tane-montane; Parlin, K 1202 (1948) DBG; West Pass Creek, H 8996 (1959) CS; Cathedral, B&S 89-62; Cement Creek, Ed 146 (1939) RMBL. There couldn't be a more thoroughly native plant than this lovely, purple-flowered pedicularis; yet from the way it haunts irrigated meadows and irrigation ditches on the floor of the Basin one could be excused for thinking it adventive. It grows seven or eight inches high, and is distinctive not only for its rich blossoms but for its finely crenulated linear leaves.

Pedicularis Grayi Nelson; cordilleran; montane-subalpine; Gothic, C 1106 (1960) RMBL; Spring Creek Valley, B&S 487-62; Lujan Creek Valley, H 9030 (1959) CS; Avery Flats, B 110-52. Growing individually rather than in populations, and rising to the height of two or three feet, this is the tallest pedicularis in the Gunnison Basin and very striking. Many times I have heard the question "What plant is that?" when it was suddenly encountered in the woods. Its leaves are like the fronds of a good-sized fern, and the spire of large hooded blossoms is streaked with red. It is more frequent in light forest than in the open, but not particularly frequent in either place.

Pedicularis groenlandica Retzius; boreal; montane-alpine; Gothic, B 92-52; Lujan Creek Valley, H 9023 (1959) CS; Mill Creek Valley, B&S 295-62; Conundrum Pass, B 216-61. The popular name of little elephant head fits this plant perfectly. The hood, or helmet, of the flower not only resembles the head of an elephant but is prolonged underneath into a proboscis. The flowers are purple and the leaves like the fronds of a small and delicate fern. The plant grows in wet, open places, and is always one of the first noticed by newcomers to the Basin.

Pedicularis Parryi Gray; cordilleran; alpine-subalpine; Pearl Pass, L 565 (1949) COLO; Baldy Chato, B&S 272-62; Slumgullion Mesa, B 252-65; Mill Creek, B&S 297a-62; Mirror Lake, B 166-61. Here the leaves are much the same as in the preceding species, but the flowers are white and the helmets look like the heads of little geese. The plant is prevailingly alpine, and is found in both moist and dryish habitats.

Pedicularis Paysoniana Pennell; cordilleran; montane-subalpine; Gothic, L 204 (1949) COLO; Mill Creek Valley, B&S 293-62. This is the most beautiful pedicularis in the neighborhood of Gothic, as is attested by the fact that I have ten records of the plant from just that station. Yet the beauty is subtle, not spectacular. For the small helmeted flowers are a pale yellow, and the bracts between them are a green made grayish by the pilosity. The plants seem to rise sheerly from the meadow or forest floor, and to have an ethereal beauty which words cannot express but which the colored slide can carry over to strangers.

Pedicularis racemosa Douglas; cordilleran; subalpine; Copper Creek Valley, B 243-61; Teocalli Ridge, L 244 (1949) COLO; Mill Creek Valley, B&S 294-62. I have never seen this plant save on the floor of mesic to dry subalpine forest. The linear leaves are crenulate like those of P. crenulata; but the flowers are white, and when paired, as frequently happens, seem like the horns of a ram. This characteristic early gave the plant the popular name of ram's horn, and really, the popular name is enough to identify it.

Pedicularis scopulorum Gray; Coloradan; alpine-montane; Rough Creek Cirque, B&S 596-62; Baldy Chato, B&S 273-62; North Italian Mtn., L 815 (1950) COLO; Cement Creek Valley, B 32-54; Gothic, B 53-59. In open, moist to mesic places, this pedicularis grows luxuriantly at altitudes above 9,000 feet in the Gunnison Basin. It is especially prevalent on the north-facing higher slopes of the Northeast San Juans, where its rose-purple, but silvery, large heads can be seen glowing in the alpine sunshine. In the lower zones the stems lengthen from six inches to a foot, and the heads grow more slender; but the plant is recognizable as the same, if not quite so lustrous. Like P. crenulata, the helmet ends in two teeth, and morphologically the two species are closely related. I do not know of their territories as overlapping; but if an uncertainty should arise, a look at the leaves would be enough. Those of P. crenulata are crenulated; those of P. scopulorum fern-leaved.

Penstemon Mitchell, The Beardtongues

The blue, wandlike penstemons

1974 C.B. to Gothic among Linaria

Penstemon strictus Bentham; cordilleran; submontane-subalpine; Gunnison, B 184-61; Gold Basin Creek drainage, B&S 55-66; Crested Butte, Ge 2121 (1955) GOLO; Cathedral, B&S 215a-62; Mill Creek Valley, B 100-64. With secund blue or bluish-purple flowers more than an inch long, and wands rising two feet high, this is not only the tallest penstemon in the Gunnison Basin but the most frequent and widespread. Furthermore its favorite habitat seems to be the disturbed soil of roadsides, and in fact, south of Crested Butte, for miles on either side of the highway, the gravelly right-of-way is blue with the plant toward the end of June and early in July. The result of all this delightful ubiquity is that P. strictus becomes the first known and the longest remembered of all the penstemons in the Gunnison Basin.

Penstemon alpinus Torrey; cordilleran; submontane; Cochetopa Park, H 8963 (1959) CS, H 8998 (1959) CS (two stations). Although apparently their territories in the Gunnison Basin do not overlap, P. alpinus might be confused with P. strictus. The paired leaves of both species are green and glabrous, and the blossoms, although not exactly the same shade of blue, are about the same size. But a glance at the calyx will settle all doubt. The lobes of the calyx of P. strictus are short and squat; those of P. alpinus are long and attenuate.

Penstemon mensarum Pennell; Coloradan; montane-subalpine; Washington Gulch, S 64-125 RMBL; Meridian Lake, C 1173 (1960) RMBL; Slate River Valley, S 65-179 RMBL; Elk Basin, Ka 402 (1964) RMBL. P. mensarum is also close to P. strictus, although the corollas are shorter. But as with P. strictus and P. alpinus, a glance at the calyx with a handlens will decide the issue. The lobes are intermediate between those of P. strictus and P. alpinus, and most striking of all, the calyx is covered with a glandular puberulence that extends in a lesser degree to the corolla itself. The four collections cited

(which are the only ones I know of from the Gunnison Basin) all occur in a line of not more than five miles in extent.

Penstemon Whippleanus Gray; cordilleran; alpine-subalpine; Castle Peak, Ew 11733 (1938) COLO; Old Monarch Pass, B 149-59; Spring Creek Pass, B&S 331-62; Slumgullion Mesa, B 251-65; Big Soap Park, B&S 113-65 RMBL. P. Whippleanus clearly belongs in the group of blue, wandlike penstemons, although its black-purple color sets it apart from all other penstemons in the Basin and although naturally enough, in exposed alpine situations, it may shrink to a matter of inches. Nevertheless, in favorable situations, even at high altitudes, its wands rise a foot high, and its paired glabrous leaves link it at once with P. strictus. P. Whippleanus is a pioneer in the upper zones, moving in on fresh soil left by rockslides or by the roadscraper, and in this capacity is frequently seen with Senecio atratus as its ecological companion. The last collection cited represents a relict population growing at an altitude of 8,400 feet in the partial shade of a grove of narrowleaf cottonwoods. As usual, such relict populations are not included in the given zonal range of the species. It should also be mentioned that white-flowered variants of this species are not infrequent.

Penstemon oliganthus Wooton & Standley; southwestern; Cochetopa Pass, P&We 8/7/31 COCO. This blue, wandlike penstemon can be recognized in the field by its habit of efflorescence. For the flowers have a tendency to be displayed at right angles to the wand, although borne on upright pedicels. But after flowering, the fruits turn upright also. As with P. Whippleanus, the calyx and corolla are somewhat glandular-pubescent.

Penstemon secundiflorus Bentham [P. unilateralis Rydberg]; cordilleran; submontane-montane; Almont, Ke 6/28/49 WS; Cochetopa Park, W 5779 (1950) COLO; West Pass Creek Valley, Jo 9 (1960) CS; Cochetopa Pass, B 77a-55. As was true of P. oliganthus, the wand of this species is somewhat shorter than the wands of the preceding members of the group. Again, a tendency toward a secund inflorescence has always been present with the

blue, wandlike penstemons. But in P. secundiflorus, the tendency seems to reach an extreme. One can find a plant with all the fascicles of flowers occurring on one side of the stem and occupying a full half of the wand. One should note the stylish hyaline edging of the glabrous calyx lobes. As a matter of fact the whole plant is glabrous.

The glomerated penstemons

Penstemon Rydbergii Nelson; cordilleran; submontane-alpine; Gunnison, Str 8/8/29 WS; Gothic, B 28d-55; East Willow Creek Valley, B 160-61; Mill Creek, B&S 252-62; Devil's Lake, B 31-64. Here the flowers occur, not in racemes whether secund or otherwise, but in from one to three dense glomerules at the summit of the stem. When there is but one glomerule, the inflorescence is, of course, capitate. The species is both widespread and frequent in the Gunnison Basin, and often is strikingly beautiful from the luster of the bluish-purple blossoms and the glaucous leaves. The plant grows in moist to mesic places, usually in the open, but sometimes in partial shade.

Penstemon procerus Douglas; cordilleran; submontane-montane; Willow Creek Valley, B 162-65 RMBL; Cochetopa Park, B&S 512-62; Lick Park, B 67-59; Taylor Park, Wr 7/52 WS. In the Introduction to this flora I spoke of the common-sense view of the species,* and several times in the course of these annotations I have implied that the common-sense view can be quantitative as well as qualitative.** The difference between P. Rydbergii and P. procerus is a beautiful example of this. That two species are involved is obvious. No one, as far as I know, has ever proposed collapsing the two into one. Yet the difference between them is largely quantitative. The glomerules of P. procerus, to begin with,

* See above, pp. 28-29.

** See above, pp. 118 (under Helianthella), 282-283 (under Astragalus Haydenianus), and 321-322 (under Gayophytum).

range from two to six or more, instead of from one to three. At the same time the glomerules are narrower since the individual blossoms are shorter. The leaves complete the picture by being consistently narrower. The species is found in drier habitats than is P. Rydbergii, and in the Willow Creek Valley collection was seeking the edge of big sagebrush bushes for protection from grazing and trampling. In the Cochetopa Park collection, the plant was growing close to clumps of Potentilla fruticosa for the same reason.

The scarlet-panicled penstemon

1974 Cochetopa Pa[illegible]

Penstemon barbatus (Cavanilles) Roth; southwestern; submontane-montane; Sapinero, Wh 565 (1898) COLO; Hartman Rocks, B 93-57; Cathedral, B&S 311-62 RMBL. As I see it, my job in this informal list is first to separate the species one from another and then to record the observations I have made and the thoughts they have led me to in my twelve years of field work in the Basin. Thus I hope no one is going to look for monographic precision in my use of botanical terms. With respect to P. barbatus, I call the species panicled because, although the raceme is not branched, it is much looser than that of any other species in the Basin and because, actually, a majority of the blossoms occur in pairs on pedicels that arise from a common peduncle.

As noted in the Introduction,* the policy of this flora is to present the plants as a series of discrete species. However, in the case of this penstemon, it seems to support the theoretical contentions of this work to mention that the Gunnison Basin plant is uniformly the subspecies Torreyi whereas at Mesa Verde, only a hundred miles to the southwest, the subspecies is trichander.

The low alpine penstemons

Penstemon Hallii Gray; Coloradan; alpine; Baldy Chato, B&S 486-62; Mesa Seco, B 74-64; Slumgullion

* See above, pp. 4-5.

Mesa, B 205-65; Handies Peak, P 1542 (1940) COCO; Engineer Pass, B&S 65-201 RMBL. With narrow linear leaves, this species varies in height from three to eight inches. But even when just three inches high (as in the last collection cited), and bearing but three blossoms to a plant, these blossoms can be as much as an inch long and three-quarters of an inch across the open mouth. Add to this that the color is a lovely, translucent violet, and the effect of dozens of plants in bloom at the same time is to make a whole day memorable. It is interesting that the species is apparently restricted to the San Juans section of the Gunnison Basin.

Penstemon Harbourii Gray; Coloradan; alpine; Mt. Belleview, B 55b-57; Queen Basin, B 68a-54; North Italian Mtn., L 1463 (1951) COLO; Baldy Chato, B&S 485-62; Engineer Pass, B&S 65-197 RMBL; Capitol City, S 64-168. In the high mountains of the southern half of the Basin, this penstemon is frequently found growing with P. Hallii, its light-blue corollas contrasting strongly with the violet-colored corollas of P. Hallii. There are other differences also. The blossoms of P. Harbourii are only half the size of those of P. Hallii, and clustered at the ends of the stems. They are not at all secund, as is conspicuously the case with P. Hallii. It is interesting that these two species of Penstemon, endemic to Colorado, should nevertheless show a sharp divergence in distribution with respect to the Gunnison Basin, P. Hallii being confined to the high mountains of the southern rim, P. Harbourii being found on the high mountains of both rims. There is a reason for this difference in behavior, which I do not know, but which surely can be discovered. The reader will note that as usual the relict collection from Capitol City is not included in the zonal range given for the species.

The mat penstemons

Penstemon teucrioides Greene; Coloradan; submontane-subalpine; Sapinero, P 1199 (1934) COCO, TOPOTYPE; Almont, P&Ha 4222 (1951) COCO; Powderhorn, B&S 43-62; Monarch Pass, P 4078 (1950) COCO; Mt.

Ouray, B&S 66-149. The mats of this Coloradan species are very small, but the plant is exceedingly common in the drier parts of the Basin, and in fact the above citations were selected from about thirty collections! The slender flowers, around five-eighths of an inch long, occur toward the ends of the branches, which are decumbent at first but then ascend. The calyces are viscid-puberulent and pick up grains of sand. The short linear leaves, which are green and dense, end in red mucros, and are very handsome under a pocket lens.

Penstemon caespitosus Nuttall; cordilleran; submontane-montane; Jack's Cabin Pass, Bea&Er 1242 (1957) COLO; Taylor Park, G 2857 (1964) COLO. P. caespitosus is morphologically close to P. teucrioides, but much less common in the Gunnison Basin. It seems less tolerant of aridity, but insufficiently so to explain its infrequency in the Basin. Although its more oblanceolate leaves are longer than those of P. teucrioides, the decumbent and then ascending stems are shorter, so that the largeness of the mats comes not from the stems but from the creeping rootstocks underground. The slightly longer calyx lobes are puberulent only.

Penstemon linarioides Gray; southwestern; submontane-montane; Almont, B 19a-57; Cochetopa Park, W 9426 (1955) COLO; Old Agency Guard Station, B 51-60 CS, RMBL; Cathedral, B&S 102-62. The prostrate and then assurgent stems of the preceding two species are still present in this species; but here the term "mat" is less apt. For it so happens that the chief characteristic of this plant comes from the number of vertical stems that spring from the prostrate stems, these vertical stems then giving rise to further vertical sterile shoots from the leaf axils. Thus the mat turns into a bird's nest. If the collector desires a fine character, he will note that the bases of the calyx lobes have white, chartaceous, and often jagged edges.

Penstemon procumbens Greene [P. Crandallii Nelson ssp. procumbens (Greene) Keck]; Gunnison Basin; subalpine-montane; Gothic, B 26-54; Snodgrass Mtn., B 30c-54; Slate River Valley, K 632 (1947) DBG; Little Soap

Park, B&S 65-76. With respect to this and the next species I have for many years gone along with the general acceptance of their being two subspecies of a larger entity, P. Crandallii. I once discussed the difficulty of this view with C. Wm. T. Penland, author of the treatment of Penstemon in Harrington's Manual; but in the years of field work, always the chief consideration is to have in mind, by whatever name, the plant intended in the literature and meant by botanists when they talk about it.

But now that I am practically at the end of this flora, a consideration of overwhelming importance takes the place of the preceding one. This is that the treatment of the species in this book should be consistent. In a manual written by several authors it is inescapable that the conception of the species will be uneven. But in a local flora written by one man such a situation is unpardonable, and by the logic of all the preceding pages these two plants must be regarded as separate species.

In the first place they are widely separated in the Gunnison Basin by habitat, altitude, and geography. P. procumbens, which is apparently endemic to the Basin, occurs only in the Elk and West Elk Mountains, where it shows the normal variation of a species in response to sun and shade, dryness and moisture. Its leaves are flat and glabrous with a short mucro at the end, and these vary from longer and oblanceolate to shorter and spoon-shaped; but always the petioles are conspicuously connate around the stems, maintaining the connation (which becomes cuplike) even when they have to embrace an auxiliary stem arising from one of the leaf axils. The plant is mat-forming, and on the open west-facing slope above the summit of Ohio Pass the mats of the plant cover a large area. Yet at the other end of its altitudinal and ecologic range, on the shaded cliff west of the road at the entrance to Little Soap Park, the plant is anchored in niches of the cliff and does its best to extend its mats over the cliff face at a steep angle.

Penstemon glabrescens Pennell [P. Crandallii Nelson ssp. glabrescens (Pennell) Keck]; southwestern; submontane-montane; Cochetopa Creek, Ke 7/10/49 WS; Cochetopa Park, P 1550 (1940) COCO; Lujan Creek Valley, H 9035 (1959) CS; Big Spring Gulch, B 39-57. As the cited collections show, P. glabrescens is limited to the southern, more arid half of the Basin. In fact the last collection cited came from half a dozen miles south of the topographic Gunnison Basin, and is included to indicate that the species extends to the south.

Now from the point of view of writing a practical guide to the plants of the Gunnison Basin, it would never occur to me to distinguish P. glabrescens from P. procumbens. But I would be much concerned to separate P. glabrescens from P. linarioides, which it much resembles. It has the same bird's-nest habit of growth, and its leaves are fully as linear and about equally long. The chief macroscopic way in which P. glabrescens differs from P. linarioides is that it has not nearly so many leaves and almost totally lacks the sterile shoots springing up beside the main stems from the leaf axils. As regards P. procumbens, P. glabrescens is different in the total dissimilarity of its leaves, in its different habit of growth, and in its quite other climatic and edaphic requirements.

Scrophularia L., The Figworts

Scrophularia lanceolata Pursh; boreal; submontane-montane; Gunnison, Pen 6278 (1915) COLO; Gold Basin Creek Valley, B 52b-57; Cochetopa Park, H 9068 (1959) CS; Fish Creek Valley, B&S 333-62; Spring Creek Valley (north), Ke 7/30/49 WS. After so many gorgeous penstemons it certainly is a change to list a member of the family whose purplish-tinged, greenish flowers are inconspicuous. Usually, S. lanceolata first attracts attention when its spires of fruits are lifted above its own leaves and the general level of vegetation. At that time, the ovoid but acute capsules will surely reveal the family to a collector familiar with the penstemons. The stems of S. lanceolata are square, and the triangular to lanceolate leaves are rather coarsely toothed. The plant is frequent in the submontane zone, whether in shade or in the open, and in situations ranging from moist to dry.

Verbascum L., The Mulleins

Verbascum Thapsus L.; adventive; submontane; Spencer, B 195-65 RMBL. On page 23 of the Introduction, I mentioned that I knew of but one population of the common mullein in the Gunnison Basin. The above collection is from that population.

Veronica L., The Speedwells

Veronica alpina L. [V. Wormskjoldii Roemer & Schultes]; boreal; alpine-subalpine; Slumgullion Mesa, B 212-65; Mineral Mtn., B&S 526-62; East Maroon Pass, B 37e-54; Gothic Natural Area, B 262-61. With its paired, lanceolate, sessile leaves, V. alpina is a familiar plant in the alpine and subalpine zones of the Gunnison Basin, as indeed in much of boreal North America. It is interesting that the leaves should be glabrous while the flower cluster at the summit of the virgate stem is pilose. Without a handlens the flowers are indistinguishable in the cluster; but later, the capsules become conspicuous, and display the notch at the top that is the badge of the genus.

Veronica americana (Rafinesque) Schweinitz; widespread North American; submontane-subalpine; Almont, B 95a-57; Cochetopa Park, Jo (1959) CS; Cathedral, B&S 419-62; Castle Park, B 73-59; Avery Flats, B 95a-57. This species of Veronica is popularly known as the American brooklime, and there is no doubt that brooks are its favorite habitat. Nevertheless it ventures forth on moist land and assumes an erect rather than aquatic habit. In the Castle Park collection cited above, the plant was growing with Epilobium saximontanum as an ecological equivalent, and it was interesting to see the two species growing to about the same height and displaying the same erect habit of growth. As in the following species, the flowers and fruits are borne in axillary racemes, never terminally.

Veronica Anagallis-aquatica L.; widespread North American; submontane; Almont, B 201-60 CS, RMBL.

This veronica is similar to the preceding species but with sessile leaves and with denser axillary racemes that sometimes bear further leaves. It is a taller, more vigorous plant, and not only are the leaves larger but the stem is twice as thick. I note that Fernald declares this species to be "apparently both indigenous and naturalized from Europe."* I must also observe that the above collection, which was growing in the East River, was almost certainly native. The bottom was gravelly, and the current cold and swift. The habitat would have been much the same at the time of the melting of the glaciers.

Veronica serpyllifolia L.; boreal; montane-subalpine; Gothic, B 28-55; Cathedral, S 62-21; Soldiers Park, B&S 54-66; Mill Creek, B&S 301-62; Lily Lake, B 211-60 RMBL. In the first year or two, this perennial veronica resembles V. alpina. The stems rise singly, or in twos or threes, to about the same height, and a collector might think it was V. alpina until he remembered that in V. alpina the inflorescence is clustered at the top of the stem, that here it is axillary in the upper half of the stem. But as the years increase, so do the stems, until at last the plant is caespitose and quite unlike V. alpina. Of course, if one has the fruits, he will note that the capsules of V. serpyllifolia are broader than high, those of V. alpina higher than broad.

Veronica peregrina L.; widespread North American; montane-submontane; Pasture Creek, B 6-64; Cathedral, S 65-158; Grant Lake, B 181-59; Sapinero, Pen 6260 (1915) COLO. This annual veronica shows the amazing variation in size that is frequent with annuals but rare with perennials. Thus in the Pasture Creek collection cited above, the plant is in flower at the height of half an inch. In the Cathedral collection (but three miles distant and at the same elevation), it is a branched plant nine inches high; and in the Grant Lake collection (once again at the same elevation), it is also nine inches high but this time a caespitose plant. It is the most prolific of flowers

* Gray's Manual of Botany, N.Y., 1950, p. 1284.

and fruits of any veronica of the Gunnison Basin, and indeed seven of the nine inches of the Grant Lake collection are taken up by the dense racemes of capsules. It is also the only veronica in the Basin with white blossoms.

SELAGINELLACEAE, The Selaginella Family

Selaginella Beauvois, The Selaginellas

Selaginella densa Rydberg; cordilleran; submontane-alpine; Quartz Creek Valley, B 2-65; Gold Basin Creek drainage, B&S 66-38; Cathedral, B 171-65; Mt. Baldy, Ew 11665 (1938) COLO; North Italian Mtn., L 3966 (1954) COLO. The small, gray-green carpets of this plant may seem insignificant in themselves; but taken together they cover an enormous amount of dryish soil in the Basin, whether on forest floors or on exposed rockslopes. There is no other species in the Basin to be confused with S. densa; yet the collector should note that the stems are prostrate, sending down roots from the lower side, and on the upper side producing two kinds of branches--vegetative branches like small nests, and reproductive branches which rise erect and four-sided. The Cathedral specimens cited above came from the dryish floor of a mixed Colorado-spruce and Douglas-fir forest, and on the date of collection, July 25th, were just bursting their sporangia and revealing the orange megaspores. It is always a marvel that things so square and geometrical as these reproductive branches can yet contain in the leaf axils things so round and big as the sporangia and megaspores.

SOLANACEAE, The Nightshade Family

Hyoscyamus L., The Henbanes

Hyoscyamus niger L.; adventive; submontane; Doyleville, P&We 8/7/31 COCO; Cochetopa Creek Valley, B 71-55; Lake Fork Canyon, B 55-65. Occurring sporadically in small populations on roadsides in the submontane zone, this plant is so different from the general roadside cover that it arrests the attention even of persons not especially interested in plants. Not only is the plantstalk lavishly and bizarrely leafy, but the stalk itself is scorpioid. While the top is unrolling in blossoms (the dun-colored petals of which are reticulate with purple veins), the calyces lower down are becoming turgid with ripening fruits. This adventive plant, in other words, looks as foreign as it really is.

Lycium L., The Matrimony Vines

Lycium halimifolium Miller; adventive; submontane; Gunnison, B&S 436-62. This vinelike shrub, probably introduced by one of the early settlers, seems well established in Gunnison, where it grow lustily in vacant lots. The main stems of the plant have two kinds of branches: vegetative ones an inch or two long that end in sharp points, and floriferous ones a foot or more long that arch out from the plant and bear the profuse, attractive, lavender blossoms.

Solanum L., The Nightshades

Solanum triflorum Nuttall; cordilleran; submontane-montane; Gunnison, Ke 6/30/49 WS; Cochetopa Creek Valley, W 9438 (1955) COLO; Fish Creek, B&S 561-62. A low, annual weed of disturbed places, S. triflorum has a central stem, but branches out laterally close to the ground and as a plant is always broader than high. Its leaves are pinnatifid, and the blossoms (and later, the berrylike fruits) occur in ones and twos as well as in threes. The flowers are white and the mature fruits green.

SPARGANIACEAE, The Bur Reed Family

Sparganium L., The Bur Reeds

Sparganium angustifolium Michaux; boreal; subalpine;

Lily Lake Basin, B 209-60 CS, RMBL. The cited collection was made not in Lily Lake, but in a small pool in the adjoining meadow. The species is also known from the Mexican Cut ponds in that previously mentioned, northwestward extension of the Gunnison Basin flora;* but otherwise it seems not to have been collected in the region. The plant is aquatic, and the long floating leaves are not only narrow, as the specific name implies, but filamentous. The staminate inflorescence occurs above the pistillate on a single short stalk arising from a leaf axil.

Sparganium multipedunculatum (Morong) Rydberg; boreal; montane; Gothic, Op 7/22/58 RMBL; Crested Butte, B 225-60 CS, RMBL, B 227-60 CS; Powderhorn, B&S 568-62. S. multipedunculatum is morphologically close to S. angustifolium; but it is a much more robust plant, and can only be called semiaquatic. It is, in fact, a plant of pond margins where the broader leaves can rest upon the water, but where the stem of the plant can rise stiffly from the floor of the pond. Indeed the stems must be stiff, for the globular heads of fruits, sometimes five to a plant and three-quarters of an inch in diameter, are no floating matter. The plant is apparently more frequent in the Gunnison Basin than the preceding, and the collector will note that the large heads are on several peduncles, when the specific name.

TYPHACEAE, The Cattail Family

Typha L., The Cattails

Typha latifolia L.; boreal; submontane-montane; Gunnison, B 682-62 RMBL; Fish Creek, B&S 574-62 RMBL. The broad-leaved cattail, which grows along the fencerows of the irrigated meadows west of Gunnison and is the only species found in the Basin, needs no descriptive annotation in this list. But I should like to point out its

* See above, pp. 268-270, under Isoëtes Bolanderi, Juncus albescens, and J. balticus.

having followed Cebolla Creek for twenty-five miles up into the mountains, and then the narrower-valleyed Fish Creek even higher, until at about 9,000 feet, it was able to establish a colony very shortly after the creation of a small, private fish reservoir. I have had no time at all to dig into the literature concerning Typha. But since notions of water dispersal are impossible here, it would seem that the problem must be left in the hands of the winds or the birds.

UMBELLIFERAE, The Parsley Family

Angelica L., The Angelicas

Angelica ampla Nelson; cordilleran; submontane-montane; Gunnison, R 10677 (1959) CS; Almont, Ke 7/4/49 WS; Gothic, B 167-60 RMBL; Fish Creek, B&S 539-62; Fish Creek Mesa, B&S 204-62. Along the hedgerows and ditchrows north of Gunnison around the first of August the stalks of this plant rise six feet tall with perfectly globular heads of fruits. The stems are purple, and the leaflets of the large, green leaves are crowded. There is no other plant like it except A. atropurpurea in eastern North America, which the collector may know, but of which the heads of fruits are hemispherical only.

Angelica Grayi Coulter & Rose; cordilleran; montane-alpine; Gothic, B 11a-54; Lake Irwin, B 219b-52; North Italian Mtn., L 919 (1950) COLO; Slumgullion Pass, B&S 563-62; Sawtooth Mtn., B&S 66-88. The generic links between this and the preceding species are not readily apparent, and must be left to the manuals, in which respect I should like to mention that the Mathias & Constance monograph is a particular joy to the collecting botanist.* The leaves of A. Grayi are, of course, compound; but the thin, serrate leaflets are not at all crowded. The plant has a habit of growth that makes field identification easy. The umbels that in A. ampla end

* North American Flora, 28B, N.Y., 1944-1945.

by being perfectly globular show in A. Grayi the opposite tendency. They start by being hemispherical, but end by being as upright as an umbrella blown inside out.

Carum L., The Caraways

Carum Carvi L.; adventive; submontane-montane; Glacier, S 65-117; Almont, B 29-60 RMBL; Gunnison, B&S 76-62; Pitkin, Ma 3247 (1958) RMBL; Sargents, Kl (1959) CS. Most of the adventive plants in the Gunnison Basin are mere fugitives, and show no signs of being established anywhere. They are included in this distributional study for the sake of the collector only, and really ought to be left out of the statistics. But C. Carvi is well established in the Basin, and this both in its white-flowered and in its crimson-flowered form. Its foliage, predominantly basal, is carrotlike; but the umbels are smaller and more delicate than those of the carrot. In fact the white-flowered form when growing in an irrigated field gives a filmy appearance to the field.

Cicuta L., The Water Hemlocks

Cicuta Douglasii (DC.) Coulter & Rose; cordilleran; submontane; Doyleville, R 10258 (1959) CS; Gunnison, B 68-55 CS, RMBL; Powderhorn, B 108-64; Cebolla Hot Springs, B 121-64 RMBL. This is the commonest paludal umbellifer in the Basin. Sium suave, its ecological equivalent and, like C. Douglasii, tolerant both of alkaline and nonalkaline soil, is much less common; in fact it is rare. The flowers of C. Douglasii are small and white, and the leaflets narrow and serrate; but details of the flowers and fruits must be left to the manuals. However, there is one gross character which the collector should not neglect. The roots are fascicled, a character shared by Helianthus Nuttallii, but by few other plants in the Basin. Further differentiae will be given under S. suave.

Sium L., The Water Parsnips

Sium suave Walter; boreal; submontane; Sapinero, Wh 528 (1898) COLO; Gunnison, B 68a-55 CS, RMBL; Cebolla Hot Springs, B 109-64. S. suave is included here, out of alphabetical order, not only because it is the one plant in the Gunnison Basin confusable with Cicuta Douglasii but also because it grows with C. Douglasii. To the naked eye the flowering umbels of the two plants are much the same. But there is one important difference. S. suave has a fringe of bracts beneath the umbel which C. Douglasii does not possess. Furthermore the leaflets of S. suave are twice as long, twice as narrow, and merely serrulate. Finally, its roots are fibrous and do not at all resemble the fascicled tubers of C. Douglasii.

Conioselinum Hoffmann, The Hemlock Parsleys

Conioselinum scopulorum (Gray) Coulter & Rose; cordilleran; subalpine-submontane; Gothic Natural Area, B 282-61; Cement Creek, B 206-61; Fish Creek, B&S 542-62; Powderhorn, B&S 571-62. On pages 18 and 19 of the Introduction, this species was discussed with respect to its intolerance of drought and its amazing tolerance both of bright sun and of deep shade. Its leaves really do resemble those of the common parsley. But I think the best field character of the plant is the absence of bracts under the umbel, and the presence of bractlets surrounding the umbellets. I say "surrounding," because usually the bractlets are erect and can be detected only with a hand-lens. The plant in favorable situations grows as much as two and a half feet high.

Cymopterus Rafinesque, The Cymopteruses

Cymopterus purpurascens (Gray) Jones; cordilleran; submontane; Gunnison, K 1504 (1949) DBG; Gold Basin Creek drainage, B 9-60; Vulcan, B 26-64; Powderhorn, B 24-65. This low plant of the sagebrush zone blooms so early that I have never seen it in flower. The plant

is in full fruit by the first of June, and gone by the end of the month. The fruits with their wide, light-purple wings are handsome, and so are the bractlets beneath the umbellets, which are white with purple ribs. One of the older residents of the Basin told me that as children they used to dig up the roots in spring for candy. In any event, the collector should not miss the stout, light-colored, fusiform root about three inches long.

Heracleum L., The Cow Parsnips

Heracleum lanatum Michaux; boreal; montane-submontane; Gothic, B 148a-52; Cathedral, S 62-37; Almont, Ke 7/3/49 WS; Sapinero, Wh 933 (1898) COLO. The cow parsnip has the largest inflorescence and the largest leaves of any umbellifer in the Gunnison Basin, and really, no further identification is necessary. It will be noted that as in species of Hydrangea and Viburnum, outer blossoms of the disklike, white inflorescence frequently have enlarged (and even cleft) petals. The leaves are aceriform, and in some of the moist, aspen-filled draws the herb grows monstrously large.

Ligusticum L., The Lovages

Ligusticum Porteri Coulter & Rose; cordilleran; montane-subalpine; McIntyre Gulch, B 197-65; Kebler Pass, P 4087 (1950) COCO; Gothic, Ma 3418 (1958) RMBL; Castle Peak, Ew 11760 (1938) COLO. In the Gunnison Basin, this vigorous umbellifer is characteristic of the borderland between meadow and aspen grove. The only plant with which it could be confused is Conioselinum scopulorum, which simply is not found in the median to dryish sites of L. Porteri. Furthermore L. Porteri has a symmetrical habit of growth not shared by the asymmetrical C. scopulorum. At the node below the central umbel of L. Porteri, two or three secondary umbels frequently appear, which are symmetrically disposed around the stem but which do not reach the plane of the principal umbel. The northern L. filicinum shares this symmetrical habit, but C. scopulorum does not.

Lomatium Rafinesque, The Biscuitroots

Lomatium dissectum (Nuttall) Mathias & Constance; cordilleran; montane; Soap Creek Valley, B 39-65; Gothic, B 145-52, B 145a-52 (two stations); Hot Springs Creek Valley, B 6-66. The requirements of this yellow-flowered plant seem unusually precise. It has been collected only in the northern half of the Basin and only in the montane zone, where it seems to favor loose soil in open places. Its leaves are much dissected (although not linearly so), its stems are often reddened, and its fusiform root is about as long as that of Cymopterus purpurascens but a dark brown instead of a light brown. The plant's floriferous stems continue to grow after flowering time, and finally hold aloft the erect, long-oval fruits with their conspicuously margined wings. The species is common in the neighborhood of Gothic.

Lomatium simplex (Nuttall) Macbride; cordilleran; submontane-montane; Gold Basin Creek drainage, B 13-60 CS, RMBL; Jack's Cabin Pass, B 21-57 CS, RMBL; Hot Springs Creek Valley, B 7-66; Ohio City, L 1274 (1951) COLO; Cathedral, S 62-12. I have never found this species overlapping with L. dissectum; apparently in the Gunnison Basin the two species approach each other and then stop. This is fortunate because the yellow-flowered umbels of L. simplex do resemble those of L. dissectum. On the other hand, the fruits being shorter and wider and broader-winged are much different, while the leaves being linearly dissected are entirely different. Furthermore the species is altogether a more delicate plant than L. dissectum.

Oreoxis Rafinesque, The Oreoxises

Oreoxis alpina (Gray) Coulter & Rose; cordilleran; submontane-alpine; Almont, W 9379 (1955) COLO; Cochetopa Park, W 5797 (1955) COLO; Razor Creek Park, B&S 66-66; Pine Creek Mesa, B 31-60; Baldy Chato, B&S 268-

↓ this yellow in Cumberland

62; Cumberland Pass, Ma 3248 (1958) RMBL. As with Eriogonum coloradense, the least part of O. alpina is the part above ground. What may seem to be three or four low caespitose umbellifers only an inch or two high will often turn out to be just the tops of a system of deep taproots and interlocking crossroots. The little flowers are yellow, and if the collector would like a fine character, let him look at the bractlets of the umbellets. Many of them are only half-separated; just a few are divided to the bottom.

Osmorhiza Rafinesque, The Sweet Cicelys

Osmorhiza obtusa (Coulter & Rose) Fernald; boreal; subalpine-montane; Wolverine Basin, Ew 11837 (1938) COLO; Avery Flats, B 11-54; Fish Creek Mesa, B&S 196-62. Whether in spruce or aspen, O. obtusa is a deep-woods plant, and although not a small plant, is usually obscure upon the forest floor. Its blossoms in fact are completely inconspicuous. Yet in midsummer the ripened ovaries rise above the foliage, each slender clavate fruit is extended on a pedicel longer than itself, and the plant becomes unmistakable, especially if one notes that its compound leaves are basically trifoliate. The term "stylopodium," used in the manuals, is admirably illustrated in this species. Between each of the styles (still extant) and the ovary (now a fruit) is a bulbous structure neither style nor ovary. This is a stylopodium.

Osmorhiza occidentalis (Nuttall) Torrey; cordilleran; subalpine-montane; Gothic Mtn., B 72b-55 RMBL; Lake Irwin, K 556 (1947) DBG; Washington Gulch, K1 (1956) CS; Ohio Creek Valley, K 585 (1947) DBG. A large, bushy, perennial herb growing frequently a yard high and dwelling in open places, this species of Osmorhiza is not obscure and has been frequently collected. Its small yellow flowers are displayed above the foliage, and its not especially clavate fruits, instead of being extended individually, are clumped together. It is curious that in the Gunnison Basin O. occidentalis, which is apparently more frequent than O. obtusa, is much

more restricted in its range, being known only from the ten-mile stretch between Kebler Pass and Gothic.

Oxypolis Rafinesque, The Oxypolises

Oxypolis Fendleri (Gray) Heller; cordilleran; subalpine-submontane; Gothic Natural Area, B 67b-54; Fish Creek Mesa, B&S 199-62; Lujan Creek Valley, H 9031 (1959) CS; Glacier, K 537 (1947) DBG; Almont, Ke 6/28/49 WS. Two umbellifers could scarcely be less alike morphologically than O. Fendleri and Conioselinum scopulorum; yet in their tolerance to sun and shade, and in their range and frequency in the Gunnison Basin, they are much the same. About the only difference in their behavior is that O. Fendleri likes to grow right in the streambed if it can. Still, the two species are unmistakable. O. Fendleri has fascicled tuberous roots like those of Helianthus Nuttallii and Cicuta Douglasii, and its leaves, nearly all basal, are simply pinnate. The inflorescence rises far above the vegetative plant and is composed of very small white blossoms. The fruits, when they develop, are clumped together vertically like miniature hearth brooms.

Podistera Watson, The Podisteras

Podistera Eastwoodae (Coulter & Rose) Mathias & Constance; southwestern; alpine-subalpine; Baldy Chato, B&S 267-62; Slumgullion Mesa, B 136-61; Mesa Seco, B 96-64; Ohio Peak, W&B 9208 (1955) COLO. It is interesting that this low alpine plant (which barely descends to the subalpine zone) should be common in the southern half of the Basin, rare in the northern. On the vast north-facing alpine slope of Baldy Chato it is the commonest forb both in the zone of thinning willows and in the open stretches above. The peduncles of the yellow-flowered umbels about equal the length of the leaves, which are the most distinctive part of the plant, since the paired pinnae are evenly distributed along the rachis of the leaf. For further details, the reader is referred to the next species.

Pseudocymopterus Coulter & Rose, The Wild Parsleys

Pseudocymopterus montanus (Gray) Coulter & Rose; cordilleran; alpine-montane; Castle Peak, Ew 11746 (1938) COLO; Slumgullion Mesa, B 136a-61; Marshall Pass, B 86-61; Avery Flats, B 10b-54; Crested Butte, E 8/91 COLO; Sapinero, Wh 537 (1898) COLO. In the southern half of the Basin, as indicated by the cited collections, this far more widespread and frequent species is found growing with Podistera Eastwoodae as an ecological equivalent. As seen from eye level, the two plants are very nearly indistinguishable. But closer inspection will reveal a number of differences. As is not the case with P. Eastwoodae, the sheaths of the petioles of P. montanus are often enormously enlarged; and in any event they usually display a white edging that is distinctive. Again, the leaves of P. montanus are linearly dissected; the paired pinnae of P. Eastwoodae frequently resemble a series of solid stars strung along the rachis. As a last detail, I might point out that the bractlets of the umbellets of P. Eastwoodae are two- or three-toothed; those of P. montanus are quite simple. This can readily be observed with a pocket lens.

URTICACEAE, The Nettle Family

Parietaria L., The Pellitories

Parietaria pensylvanica Muhlenberg; widespread North American; submontane; Lake Fork Canyon, W 9317 (1955) COLO; Biebel's Springs, B 183-60 CS, RMBL; Cochetopa Dome, B&S 189-66. A low annual with green axillary flowers, the Pennsylvania pellitory is like the Gunnison Basin species of Sullivantia in that it occurs only in cliff crevices. But the sullivantia is a plant of moist cliff crevices, and most at home in the subalpine zone; the pellitory is a plant of dry cliff crevices and at home only in the submontane zone. Thus it is interesting to find them overlapping in the Lake Fork Canyon (as in the cited collections of W.A. Weber), which is the coolest and narrowest canyon in the submontane zone of the Gunnison Basin, and probably the only place in that zone where the sullivantia could survive? At the same time it is probably the shadiest and moistest place in the submontane zone which the pellitory could endure, for the other sites of the species are all drier and more exposed. Probably these remarks are enough to make the collector know what he has if he chances upon P. pensylvanica. But it might be mentioned that the leaf is of a most peculiar shape. The tip is not pointed but rounded, and the lanceolate body is a bit swollen in the middle, so that the leaves look like small marine animals darting out of the plant.

Urtica L., The Nettles

Urtica gracilis Aiton [U. dioica L.]; boreal; montane-submontane; Gothic, B 270-61; Cathedral, B&S 174-62 RMBL; Almont, B 238-60; Powderhorn, B 133-64. As with Parietaria, there seems to be but one species of Urtica in the Gunnison Basin. The leaves vary enormously in size, ranging in the collections cited from one to five inches in length; yet they are always longer than the axillary catkins of green fruits or flowers, and are always clustered at the nodes. The edges of the leaves are serrate, and the leaves themselves are slightly curved to one side or the other, thus becoming asymmetrical.

VALERIANACEAE, The Valerian Family

Valeriana L., The Valerians

Valeriana acutiloba Rydberg [V. capitata Pallas]; cordilleran; montane-alpine; Gothic, S 62-33; Spring Creek Valley, B 149-65; Mill Creek Valley, B&S 254-62; Virginia Col, B 23-54, B 23a-54. This beautiful plant is widespread in the Gunnison Basin and not infrequent. Its basal leaves are entire (and frequently petioled), but its stemleaves have one or more pair of pinnae. The inflorescence is corymbiform, varying from one so compact that it seems capitate, to one so

broad that it requires a pair of lateral inflorescences beneath the main one. But the corolla is what is most distinctive. Beneath its flaring lobes it tapers like a funnel to a bit of cylindrical tube that plunges into the lobeless calyx. Furthermore, between the funnel and the tube, is a swelling on one side that suggests some of the gibbous lupines. The Gunnison Basin plants seem to be either pistillate, or staminate with some pistillate flowers.

The reader will note that instead of regarding this plant as a subspecies of the Alaskan V. capitata, I am following Cronquist in Vascular Plants of the Pacific Northwest in returning to Rydberg's name for this plant of the Southern Rockies.* In addition to the theoretical reasons for making this choice, it seems to me that by an unconscious suggestion the Alaskan name has led a number of botanical visitors to Gothic (including the author) to regard those plants of V. acutiloba with a condensed inflorescence as V. capitata, those plants with an open corymbiform inflorescence as V. occidentalis, which apparently does not grow around Gothic.

Valeriana edulis Nuttall; cordilleran; submontane-subalpine; Almont, Ke 6/22/49 WS; Cochetopa Park, Jo (1959) CS; Gothic, B 73-52; Mill Creek Valley, B&S 255-62. V. edulis is fully as widespread as V. acutiloba, and I think a little more frequent. It is a lower-ranging plant, and more tolerant of boggy soils--in fact one frequently sees it in boggy cow pastures. Yet in the mesophytic meadows around Gothic, the two species grow side by side as ecological equivalents. Furthermore in the Gunnison Basin, V. edulis seems to be more strictly dioecious than V. acutiloba. Its inflorescence is paniculate, with the branches rising at close angles to the main stem. Indeed the whole plant seems to have the vertical habit, for the long and slender basal leaves and similar pinnae of the cauline leaves rise as vertically as they can; and to complete the picture, the root is vertical in contrast with the horizontal root of V. acutiloba.

* Seattle, 1959, 4, 474.

Valeriana occidentalis Heller; cordilleran; submontane; Sapinero, Wh 401 (1898) COLO. The pinnae of the cauline leaves of V. occidentalis are quite different from those of V. acutiloba. The pinnae of the latter are linear, even acuminate; in V. occidentalis, they are elliptical, and suggest the leaflet of a legume. Again, the corolla of V. occidentalis, beneath the flaring lobes, is cup-shaped, not funnel-shaped, and it lacks both the gibbosity of V. acutiloba and the bit of cylindrical tube.

VERBENACEAE, The Vervain Family

Verbena L., The Vervains

Verbena bracteata Lagasca & Rodriguez; widespread North American; submontane; Sapinero, Wh 626 (1898) COLO. Most botanists recognize this plant in the field by the habit and the leaves, as they needs must, for the flowers are almost invisible to the naked eye. The habit of the plant is usually sprawling, and the leaves are trifoliate in a peculiar way, the two lateral leaflets being much smaller than the terminal one, and all three having dissected edges. But at the ends of the branches the leaves turn into linear bracts, each bract protecting one of the small flowers, the corolla of which just appears above the strigose calyx.

Verbena Macdougallii Heller; cordilleran; submontane; Cebolla Hot Springs, B 218-65 RMBL. In this species, the purple flowers are not axillary as in the preceding species, but occur in cylindrical spikes overtopping the vegetative plant. Of course the bracts are still there; but they have become almost vestigial, since the purpose of the spike is to display the flowers rather than to hide them. The leaves are handsome--rugose with cross reticulations, essentially sessile, and dentate. The plant grows two or three feet tall, and seeks open places.

VIOLACEAE, The Violet Family

Viola L., The Violets

The blue or purple violets

Viola adunca Smith; boreal; alpine-submontane; Handies Peak, P 1536 (1940) COCO; Blaine Basin, B 112-57; Mill Creek Valley, B&S 292-62; Gothic, L 59 (1949) COLO; Pine Creek Mesa, B 35-60 RMBL; Cochetopa Park, Jo (1959) CS. The most widespread and frequent violet in the Basin, this is a short-stemmed, clumpy plant that ranges in height from half an inch in the alpine form (sometimes called V. bellidifolia) to five inches in the lower-montane form. It occurs both in partial shade and in the open, and can be recognized by the spur (which is the source of its specific name) and by the peculiar leaf. This is subcordate (even truncate) at the base, and finely crenulate as it curves to its acute, but blunt, tip.

Viola nephrophylla Greene; boreal; montane-submontane; Gothic, C 1087 (1960) RMBL; Dutch Gulch, B 90-65; Sapinero, Wh 491 (1898) COLO. Whereas V. adunca is a violet of dry to mesic habitats, V. nephrophylla is a plant of bogs. Here it rises to about the same height as the lower-montane form of V. adunca, but is unbranched from the base, whereas V. adunca is rather copiously branched; in fact the branching is what gives V. adunca its clumpy effect. The blue blossoms of V. nephrophylla are often as much as two centimeters long, and its rounded to acute leaves are perfectly symmetrical.

The white violets

Viola canadensis L. [V. rugulosa Greene]; widespread North American; montane-subalpine; Fish Creek Mesa, B&S 91-62; Gothic, Wi 10156 (1954); Mt. Wilkinson, B 64-60; Gothic Natural Area, S 64-139 RMBL. I have always thought V. canadensis one of the easiest violets to come to know. There is little if any spur, and the petals are white on the inside and tinted purple on the outside. The crenulate leaves vary from reniform to ovate, but

are usually cordate at the base and acuminate at the apex. The plant is both occasionally branched and occasionally rhizomatous.

Viola palustris L.; boreal; subalpine-montane; Ohio Peak, B 31b-55; Copley Lake, B 115-60; Avery Flats, B 10-54; Slate River Valley, B 105-61. The scapes of this low, white-flowered violet rise above the leaves, which can be almost circular. The plant is found only in moist places, whether in the open or in shade, and sends out thin rhizomes from the nodes of the perennial root. It is interesting that in the Gunnison Basin only the white-flowered form is known, whereas in other places, such as Tuckerman's Ravine in the White Mountains of New Hampshire, only the lavender-colored plant occurs.

The yellow violet

Viola Nuttallii Pursh; cordilleran; subalpine-montane; Kebler Pass, K 546 (1947) DBG; Slate River Valley, C 1001 (1960) RMBL; Gothic, S 62-64 RMBL; Sapinero, Wh 595 (1898) COLO. Since as far as I know this is the only yellow-flowered violet in the Gunnison Basin, the color of the blossoms alone will identify the plant. But the collector will note that the lanceolate, sinuately toothed leaves with their white veins are extraordinarily like the leaves of a plantain. The plant grows with great vigor in the neighborhood of Gothic.

SUMMARY OF SPECIES

Boreal species	275
Cordilleran species	568
Southwestern species	62
Widespread North American species	34
Relicts of the plains	15
Coloradan species	26
Gunnison Basin species	5
Adventive species	77
Total species	1062

PERCENTAGES

TO THE NEAREST HALF PER CENT

Boreal species	26.
Cordilleran species	53.5
Southwestern species	6.
Widespread North American species	3.
Relicts of the plains	1.5
Coloradan species	2.5
Gunnison Basin species	.5
Adventive species	7.
Total per cent	100.0

GLOSSARY OF PLACE NAMES

Agency Peak. 11,700-foot peak a mile south of Sawtooth Mtn. and separated from it by an 11,400-foot col.

Almont. Small village situated about 10 miles north of Gunnison where the East and Taylor Rivers meet to form the Gunnison River.

Alpine Counting Corrals. See Elk Creek.

Alpine Guard Station. See Elk Creek.

Alpine Pass. 11,900-foot pass in the Continental Divide 5 miles southeast of Cumberland Pass. Can be reached by following the old bed of the Denver & South Park railroad up Middle Quartz Creek.

Alpine Plateau. 11,500-foot partially forested section of the western rampart of the Gunnison Basin about 4 miles north of Hinsdale County.

Alpine Tunnel. Old tunnel of the Denver & South Park railroad 300 feet beneath Alpine Pass.

American Basin. 12,500-foot basin in Hinsdale County at the head of the Lake Fork.

American Flats. 12,500-foot terrace between Engineer Mtn. and Henson Creek Basin.

Anthracite Creek. Creek draining Lake Irwin Basin to the west.

Anthracite Mesa. Ridge north of Crested Butte separating Washington Gulch from the valley of the Slate River.

Anthracite Range. Conspicuous east-and-west range of granitic mountains at the head of Ohio Creek.

Avery Flats. 10,000-foot bench about 2 miles north of Gothic partially covered with rich subalpine forest.

Avery Peak. 12,650-foot peak of red rock directly above Gothic.

Bald Mtn. 11,300-foot mountain a mile and a half east of the summit of Waunita Pass and most easily reached from that place.

Baldwin. Former mining town on Ohio Creek about 16 miles northwest of Gunnison.

Baldy Chato. 13,400-foot peak of the Northeast San Juans about 6 miles southeast of Cathedral.

Baxter Basin. 11,000-foot basin in the Ruby Range, a couple of miles west of the old townsite of Pittsburgh.

Bear Creek. Draining the country to the east, this is the last tributary of Spring Creek before it joins Cebolla Creek at Cathedral.

Beaver Creek. Creek flowing southeast from the gulch between Middle Baldy and South Baldy to join the Gunnison River at Hierro.

Beaver Creek (south). Creek flowing generally northwest from the edge of Summit Park, and joining Cebolla Creek just south of Iron Mtn.

Bent Peak. 13,400-foot summit in the Continental Divide in Hinsdale County just west of Carson Pass.

Biebel's Springs. Watering place for cattle with interesting Dakota quartzite rocks at the head of Sheep Gulch.

Big Mesa. Bare 8,700-foot mesa south of the Gunnison River between South Beaver Creek and Willow Creek.

Big Soap Park. Large, meadowy park on Soap Creek about 13 miles north of Sapinero and at an elevation of around 8,500 feet.

Big Spring Gulch. Gulch in Mineral County on the south side of Spring Creek Pass.

Black Canyon. The Black Canyon of the Gunnison River occurs to the northeast of the Cimarron Fault about 20 miles west of the Gunnison Basin.

Black Sage Pass. Upper-montane road pass between Waunita Park and the valley of Tomichi Creek. The black (or ordinary) sagebrush is found in the western approaches to the pass.

Blaine Basin. Alpine basin (also known as Sawtooth Basin) on the northwest flank of Avery Peak. See Virginia Basin.

Blue Creek. Flowing north from Uncompahgre Peak to the Gunnison River at Curecanti, Blue Creek lies to the west of Blue Mesa and is just outside the Gunnison Basin.

Blue Mesa. 9,000-foot mesa south of the Gunnison River forming part of the western boundary of the Gunnison Basin. Route 50 crosses its northern shoulder at 8,400 feet. Soap Mesa is its counterpart on the north side of the Gunnison River.

Bondholder Meadows. Extensive subalpine meadows in the valley of Spring Creek about 7 miles southeast of Cathedral in Saguache County.

Brush Creek (south). Creek draining Devil's Lake in Hinsdale County, and flowing south into Cebolla Creek. Not to be confused with West, Middle, and East Brush Creeks in the northern half of the Basin.

Buck Meadow. Subalpine meadow 3 or 4 miles southeast of Los Pinos Pass in Saguache County. One of the Big Meadows.

Cabin Creek Cow Camp. Cow camp at the head of Cabin Creek about 10 miles northeast of Gunnison.

Calf Creek Plateau. 12,500-foot, north- and south-alligned tableland in Hinsdale County between the Lake Fork and Cebolla Creek. Its capping rock is the basalt of the Hinsdale Formation.

Cannibal Fault. Commencing at about the latitude at which the Cimarron Fault ends (but several miles to the west), this fault separates the Cannibal and Calf Creek Plateaus in Hinsdale County, and then proceeds south through Spring Creek Pass in the Continental Divide.

Capitol City. Site of an old mining town in Hinsdale County at the confluence of the north and main forks of Henson Creek. About 10 miles west of Lake City.

Carbonate Hill. 12,700-foot hogback about a mile south of Pearl Pass.

Carson Pass. 12,400-foot road pass in the Continental Divide about 12 miles south of Lake City.

Castle Creek. Creek flowing east from the West Elks to join Ohio Creek near the old townsite of Mt. Carbon.

Castle Park. Upper-montane park along Castle Creek at the east base of the West Elk Mts.

Castle Pass. 11,000-foot trail pass in the West Elks at the head of Castle Creek.

Cathedral. Old townsite in Hinsdale County at the confluence of Spring and Cebolla Creeks. Named for a group of cathedral-like rocks a couple of miles to the southeast.

Cebolla Camp Ground. Canyon campground in spruce forest along Cebolla Creek about 5 miles southwest of Cathedral.

Cebolla Creek. A major tributary of the Gunnison River, rising in the Northeast San Juans at Spring Creek Pass in the Continental Divide, turning at Cathedral in Hinsdale County, and flowing into the Gunnison River (after a course of about 45 miles) at Cebolla in Gunnison County.

Cebolla Hot Springs. Mineral springs about a mile southeast of Powderhorn Post Office. Undoubtedly attributable to the Cimarron Fault, the springs have been a resort since the last century, as is the case with Waunita Hot Springs in the northern half of the Basin.

Cement Creek. Creek flowing southwesterly for 13 or 14 miles from Dorchester Pass in the Sawtooth Range to join the East River at Glacier.

Cement Creek Hot Springs. There are two sites of these: the first on the left bank about a mile east of the East River, the second on the right bank about 4 miles east of the East River.

Cement Mtn. 12,000-foot, tabletop mountain about 10 miles southeast of Crested Butte.

Chavez Creek. Tributary of Cochetopa Creek flowing from the slopes of Stewart Peak in a northeasterly direction.

Cimarron Fault. Proceeding in a southeasterly direction from the neighborhood of the Black Canyon, this fault cuts across the Lake Fork at Madeira Siding, and passing through Johnson Gulch turns south at Powderhorn to follow the valley of Cebolla Creek until it disappears.

Cliff Creek. Creek outside the Gunnison Basin flowing northwesterly from Castle Pass.

Coal Creek. Creek flowing easterly from Kebler Pass to join the Slate River at Crested Butte.

Cochetopa Creek. One of the major streams of the Gunnison Basin, rising in the Continental Divide south of San Luis Peak and flowing north for some 40 miles to join Tomichi Creek at Parlin.

Cochetopa Creek Canyon. Granite canyon of Cochetopa Creek between Cochetopa Park and the valley of Tomichi Creek.

Cochetopa Dome. 11,000-foot landmark in the center of Cochetopa Park.

Cochetopa Hills. Between the Long Branch Baldy Range on the northeast and San Luis Peak in the southwest, the Continental Divide is carried by the wooded Cochetopa Hills attaining elevations of around 11,000 feet.

Cochetopa Park. Large and unusually arid park in Saguache County about 15 miles south of Tomichi Creek. The Miocene ash beds that compose its floor provide an unusual habitat for plants.

Cochetopa Pass. 10,000-foot road pass over the Cochetopa Hills. Westernmost of the three passes over the Cochetopa Hills, this is the pass that was used by Captain Gunnison in his discovery of the Gunnison Basin. The forest here has been devastated by logging, and at the time of writing, the heaped-up, half-burned logs destroyed any pleasure in visiting the site.

Comanche Creek. Small creek draining into Gold Creek from Fossil Ridge.

Conundrum Pass. 13,000-foot trail pass between the drainages of Copper Creek and Conundrum Creek about 6 miles northeast of Gothic by airline.

Copley Lake. Small lake about a half-mile east of the old townsite of Irwin. The pond is without fish and hence relatively undisturbed.

Copper Creek. Creek flowing southwest from Copper Lake to Gothic and the East River.

Copper Lake. Small lake at the west base of East Maroon Pass and drained by Copper Creek.

Copper Lake Basin. Large basin, including several higher tarns, surrounding Copper Lake.

Cottonwood Pass. 12,100-foot road pass in the Conti-

nental Divide about 10 miles east of Taylor Reservoir.

The Craters. Three water- and sedge-filled depressions on the summit of Fish Creek Mesa presumably caused by collapse of bubbles of gas in the volcanic rock.

Crested Butte. Former mining town about 30 miles north of Gunnison at the eastern approach to Kebler Pass.

Crested Butte Mtn. 12,175-foot peak, or "butte," rising directly above the town of Crested Butte.

Crookton. Former stagestop and railroad depot between Doyleville and Sargents.

Crystal Peak. 12,400-foot peak in Gunnison County at the head of Cement Creek.

Cumberland Pass. 12,000-foot road pass about 2 miles west of the Continental Divide and 6 or 7 miles north of Pitkin.

Devil's Hole. Watering hole at the base of spruce and aspen forest, halfway between Los Pinos Pass and Rock Creek in Saguache County.

Devil's Lake. Small 12,000-foot lake in Hinsdale County. It is situated in the Cannibal Fault beneath the escarpment of the Calf Creek Plateau.

Doctor Gulch. Gulch draining northwest into Spring Creek (north) at Mosca.

Dorchester Pass. 12,100-foot road pass in the Elk Mountains between Cement Creek and the Taylor River. Sometimes called Bowman Pass.

Double Top Mtn. Double-summited mountain of the same height as Crested Butte Mtn. and 6 miles east of it.

Doyleville. Village about 18 miles east of Gunnison near the junction of Hot Springs Creek and Tomichi Creek.

Dry Gulch. Gulch about 7 miles east of Gunnison leading northeast from the valley of Tomichi Creek.

Dry Lake. Small lake at the low point of Dry Lake Park. In years of decreased precipitation the lake becomes dry in the summer.

Dry Lake Park. Small park in Hinsdale County a couple

of miles southwest of Cathedral and about a thousand feet above Cebolla Creek.

Dubois. Mining townsite in the valley of Goose Creek about 6 miles northwest of Powderhorn.

Dutch Gulch. Gulch draining into the valley of Indian Creek and carrying Route 149 from Indian Creek to the summit of Powderhorn Divide.

Eagle Rock. Rocky crag above and south of the Gunnison River west of Hierro. The name has been used to label both roadstands and botanical collections in the narrows of the Gunnison River.

East Beaver Creek. Short tributary of South Beaver Creek, rising on the north slope of Sawtooth Mtn.

East Brush Creek. Creek rising below Pearl Pass and flowing east of Carbonate Hill to join Cascade Creek.

East Brush Creek (south). The branch of Brush Creek that drains Devil's Lake in Hinsdale County.

East Maroon Pass. 11,800-foot pass in the Elk Mountains 4 miles northeast of Gothic by airline.

East River. Finding its source in Emerald Lake and flowing south from Schofield Pass through Gothic, the East River joins the Taylor River at Almont to form the Gunnison River.

East Willow Creek. Rising below Tin Cup Pass and flowing through Mirror Lake, East Willow Creek joins Middle and West Willow Creeks at Tin Cup, and the three flow together into Taylor Reservoir.

Elk Basin. Alpine and subalpine basin on the southwest-facing flank of Scarp Ridge.

Elk Creek. Creek draining the western rampart of the Gunnison Basin and flowing into the Lake Fork just north of the Hinsdale County line. The road to the Alpine Counting Corrals and the Alpine Guard Station uses this valley until it crosses the divide between Elk Creek and Soldier Creek, a tributary of Blue Creek.

Elkhorn. Old townsite on the Gunnison River across from the mouth of Steuben Creek.

Elk Mountains. The Elk Range begins in the neighborhood of Truro Peak north of Taylor Reservoir and pro-

ceeds west forming the northern boundary of the Gunnison Basin.

Elkton Divide. Subalpine divide between Gothic Mtn. and Mt. Baldy separating the East River Valley from the Slate River Valley.

Emerald Lake. Small subalpine lake just below Schofield Pass.

Engineer Mtn. 13,260-foot mountain north of Engineer Pass and west of American Flats. It is part of the boundary both of Hinsdale County and of the Gunnison Basin.

Engineer Pass. 12,800-foot road pass just south of Engineer Mtn.

Escalante Hill. Hill in the northeastern part of Gunnison used at various times for skiing, water tank, and now buildings of Western State College. Also known as Johnny Hill.

Fish Canyon. Narrow, walled canyon of Fish Creek a mile or so west of Cebolla Creek.

Fish Canyon Flats. Broad mesa separating Fish Creek from Cebolla Creek.

Fish Creek. Creek in Hinsdale County flowing into Cebolla Creek about 3 miles north of Cathedral and separating Fish Creek Mesa (on the north) from Fish Canyon Flats (on the south).

Fish Creek Canyon. The same as Fish Canyon.

Fish Creek Mesa. Narrow, high, north- and south-alligned mesa separating Fish Creek from Powderhorn Park. The summit is remarkable for three ponds called The Craters, which see.

Flag Creek. Small tributary of Spring Creek (north) flowing south from North Italian Mtn.

Floresta. Site of an anthracite-mining town 2 miles west of Ohio Pass.

Fossil Ridge. 12,000-foot ridge, alligned northeast and southwest, between Taylor River and Quartz Creek.

Galena Mtn. 12,500-foot mountain a mile or two distant from Schofield Pass in the northwestward extension of the Gunnison Basin flora.

The Gate. Narrow passageway cut by the Lake Fork to a depth of 500 feet in a hard layer of the volcanic

Lake Fork quartz-latite. Best seen from the north.

Gateview. Former village site near the junction of Indian Creek and the Lake Fork. The Gate is conspicuous from this site.

Glacier. Old village site and railroad station near the junction of Cement Creek and the East River.

Gold Basin Creek. Principal creek draining the Sawtooth Mtn. upland between Cochetopa Creek and South Beaver Creek. It empties into Tomichi Creek just before the latter's union with the Gunnison River.

Gold Basin Creek Road. Dirt road ascending Gold Basin Creek and leading directly south from Gunnison into Saguache County.

Gold Creek. Short, south-flowing creek, emptying into Quartz Creek at Ohio City.

Goose Creek. Short tributary flowing north-northeast into Cebolla Creek. It rises in an upland about 3 miles west of Powderhorn.

Gothic. Old mining town on the East River north of Crested Butte, now the seat of the Rocky Mountain Biological Laboratory.

Gothic Mtn. 12,650-foot, east-facing mountain overlooking the old mining town of Gothic. The town took its name from the mountain, and the mountain took its name from the same erosional pattern that suggested the name of Gothics in the Adirondacks.

Gothic Natural Area. Area in the Gunnison National Forest about 3 miles north of Gothic set aside for scientific research. It contains pre-Columban spruce-fir forest, and about every kind of subalpine habitat.

Graflin Gulch. North- and south-alligned gulch south of Tomichi Creek leading to the old mining town of Iris.

Granite Basin. Upper-montane and subalpine basin on the west-facing slope of Cement Mtn.

Grant Lake. Small lake at 9,000 feet about 2 miles east of Crested Butte.

Gunnison. Principal town in the Gunnison Basin, at the confluence of Tomichi Creek and the Gunnison River.

Handies Peak. 14,000-foot peak in Hinsdale County at the head of the Lake Fork of the Gunnison River.

Hartman Rocks. These hills of pre-Cambrian granite form a conspicuous part of the landscape immediately south of Gunnison.

Henson Creek. Flowing east to Lake City for 11 or 12 miles, this is the principal tributary of the Lake Fork.

Henson Creek Basin. Alpine basin just east of American Flats in which Henson Creek arises.

Henson Creek Canyon. Deep canyon of Henson Creek cut in volcanic rock just west of Lake City.

Hierro. Former village (now a campground) at the beginning of the narrows of the Gunnison River.

Horn Gulch. Sagebrush draw east of Tomichi Dome connecting the valley of Tomichi Creek with Waunita Park.

Horse Park. On the other side of Mineral Creek and 400 feet higher, Horse Park is the counterpart of Dry Lake Park, even to the small body of water in it.

Hot Springs Creek. Creek draining Waunita Park and joining Tomichi Creek near Doyleville.

Huntsman Mesa. 9,800-foot mesa separating Powderhorn Valley from the valley of Willow Creek.

Indian Creek. Creek flowing north-northwest from the Calf Creek Plateau and draining into the Lake Fork at Gateview.

Inferno Canyon. Dry canyon south of Devil's Lake marking the Cannibal Fault.

Iola. Old village site on the Gunnison River 2 miles west of Elkhorn.

Iris. Former gold-mining town about 10 miles southeast of Gunnison by airline.

Iron Mtn. 9,200-foot wooded mountain a couple of miles southeast of Cebolla Hot Springs.

Irwin. Former silver-mining town 6 miles west of Crested Butte.

Jack's Cabin. Village site in Gunnison County on the East River, 5 miles north of Almont.

Jack's Cabin Pass. 8,700-foot open pass between the valleys of the East and Taylor Rivers about 4 miles northeast of Almont.

Johnny Hill. See Escalante Hill.

Johnson Gulch. Gulch betraying the presence of the Cimarron Fault and leading from Madeira Siding to the top of Powderhorn Divide.

Judd's Falls. Falls in Copper Creek about a half-mile east of Gothic, named after the last resident of the old mining town.

Kebler Pass. 10,000-foot road pass over the western edge of the Gunnison Basin about a mile south of Lake Irwin and 7 or 8 miles west of Crested Butte.

Kezar Basin. Shallow sagebrush basin about 3 miles southwest of Iola.

Killdeer Creek. Creek flowing north into Los Pinos Creek about 4 miles east of Los Pinos Pass.

Lake City. Former mining town and present county seat of Hinsdale County situated near the junction of Henson Creek and the Lake Fork. Now largely a summer-resort town.

Lake Fork. Strictly speaking, this is the Lake Fork of the Gunnison River. But since it is almost as large as the Gunnison River when it joins it, it has long been called simply the "Lake Fork." Rising in the highest part of the San Juans, it flows north by Lake City, and enters the Gunnison River just west of Sapinero.

Lake Fork Canyon. Narrow, walled, north-and-south canyon of the Lake Fork extending for nearly 10 miles between Madeira Siding and the Gunnison River; now partially flooded.

Lake Irwin. 10,300-foot lake occupying the center of the large basin known by its name.

Lake Irwin Basin. Large subalpine and alpine basin in Gunnison County between the Anthracite Range, the Ruby Range, and Scarp Ridge. An integral part of the Gunnison Basin, it is also known as the Ruby Mountains Basin.

Lake San Cristobal. Lake created in the bed of the Lake Fork by a landslide from Mesa Seco.

Leechmere. Small pond about a mile and a half west of Ohio Pass in the spruce-fir forest along the old road to Floresta.

Lick Park. Partially open, partially forested park just within the Gunnison National Forest at the head of Stubbs Gulch; elevation around 9,500 feet.

Lily Lake. Small lake in a meadow about a mile and a half southeast of Ohio Pass; elevation around 10,700 feet.

Little Iron Mtn. 8,750-foot wooded mountain the other side of Deldorado Creek from Iron Mtn.

Little Percent Gulch. Gulch draining into Quartz Creek from the north about 3 miles east of Ohio City.

Little Soap Park. Small, lower-montane park in the valley of Soap Creek about 8 miles north of the Gunnison River.

Long Branch Baldy. Although under 12,000 feet, this is the highest mountain in the Continental Divide between the Northeast San Juans and the Sawatch Range. Its rocky top is about 7 miles southwest of Sargents by airline.

Long Branch Baldy Lake. Small subalpine lake directly beneath the summit of Long Branch Baldy. There is a second lake a few rods below the first.

Long Gulch. Gulch parallel to Graflin Gulch and about 3 miles east. It also leads to the old mining town of Iris.

Los Pinos Creek. Creek flowing northeasterly for about 16 miles from Los Pinos Pass to Cochetopa Creek.

Los Pinos Pass. 10,500-foot pass between Cathedral in Hinsdale County and Cochetopa Park in Saguache County.

Lost Canyon Gulch. Gulch about 8 miles northeast of Gunnison which takes over the Lost Canyon Road from Sheep Gulch.

Lujan Creek. Short tributary of West Creek, flowing northwest from West Pass.

McIntyre Gulch. Site of the Sapinero Ranger Station. The gulch leads north onto Soap Mesa.

Madeira Siding. Former village (and railroad station) on the Lake Fork about 2 miles north of Gateview.

Marshall Creek. Creek flowing from Marshall Pass to Sargents where it joins Tomichi Creek.

Marshall Pass. 10,800-foot pass in the Continental Divide 12 miles south of Monarch Pass. The former bed of the Denver & Rio Grande railroad now serves as a rough road over the pass.

Matchless Mtn. 12,200-foot mountain 2 miles west of Taylor Reservoir.

Meridian Lake. Narrow lake on the east slope of Anthracite Mesa 400 feet above the floor of Washington Gulch.

Mesa Seco. 12,500-foot northern rampart of Slumgullion Gulch. From its southwest-facing escarpment came the earthflow that created Lake San Cristobal.

Middle Brush Creek. Creek draining the two Twin Lakes and Cumberland Basin. It empties into Cascade Creek.

Middle Farris Creek. Creek flowing from Double Top Mtn. to the East River, which it joins just south of Crested Butte Mtn.

Middle Quartz Creek. Route of the former Denver & South Park railroad over Alpine Pass, Middle Quartz Creek joins North Quartz Creek to form Quartz Creek a mile and a half east of Pitkin.

Midway. Site of an abandoned gold-mining town on Willow Creek halfway between Spencer and Vulcan, two other abandoned towns of the same gold-mining boom.

Mill Creek. Flowing northeast from Slumgullion Pass to Cebolla Creek, Mill Creek passes through 5 miles of unusually rich subalpine vegetation. Although this is the creek always meant when the name is used without qualification, sometimes "south" is added to make the location immediately clear.

Mill Creek (north). Creek flowing east to Ohio Creek from the gulch between North and Middle Baldy.

Mineral Creek. Rising in the basin between Mineral Mtn. and Trallala Peak, Mineral Creek flows north for about 8 miles before it empties into Cebolla Creek.

Mineral Mtn. Around 13,000 feet high, Mineral Mtn. is the central summit of the Northeast San Juans.

Mirror Lake. Small subalpine lake in the flow of East Willow Creek from Tin Cup Pass to the village of Tin Cup.

Monarch Pass. 11,300-foot pass in the Sawatch Range (and Continental Divide) about 40 miles east of Gunnison.

Monchego Park. Very small, woodsy and brushy park in Saguache County in the valley of Texas Creek just north of the Continental Divide.

Mt. Baldy. 12,700-foot mountain on the other side of Schofield Pass from Mt. Belleview.

Mt. Belleview. Conspicuous, twin-summited 12,500-foot peak just east of Schofield Pass in Gunnison County.

Mt. Ouray. Southern outpost of the Sawatch Range, Mt. Ouray rises above Marshall Pass to a height of nearly 14,000 feet.

Mt. Peck. Summit in the Sawatch Range a mile or so south of Monarch Pass.

Mt. Whetstone. Three-summited, east-facing granitic mountain about 3 miles south of Crested Butte.

Mt. Wilkinson. Flat-topped volcanic mountain about 8 miles south of Crested Butte.

Narrows of the Gunnison River. Usual name for the canyon that separates the floodplain meadows adjoining Gunnison from those that formerly extended either side of Iola.

Needle Creek. Creek 7 or 8 miles long in the eastern part of the Basin. It flows north, and joins Tomichi Creek across from Horn Gulch.

Nicholson Lake. Small lake in the valley of the Slate River a couple of miles north of Crested Butte.

Ninemile Hill. Hill, just about 9 miles long, which carries Route 149 from Iola to the height of land near Spencer.

North Beaver Creek. Creek flowing west from the edge of Rock Creek Park and joining Beaver Creek (south) just east of Iron Mtn. Its valley carries a road up to Rock Creek Cow Camp, and sometimes the creek is called Road Creek.

Northeast San Juan Mountains. Range of mountains forming the southern boundary of the Gunnison Basin (as well as a section of the Continental Divide), and extending from Baldy Cinco in the west to San Luis Peak in the east. A branch extends north from San Luis Peak through Stewart Peak to Baldy Chato.

North Italian Mtn. 13,200-foot mountain at the head of Cement Creek.

North Pass. 10,000-foot road pass in the Cochetopa Hills. Central of the three passes over the Hills, it now carries state highway 114 over the Continental Divide into the San Luis Valley.

North Pole Basin. Large glacial cirque a couple of miles west of Schofield Pass. Easily accessible, it has long been a favorite collecting place of alpine botanists.

North Quartz Creek. This creek flows south from Cumberland Pass, joining Middle Quartz Creek to form Quartz Creek a mile and a half east of Pitkin.

Oh-be-Joyful Creek. Main tributary of the Slate River, flowing east from the Ruby Range.

Ohio City. Former silver town situated at the junction of Gold and Quartz Creeks 9 miles northeast of Parlin.

Ohio Creek. Creek flowing south from Ohio Pass to join the Gunnison River a mile or so north of Gunnison.

Ohio Pass. 10,000-foot, north-and-south road pass at the eastern abutment of the Anthracite Range.

Ohio Peak. 12,250-foot summit at the east end of the Anthracite Range.

Old Agency Guard Station. Guard station on Los Pinos Creek just as it leaves the hills to enter Cochetopa Park.

Old Monarch Pass. 11,300-foot pass in the Sawatch Mountains, about a mile north of Monarch Pass. Although the two passes have the same altitude, Old Monarch Pass is in the alpine zone, Monarch Pass in the spruce-fir forest.

The Palisades. Conspicuous vertical cliffs of West Elk breccia across the Gunnison River from the western margin of Gunnison.

Parlin. Village at the junction of Quartz Creek and Tomichi Creek about 12 miles east of Gunnison.

Pass Creek. The creek that carries the road from Taylor Reservoir to Cottonwood Pass.

Pasture Creek. Small creek in Hinsdale County flowing north and joining Cebolla Creek about 4 miles southwest of Cathedral.

Peanuts Lake. Small lake in the valley of the Slate River a mile or so north of Crested Butte.

Pearl Mtn. 13,500-foot mountain just west of Pearl Pass.

Pearl Pass. 12,700-foot trail pass in the Sawtooth Range between Gunnison and Pitkin Counties some 12 miles northeast of Crested Butte by airline.

Peeler Basin. Large subalpine basin northwest of Crested Butte more or less enclosed by Scarp Ridge.

Peeler Lake. The largest of the numerous ponds in Peeler Basin.

Pine Creek. North-flowing creek between Pine Creek Mesa and Blue Mesa.

Pine Creek Mesa. Mesa between Willow Creek Mesa and Blue Mesa. Pine Creek bounds it on the west.

Pitkin. Old silver town on Quartz Creek, 16 miles northeast of Parlin.

Powderhorn. Village in Gunnison County 21 miles southwest of Gunnison by airline.

Powderhorn Creek. Creek draining the east slope of Calf Creek Plateau, and by its west fork the Powderhorn Lakes, and finally joining Cebolla Creek at the north end of Powderhorn Valley.

Powderhorn Divide. Broad height-of-land between Powderhorn and Gateview. It reaches an elevation of around 9,000 feet.

Powderhorn Lakes. Twin alpine lakes of Hinsdale County, the larger in the great glacial cirque of Calf Creek Plateau.

Powderhorn Park. Grassy, north- and south-alligned subalpine park about 4 miles west of Cathedral.

Powderhorn Valley. A four-mile stretch of floodplain in the valley of Cebolla Creek, mostly to the southeast of Powderhorn Post Office.

Prosser Creek. Short, four-mile tributary of Razor Creek flowing north from Razor Creek Dome.

Quartz Camp Ground. Campground on North Quartz Creek, about 4 miles northeast of Pitkin.

Quartz Creek. Formed by the union of North and Middle Quartz Creeks just east of Pitkin, Quartz Creek joins Tomichi Creek at Parlin.

Queen Basin. Large alpine basin about 3 miles northeast of Gothic between White Rock Mtn. and Red Mtn.

Razor Creek. Creek draining a section of the Continental Divide. After flowing north through three parks, it joins the Gunnison River between Hot Springs Creek and Quartz Creek.

Razor Creek Canyon. Rocky canyon immediately below Lower Razor Creek Park.

Razor Creek Dome. 11,500-foot northern rampart of Cochetopa Park.

Razor Creek Park. Principal park through which Razor Creek flows; about 10 miles south of Doyleville.

Red Creek. Creek draining the southern slope of the West Elk Wild Area. After a dozen miles, it flows into the Gunnison River about 5 miles east of Sapinero.

Red Mountain. 12,500-foot ridge of red, sedimentary rock forming the eastern rampart of the East River Valley below Gothic.

Redwell Basin. Prominent subalpine basin subtended by Scarp Ridge and one basin removed to the east from Peeler Basin.

Roaring Judy Gulch. Gulch draining the southern slope of Cement Mtn.

Rough Creek. Creek about 7 miles long, flowing north and draining the section of the Northeast San Juans between Baldy Cinco and Trallala Peak. It empties into Cebolla Creek near Cebolla Camp Ground.

Rough Creek Cirque. Large, 12,000-foot cirque at the head of the west fork of Rough Creek.

Rough Creek Meadows. These beautiful subalpine meadows stretch north and south for about 2 miles and bear testimony to the glacier that covered them not so long ago.

Rough Creek Pass. 12,500-foot trail pass in the Continental Divide separating Hinsdale County from Mineral County, and Rough Creek (which flows north) from Miner's Creek (which flows south).

Ruby Mountains. 13,000-foot range of mountains forming the western rampart of the Ruby Mountains Basin and also part of the western boundary of the Gunnison Basin.

Ruby Mountains Basin. 10,000-foot mountain basin 7 or 8 miles northwest of Crested Butte by airline. It contains Lake Irwin at its center, and is sometimes called Lake Irwin Basin.

Rustler's Gulch. Relatively undisturbed subalpine and alpine valley about 4 miles north of Gothic at the edge of the Gunnison Basin. It drains into the East River.

Sapinero. Old railroad town on the Gunnison River at the lowest point in the Basin just east of the canyon that drains the Basin. Now flooded, the two or three buildings of the town have been moved to higher ground on the south slope of the river.

Sapinero Mesa. Domed mesa 2 or 3 miles southeast of the present town of Sapinero.

Sapinero Ranger Station. Guard station in McIntyre Gulch about a mile and a half north of the present town of Sapinero.

Sargents. Village at the junction of Marshall Creek and Tomichi Creek near the western base of Monarch Pass.

Sawatch Mountains. The Sawatch Range begins with Mt. Ouray (eastern outpost of the Gunnison Basin) and continues north to the Mount of the Holy Cross. The southern half of the range is the eastern wall of the Gunnison Basin.

Sawtooth Mtn. 12,100-foot mountain of volcanic rock about 18 miles south of Gunnison and the principal landmark from the center of the town.

Scarp Ridge. 12,000-foot, northeast-facing escarpment forming the eastern rampart of the Ruby Mountains Basin.

Schofield Park. Meadowy, subalpine park extending 2 miles to the northwest of Schofield Pass. The vegetation of the Gunnison continues throughout the park, but changes once the descent into Crystal Canyon is begun.

Schofield Pass. 10,700-foot pass at the head of the East River in the northern wall of the Gunnison Basin.

Sheep Creek. West-flowing creek joining Spring Creek (south) just north of Bondholder Meadows. A rugged horse trail follows its course up to the low col on Baldy Chato.

Sheep Creek Gulch. Alpine Gulch on the west-facing flank of Baldy Chato at the head of Sheep Creek.

Sheep Gulch. Open gulch north of Signal Peak carrying the dirt road from Route 135 to Biebel's Springs.

Sherman. Former mining town at the junction of Cottonwood Creek and the Lake Fork, some 14 road miles southwest of Lake City.

Signal Peak. 9,000-foot, bare pointed peak about 4 miles northeast of Gunnison.

Signal Peak Ridge. The ridge that continues for 3 or 4 miles east-northeast of Signal Peak. The capping rock is that same fused rhyolite which caps so many mesas west of Gunnison.

Slate River. The principal tributary of the East River, rising on the other side of Mt. Baldy from the East River and flowing parallel with it until it joins it some 6 miles southeast of Crested Butte.

Slumgullion Gulch. Gulch rising steeply and eastwardly from the north end of Lake San Cristobal until it meets the head of Mill Creek at Slumgullion Pass. It carries Route 149 from Lake City over the mountains to Creede and South Fork.

Slumgullion Mesa. 12,000-foot tableland forming the southern rampart of Slumgullion Gulch.

Slumgullion Pass. 11,300-foot road pass in Hinsdale County separating Slumgullion Gulch (which descends to Lake San Cristobal) from Mill Creek

(which flows into Cebolla Creek).

Smith Hill. Section of Anthracite Mesa 4 miles northwest of Crested Butte containing the anthracite mine that gave the mesa its name.

Snodgrass Mtn. 11,300-foot, wooded mountain southeast of Gothic Mtn. and separated from it by a 10,400-foot col.

Snow Mesa. 12,000-foot mesa extending from Baldy Cinco to the south and west, and carrying the Continental Divide from Baldy Cinco to Spring Creek Pass by means of its north escarpment.

Snyder Gulch. Gulch draining into Razor Creek north of its junction with Prosser Creek, and leading eastward into high, wooded country.

Soap Creek. 20-mile-long creek flowing south from the West Elks through the two Soap Parks to the Gunnison River near Sapinero.

Soap Creek Camp Ground. Campground on the west bank of Soap Creek about 6 miles north of the Gunnison River.

Soap Mesa. High mesa west of Soap Creek and extending from the Gunnison River to Big Soap Park. It forms in this section the western boundary of the Gunnison Basin just as Blue Mesa does south of the Gunnison River.

Soldiers Park. Small park on the northern flanks of Sawtooth Mtn. a mile or two southwest of Lick Park.

South Baldy. 12,400-foot, southern outpost of the West Elks. See pages 107 and 400 under Erigeron peregrinus and Castilleja rhexifolia.

South Baldy Pass. Broad 11,500-foot pass at the southern base of South Baldy separating the drainage of West Elk Creek from that of Steuben Creek.

South Beaver Creek. Creek rising in the high park country west of Sawtooth Mtn. and flowing north to join the Gunnison River about a mile east of Hierro.

Spencer. Former gold-mining town on the height-of-land between Iola and Powderhorn. Some of the buildings are still extant in good condition, although concealed from the highway which now passes a

mile to the east.

Spring Creek. Flowing northwest from San Luis Peak and the Continental Divide through Bondholder Meadows, Spring Creek joins Cebolla Creek at Cathedral. Botanically, its valley has proved unusually interesting, and this is the creek always meant when the name is used without qualification, although sometimes "south" will be added to make the location immediately clear.

Spring Creek (north). Formed by Flag Creek and the creeks in Rosebud and Deadman's Gulches, Spring Creek (north) flows south into the Taylor River.

Spring Creek Pass. 10,800-foot highway pass in the Continental Divide. It separates Cebolla Creek, which flows north into the Gunnison River, from Big Spring Creek, which flows south into the Rio Grande.

Steers Gulch. Rising in the aspen country between Beaver Creek and West Antelope Creek, Steers Gulch drains into the Gunnison River floodplain about 3 miles west of Gunnison.

Steuben Creek. Creek flowing southeast from South Baldy Pass and joining the Gunnison River at Elkhorn.

Stubbs Gulch. Draining into Gold Basin Creek, Stubbs Gulch penetrates still farther into the Sawtooth Mtn. upland where it drains Lick Park.

Sugar Creek. A tributary of Willow Creek, rising southeast of Vulcan and flowing northwest to join Willow Creek about 4 miles south of Elkhorn.

Summit Park. An arm of Rock Creek Park which advances to the brink of the valley of Beaver Creek (south).

Sun Creek. Draining Sun Park on the southeast flank of the West Elks, Sun Creek flows south to join Steuben Creek a couple of miles north of Elkhorn.

Swampy Pass. 10,500-foot trail pass between the Anthracite Range and the West Elk Mountains.

Sylvanite Basin. Small basin at the upper edge of the subalpine zone on the east-facing slope of Copper