend the day at Boat Harbor while the breeze had a chance to come up and ripple the water

and Lo freed himself of the new supply of gossip from Raleigh and Brandy Harbor. Promptly, when we touched at Woodward's wharf, Pease, Gilbert and Hotchkiss decided that they, too, would rather walk and so be certain of reaching Flower Cove in time for the next mail south, on Monday. That left Wiegand, Long and me; and, knowing from experience that there would be no hope of leaving before next morning, we tried to be philosophical and went botanizing. The list of plants would largely repeat that of the preceding days; but Boat Harbor yielded a few species which we had not seen. In a shallow pool to the west, toward Watts Bight, there was an aquatic grass just coming into bloom, clearly an Alopecurus but strange to us, the arctic plant which I have recently discussed, A. aequalis var. natans (Wahlenb.) Fern.<sup>1</sup>, known outside the Arctic only at the Straits of Belle Isle.

After the heavy Sunday dinner we were glad of a good walk; so we went to the high ridge south of the harbor. In the scrub thicket Vaccinium ovalifolium Sm. was abundant, a species of Pacific America already known from western Newfoundland; and at one point we came upon a colony of Sanicula marilandica L., singularly out of place in this arctic-alpine flora. The gravel at the crest was thoroughly mixed and packed as if it had formed the bed of an ancient stream; and in this mixed gravel, with Lesquerella arctica, was a great colony of Antennaria vexillifera, which we had got on Cook Point the day before; and lower down, while collecting the now common pink-flowered Braya, Long found a single rosette or another species, the leaves covered with long, crisp white villosity. Seach for a full hour brought one more sterile plant to light. We need it in better condition but from the foliage alone it seems probable that it is B. Richardsonii (Rydb.) Fern. of the Canadian Rocky Mountains.

When we started early Monday morning there seemed no question that we should get to Flower Cove in a few hours. The water was calm and if we could but get past Big Brook there would be no place to visit before Eddies Cove and from there on we should be near home. Luckily, Tom Diamond was out at his traps so we stopped outside to exchange gossip and thus safely passed Big Brook. On the way down we had been impressed by some waterfalls coming off the barrens near 4-Mile Cove, and as the sea was now so very quiet we decided on the return to stop and look them over. They yielded nothing

<sup>&</sup>lt;sup>1</sup> Fernald, Rhodora, xxvii. 198 (1925).

novel, however, but we collected the specialties of the place and in one depression in the gravel I found a Carex which did not look quite familiar. In the hurry of the moment, with the boat tossing in the surf waiting for us, I did not stop to examine it, but dug a few plants and went on; and, as is so often the case, I soon wished that I had had my wits about me and had taken a good supply. For the little plant, with mostly pistillate terminal spikes, superficially resembles the rare arctic C. rufina Drejer, but in its technical characters it belongs with C. livida. It has been described as C. livida var. rufinaeformis Fern. but better (especially riper) material may show it to be a unique species.

This time the fates, themselves, took Lo's part. We had not got far beyond 4-Mile Cove when a squall struck us and for the next hour the little boat fought bravely through the rough sea. The splash was bad for our presses but, by stretching ourselves and our waterproof coats between them and the bow of the boat, we succeeded in fending off most of the water until we got into the shelter of Eddies Cove. there we were, on shore again, destined to stay at Eddies Cove until the blow was over. After dinner the obvious thing to do was to go botanizing. Almost in Mrs. Coates's vard Carex incurva was making a carpet at the easternmost spot at which we got it. The boggy swales were full of Carex chordorhiza var. sphagnophila and C. microglochin, Primula egaliksensis and the other plants characteristic of swales at Flower Cove; but many openings in the spruce thicket were occupied by the Rocky Mountain Epilobium Drummondii, which we had first seen at Big Brook, now well developed and with the characteristic bulbs forming at the bases of the stems. We hoped to find many interesting things along Eddies Cove Brook, which at its mouth diffuses itself as a shallow stream or thin film over a broad expanse of rocky delta; but on the whole the flora there was Canadian rather than arctic, the most ordinary plants of thicket and swale; but in one pocket we did find Viola palustris L., a species new to Newfoundland but naturally to be expected, since it abounds in Gaspé and reaches the mountains of Maine and New Hampshire. was scattered among the tall grasses and sedges and mostly past flowering, but we secured enough in anthesis to give us the delicious fragrance of Viola odorata L., a quality I had never before noticed in V. palustris.

<sup>&</sup>lt;sup>1</sup> Fernald, Rhodora, xxviii. 7, 8 (1926).

When we came in to supper the wind was going down and after supper we packed up our things ready to make the two-hour trip home; but, no! Our employee ordered us to wait until morning. We were in his hands and obviously could not discharge him until we got back to Flower Cove; and on Tuesday morning when our motorboat came up to the Whalen's wharf, the race was over and the pedestrians had won by 20 hours! They had the old presses cleared and the driers dried; and, after we had read our mail, everyone set to work putting our tremendous new collection through the presses. It was three days before some of the plants could get into ventilators; but by the second day, July 23, we felt it safe to take some local walks, for immediately in the neighborhood there would not be enough of novelty to embarrass us. Griscom, bent upon studying the birds of the comparatively sheltered thickets at Eddies Cove, had gone there; but the rest of us were still wholly botanists. In groups of two or three we retraversed the region from Sandy Cove to Bear Cove and after two such days it became clear that we had the area now pretty well in hand. We extended various ranges but added only a few species to the Newfoundland list. Two, however, are worth special record. In the thicket near Savage Cove there was a tall Epilobium with flowers much larger than in E. Hornemanni Reichenb. which abounded everywhere. The strange plant has the more pointed leaves with sharper teeth than in the latter species; and comparison shows it to be a perfect match for Alaskan material of E. Behringianum Hausskn., a species heretofore known only from southern Alaska, and, by way of the Aleutian Islands and Kamtchatka, southwestward to the Kurile Islands. The second plant was also an Epilobium. pond at the border of the Rock Marsh, where Agrostis melaleuca and Eriophorum Scheuchzeri abound, has its southern shore bordered by an extensive limestone pavement which, during the spring thaw, is obviously a part of the pond-floor. There we got many interesting things and, failing to recognize one species, I mechanically took two or three individuals for examination. It is fortunate that I did so for it proves to be Epilobium leptocarpum Hausskn., var. (?) Macounii Trel., another cordilleran plant new to eastern America; and, as in the case of Long's Cerastium Regelii, we at least know where to go for more. Better than that, we know a second station, for in a few days we were collecting a full series along the trail up Bard Harbor Hill.

Our curiosity regarding the region of Cape Norman being tempor-

arily a little satisfied we now turned our minds to the Highlands of St. John and planned to take the "Home" south on the morning of Monday, the 27th, to St. John's Island, thence to cross by motor-boat to Bard Harbor on the mainland shore. This was the trip we had long dreamed of and it was consequently a shock and deep disappointment to the rest of us when Griscom and Pease announced that they must start home by that boat. We could hardly accuse them of dreading an ascent on a trail to 1900 feet, for Pease's mountaineering exploits are too well known, and I had personally seen Griscom add a sick packer's load to his own and carry them both at once up the steep slope into Fernald Basin in the Shickshocks. So we were forced to accept the inevitable and leave them on the "Home" when we reached St. John's Island. Mr. John Haliburton, with whom we had arranged to get put across to the mainland, was away but Miss Haliburton insisted on our staying to dinner and then some of the men took us across nine miles to Bard Harbor.

Bard Harbor has two families, those of Eli Galton and his son-inlaw, Caleb Chambers, in summer and a third family in winter; and three or four miles to the south, at the mouth of Doctor Brook, there is the Galliott family. The men were all away on the outer islands. but Mrs. Galton and Mrs. Chambers took good care of us. obviously too late, at 4 in the afternoon, to explore the hills, but the great limestone escarpments of both hills, Bard Harbor Hill to the north, Doctor Hill to the south, were pretty tempting, so we ventured to go a little way on the trail up Bard Harbor Hill. After crossing marshes the trail led through rich Canadian forest and clouds of mosquitoes and flies; and, perhaps largely to get away from the flies, we hurried up the slope. Slightly below timber-line we came to a steep glade, full of Heracleum lanatum Michx., Polystichum Braunii (Spenner) Fée and Thelypteris Filix-mas (L.) Nieuwl. and with so many thousands of the famous European snail, Helix hortensis, that, struggling up the wet slope and perpetually slipping back, we promptly dubbed the place "Helix Slide." Reaching the rocky summit we looked in vain for limestone. We were on a vast tableland of hopelessly sterile quartzite and tried to be enthusiastic over Juncus trifidus L., Luzula spicata (L.) DC., Hierochloe alpina (Sw.) R. & S. and the other ubiquitous plants of the most silicious mountain-crests. one depression we did find Carex stylosa, which we had known only about Port aux Basques; and Hotchkiss, tugging through a scrubthicket, brought back from a glade material of *Milium effusum* L., a grass we had had only from the region of Ingornachoix Bay. But we were much depressed at the anticlimax, for the western escarpments of both hills certainly looked like limestone and the geological map so indicated them.

(To be continued)

ERECHTITES MEGALOCARPA IN RHODE ISLAND.—Ever since *Erechtites*, with its troublesome variations, received the attention of M. L. Fernald, botanists have been on the lookout for *Erechtites megalocarpa*, a new species which he described in Rhodora, xix: 24–27 (1917).

Although many plants have been examined by the writer, even sturdy specimens with large heads had disappointingly small achenes—none over 3 mm. long—and it was not until Sept. 8, 1925, that a group with fleshy leaves, basally thickened midribs, and abruptly narrowed involucres, gave promise of success. A brief examination showed that the achenes were 4–5 mm. long, had about 16 ribs, and that the plainly exserted style bases protruded at least three-tenths (.3) mm.

Without repeating the descriptive details already published, the fact that there were present at least seventeen of the nineteen characteristics attributed to the new species suggests that the plant may well be *Erechtites megalocarpa* Fernald.

The colony grew on a low bank near the ocean shore, on Sachuest Neck, a long point of land extending into the Atlantic at Middletown, R. I.—S. N. F. Sanford, Boston, Mass.

<sup>&</sup>quot;Acer saccharum Marsh."—The name "Acer saccharum Marsh." (Arb. Amer. 4. 1785) has of late years been generally taken up as the name for our sugar maple. It may, therefore, be interesting to note that Marshall never published any such species. The name "Acer saccharum" does, it is true, appear as cited, but this was merely a typographical error for Acer saccharinum L. In the revised French edition of Marshall's work (Catalogue alphabetique des Arbres et Arbrisseaux), which appeared in 1788, the error was cor-



Fernald, Merritt Lyndon. 1926. "TWO SUMMERS OF BOTANIZING IN NEWFOUNDLAND: Part II. Journal of the Summer of 1925 (Continued)." *Rhodora* 28, 89–111.

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