

LIST OF PLANTS COLLECTED BY DR. EDWARD PALMER IN LOWER CALIFORNIA IN 1889.

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Dr. Edward Palmer was employed by the Department of Agriculture to make botanical investigations and collections in California and adjacent parts. In January, 1889, he began his collections at San Quentin, in Lower California; next he proceeded to Lagoon Head; then to Cedros Island and San Benito Island, and lastly off the west coast to Guadalupe Islands.

The specimens were all carefully examined and determined, so far as possible, at the herbarium in the Agricultural Department, and finally corrected by a study of the types in the Gray herbarium. Dr. Sereno Watson very kindly and willingly looked over our specimens and gave very valuable suggestions as to where certain puzzling forms should go.

1. PLANTS COLLECTED AT SAN QUENTIN.

During January and the first part of February last, Dr. Palmer was engaged in collecting in the region about San Quentin Bay. Although some of our best collectors have visited this region, yet none probably have collected so largely and thoroughly. While a number of new species were found, the collection is also especially valuable in the number of old but rare species, and in extending the range southward of other more common ones.

In this paper each species is preceded by the number under which it is to be distributed. Those numbers under 700 were collected in January, while 700 to 740 were collected in February.

- 600. *Platystemon Californicus* Benth.
- 630. *Meconopsis heterophylla* Benth.
- 739. *Eschscholtzia Californica* Cham.
- 707. *E. peninsularis* Greene.
- 611. *Draba cuneifolia*, var. *brevipes* Watson.
- 734. *Cheiranthus asper* C. & S.
- 725. *Sisymbrium canescens* Nutt.
- 731. *S. reflexum* Nutt.
- 723. *Tropidocarpum gracile* Hook.

Very rare and only two specimens collected. This extends its published range considerably southward.

- 671. *Capsella divaricata* Walp.
- 621, 675. *Lepidium nitidum* Nutt.
- 728. *Frankenia Palmeri* Watson.
- 732. *Tissa macrotheca* Britton. (*Lepigonum macrothecum*, F. & M.)

This extends the range of this species south of that given by Mr. Britton in his recent paper on the genus.

733. *Calandrinia caulescens* H. B. K., var. *Menziesii* Gray.

Very common.

712. *C. maritima* Nutt.

Stems 2 to 10 inches high, erect and simple, rarely with spreading branches at base; flowers in an umbel like cluster; pedicels 3 to 8 lines long; petals 5, small, reddish; stamens 3 or 4; stigma capitate, barely three-lobed. This is a very rare and little-known species, only having been previously collected by Nuttall, Thurber, and Parry. This year also by Lieutenant Pond.

709. *Claytonia parviflora* Dougl.

Common.

616. *Malvastrum Thurberi* Gray.

681. *M. exilis* Gray.

Leaves deeply cleft and more sharply toothed than the species.

693, 624. *Sphæralcea ambigua* Gray.

Not before reported from Lower California, although Oreutt probably got it from Japa.

676. *Erodium cicutarium* L. Her.

618. *E. moschatum* L. Her.

715. *E. Texanum* Gray.

666a. *Lupinus*.

Stems 5 to 10 inches high, branching at base, pubescence of long and scant hairs; leaflets (3 to 6 lines long) oblanceolate, on long petioles; flowers scattered and small (3 to 4 lines long), violet with yellow keel; pods one-half inch long, five to six seeded; seeds brownish, mottled with black, only one line in diameter; bract deciduous. As we have the genus represented in the National Herbarium our plant seems nearest to *L. Arizonicus*, Wat. Its small and scattered flowers also seem to place it in this section. A comparison with the Cambridge specimens indicated a close relationship with *L. nanus*. Oreutt and others have distributed as *L. micranthus*, Dougl., a somewhat similar form. With so many uncertain forms before us we leave this until a revision of the genus is made.

666. *Lupinus micranthus* Dougl.

716. *L. affinis* Agard.

697. *Trifolium tridentatum* Lindl.

613. *T. gracilentum* T. & G.

669a. *Hosackia maritima* Nutt. ?

Form, growing with the next.

669. *H. stigosa* Nutt.

The typical form; very common.

690. *H. (Syrmatium) Watsoni* n. sp.

Stems shrubby at base, 1 and 2 feet high, branches weak ascending, growing parts silky, older parts puberulent; leaflets mostly three, 2 to 4 lines long, obovate to oblanceolate, abruptly acute; umbels two to many flowered, on peduncles 1 to 2 inches long (sometimes shorter),

with an ovate bract; calyx 2 lines long with short and acute teeth; flowers 4 to 5 lines long, dark purple in bud, becoming orange; pods two or three seeded, slightly incurved.

This plant is nearest *H. juncea*, but differs in its long peduncled umbels, acute calyx teeth, etc. We take pleasure in dedicating this new species to Dr. Sereno Watson.

637. *H. Palmeri* n. sp.

Seemingly nearest *H. prostrata*, Nutt. Annual, 1 to 2 feet high, branching, pubescent when young, becoming nearly glabrous; leaflets, three to seven (mostly five), 4 to 6 lines long, on a somewhat winged rachis, ovate to oblong, obtuse; the capitate umbels many-flowered (sometimes one or two), with ovate bract, on slender peduncles (1 to 1½ inches long); calyx pubescent even in fruit; teeth minute; flowers, 2 to 3 lines long, "scarlet;" style glabrous; pods two-seeded, much coiled.

Differs from *H. prostrata* in its more erect habit, larger, less crowded leaflets, longer peduncles, and coiled pods, etc.

614. *Astragalus didymocarpus* H. & A.

646 and 700. *A. Hornii* Gray.

719. *A. triflorus* Gray.

Also collected here by Oreutt in 1886.

619. *Rosa minutiflora* Engl.

Has also recently been collected by Oreutt, Pringle, and Parry.

670. *Lathyrus paluster* L.

741. *Ribes Palmeri* n. sp.

Stems several feet high, the younger parts with a close white pubescence, leaves 6 to 10 lines broad, oval, three to five lobed, lobes crenate; racemes, ten to fifteen (sometimes only two to five), flowered, in fruit becoming a compact spike on short, stunted branches; calyx tube short, 1½ lines long, reflexed lobes almost as long; anthers sessile, petals minute, fruit red, 2 lines in diameter, ten-seeded. In fruit in February. Also collected by Oreutt in 1883 in Guadalupe Mountains, Lower California, in Herb. Gray.

738. *Eulobus Californicus* Nutt.

San Quentin, February, 1889. Lagoon Head, November 10 (806). We find no specimens of this species from Lower California, either in the National or Gray Herbarium.

617. *Oenothera micrantha* Hornemann.

Stems 1 to 20 inches high, erect or prostrate, the petals often reddening on drying, and having a black spot at base, as in *O. bistorta*. Later on, a peculiar form was collected, acaulescent or with short branches (with much the habit of *O. breviflora*); capsules many, crowning the slender tap-root, about 9 lines long, becoming reflexed.

663. *Oenothera trichocalyx* Nutt.?

Annual or biennial, acaulescent (sometimes canlescent) from a long slender root, leaves 2 to 8 inches long, lyrate-pinnatifid, or the lower

ones often entire, on long petioles; calyx tube, $1\frac{1}{2}$ inches long, slender; petals obovate, 9 lines long; capsules becoming reflexed in age and burying themselves in the sand; flowers rose-colored. The whole plant more or less purplish, much resembling *El. primiveris*, but capsule and seeds very different.

668. *Megarrhiza*.

Perhaps distinct but nearest *M. Californica*. Fruit globose, 2 inches in diameter, covered with weak, slender spines 8 to 10 lines long by 4 to 5 broad. The large root is used as a medicine.

643. *Apiastrum angustifolium* Nutt.

678. *Galium aparine* L., var. *Vaillantii* Koch.

635. *Aplopappus fasciculatus* n. sp.

Belonging to the § *Aplopappus* proper. Herbaceous, a foot or two high, glabrous; leaves entire, linear-spatulate (1 to $1\frac{1}{2}$ lines long), acute, fasciated in the axils; heads five to ten, in cymose clusters, 3 to 6 lines high; bracts well imbricated in three or four series with indefinite green tips; rayless; akenes pubescent; style tips short, broadly ovate.

724. *Pleuchea borealis* Gray.

605. *Styloclyne gnaphaloides* Nutt.

699. *Gnaphalium Sprengelii* H. & A.

But a single specimen collected.

674. *G. microcephalum* Nutt.

Not common.

622. *Franseria chenopodifolia* Benth.

This species, which for so long a time was unknown and variously referred to *F. deltoidea* and *F. eriocentra*, seems to be rather widely distributed. Orcutt collected it at All Saints Bay, 1885, by means of which Dr. Gray re-established Bentham's species; also collected by Hinds at Bay of Magdalena, E. L. Greene at Cedros Island, and now by Dr. Palmer at San Quentin.

664. *Viguiera laciniata* Gray.

661, 662. *Encelia Californica* Nutt.

677. *Leptosyne Douglassii* D. C.

Its most southern range.

602. *Layia elegans* T. & G.

The rays are only yellow near the base, the remainder purple or white, three-quarters of an inch long, the hairs on the pappus sparse and hardly woolly, and about one-third their length. Stems mostly simple; only the uppermost leaves entire. Orcutt has also collected a purple-flowered form at All Saints Bay (1885).

634. *Baeria gracilis* Gray, var. *paleacea* Gray.

Plant much branched and spreading at base; heads 2 to 3 lines high; bracts six to eight, erect and close; rays small (1 to 2 lines), barely exerted. Collected by Orcutt in 1884 and distributed as the var. *tenerima*. This plant differs somewhat from the var. *paleacea* in most herbarium specimens, but Orcutt's plant was referred here by Dr. Gray.

736. *Baeria uliginosa* Gray.

This plant differs somewhat from most of the forms of this species seen. The receptacle is obtusely conical and puberulent, the involueral bracts narrower and longer, and the stem 1 to 2 feet high. The leaves are mostly entire towards the base, with the apex cut into long linear lobes. Our plant most resembles 466 of Kellogg & Harford, which was distributed as *B. Fremontii*, but referred by Dr. Gray in his Herbarium to *B. uliginosa*, and yet from his notes he considered it a peculiar form.

665. *Chænactis lanosa* D. C.

Grows very plentifully about San Quentin, but not before reported so far south.

644. *Senecio Lyoni* Gray.

Before only reported from San Clemente Island by Nevin & Lyon (1885). The present plant differs somewhat from the type. It is taller and more branching, the wool in the axils not quite so abundant, the pedicels longer (sometimes 2 inches), and somewhat spreading.

659. *Senecio peninsularis* n. sp.

Two feet high, much branched, glabrous; leaves bipinnate, segments linear, and with a broad auriculate base; the heads in a corymbose cyme; the longest pedicels 2 to 3 inches long; heads large (6 lines high), rays conspicuous and dark yellow; involucre somewhat open, with tapering black tips, hairy when young. Akenes with a short dense white pubescence. Closely related to *S. Lyoni*, but differs in the broad auriculate base of the leaves; no wool in the axils; rays larger and darker colored.

606. *Senecio sylvaticus* L.691. *Trixis angustifolia* D. C.

The typical form is rarely collected so near the coast.

615, 625, 626. *Microseris linearifolia* Gray.

This species is quite variable here, but the smaller forms are more common.

607. *Sonchus tenerrimus* L.

Supposed to have been introduced from Southern Europe, but rarely met with, and only reported by Nuttall and by Orest in 1884.

639. *Philibertia linearis* Gray, var. *heterophylla* Gray.650. *Gilia (Siphonella) laxa* n. sp.

Annual, sweet-scented, 4 to 9 inches high, slender and weak, either simple or much branched; leaves divided into three to five linear segments (5 to 10 lines long), upper ones often alternate; calyx 2 lines long, cleft almost to the base; corolla lobes but 2 lines long; capsule 1 line long, four seeds in each cell. The characters of the section *Siphonella* must be somewhat enlarged to admit this species, as its relationships are certainly here, notwithstanding these differences. It is nearest *G. floribunda*, but differs in being an annual, in its weak and straggling habit, more simple inflorescence, and smaller flowers.

648 and 649. *Gilia dianthoides* Endl.

638. *Ellisia membrancea* Benth.

673. *Ellisia chrysanthemifolia* Benth.

701. *Phacelia Parryi* Torr.

A very handsome and common plant.

692. *Phacelia hirtuosa* Gray.

This was the last *Phacelia* described by Dr. Gray and has only been found once before: Oreutt, at San Telmo, Lower California, and now at San Quentin.

645. *Phacelia tanacetifolia* Benth.

660. *Phacelia (Eutoca) Palmeri* n. sp.

Small, decumbent or ascending, annual, pubescent and somewhat hirsute; leaves all radical, pinnate, the alternate ones three-lobed, the others entire, the segments small, obtuse. Flowering branches 2 to 8 inches long, flowers scattered (the earliest ones often form single peduncles); pedicel short (1 to 3 lines) at first spreading, in age brought close to the axis. Calyx in fruit 3 lines long; the sepals obovate, becoming spatulate; corolla "bluish white," scarcely longer than calyx, barely 2 lines high, 3 lines wide, stamens included, with appendages small; style cleft for two-thirds its length. Capsule pointed, very hairy along the lines of dehiscence; seeds thirty, minute (one-fourth line in diameter), closely related to *P. Douglasii*, but differs in leaves, flower, style, seeds, etc.

627. *Pectocarya linearis* D. C.

628. *P. penicillata* D. C.

608. *Krynitzkia intermedia* Gray.

695. *K. muricata* Gray.

Very common.

631 and 695. *K. Jonesii* Gray.

This species has been seldom collected before, but is quite common about San Quentin Bay. It seems quite distinct from the above species.

630 and 698. *K. ramosissima* Greene.

Stems 3 to 7 inches high; leaves 3 to 12 lines long; nutlets often two, and one slightly larger (2 to 3 lines long); smooth and lucid; the other obtuse and slightly muriculate. This species seem to be too near *K. maritima*.

612. *Amsinkia intermedia* F. & M.

607. *A. spectabilis* F. & M.

704. *Solanum Palmeri* n. sp.

Belonging in the section containing *S. triquetum*. Stems angled and pubescent with branching hairs, a foot or so high. Leaves 1 to 1½ inches long, deeply three-lobed; the lateral ones small, ovate, the terminal one ovate to lanceolate; the umbel terminal two to six flowered; corolla 3 to 4 lines wide, violet, greenish at base, five cleft, pubescent without; pedicels 6 to 10 lines long, fruit yellowish (?), 8 lines in diameter. San Quentin, February 1, 1889.

647. *Solanum nigrum* L. Var.

Leaves conspicuously angulate-dentate, corolla 6 lines wide, filaments hairy at base; style hairy the lower half.

682. *Physalis crassifolia* Benth. ?

Apparently an annual, the corolla (10 lines broad) is larger and the sepals acute. This seems to be the same as the *Physalis* collected by Dr. Streets, at Cedros Island, in 1869. Perhaps new.

688. *Nicotiana Clevelandi* Gray.

A rare species. The lower leaves sometimes a foot long, including the petiole.

658. *Linaria Canadensis* Dumont.657. *Antirrhinum Watsoni* n. sp.

Slender, erect, 1 to 1½ feet high, often simple, almost glabrous; leaves 1 to 1½ inches long, linear to narrowly lanceolate; pedicels 5 to 12 lines long; calyx glabrous or sparsely pubescent; sepals (1 to 1½ lines long) almost equal, all shorter than the capsule; corolla pubescent (3 to 4 lines long), "violet, white veined," its tube longer than the sepals; the lips prominent; the palet covered with yellow hairs; persistent style (1 to 1½ lines long) glabrous, equaling the slightly oblique, globular capsule. Flowering February to March. Closely related to *A. Kingii*, Watson, but of entirely different range, and flowering earlier; also in its long pedicels, equal sepals, larger flowers, etc. "Northwestern Mountains," Sonora (Pringle, March 26, 1884), Los Angeles Bay (Palmer, 1887), and now at San Quentin.

Antirrhinum Kingii, var., Watson, Proc. Am. Acad., Vol. XXIV, p. 66.

735. *A. subsessile* Gray.720. *Galvesia juncea* Gray.

This is *Antirrhinum junceum* in Syn. Flora. Good specimens were collected in flower and fruit in February. San Quentin. First collected on Cedros Island by Dr. Streets.

642. *Castilleia affinis* H. & A.

Considerably out of its range.

620. *Salvia Columbariæ* Benth.

With small forms barely 2 inches high; the largest forms sometimes bearing 3 whorls of flowers.

610. *Audibertia stachyoides* Benth.

The more glabrous form; stems slender, leaves oblanceolate, ¾ to 1½ inches long. Three to six very distant and small heads; the bracts and calyx not oval, pubescent, the latter with teeth almost equal; stamens barely exerted.

654. *Plantago Patagonica* L.

Common. Collected at various places representing various forms. The var. *nuda* (653), 609 also, San Benito (910).

640. *Mirabilis Californicus* Gray.

Stems glabrous below, viscid, pubescent, and even scabrous above;

leaves (1 inch long) triangular, cordate at base on petioles almost as long; "flowers light pink."

721. *Abronia maritima* Nutt.

737. *A. umbellata* Lam.

689. *Rumex hymenosepalus* Torr.

655. *Nemacaulis Nuttallii* Benth.

This species was found in great abundance. While some specimens agree with the published descriptions, yet others have stems perfectly green, taller (1 to 1½ feet high), erect, and with leaves 4 inches long. Besides the collectors given in Bot. California it has been found by Pringle (1882) and Orcutt (1886), Parry, Cleveland, and J. C. Nevin (1882).

722. *Chorizanthe Lastarriæa* Parry. (*Lastarriwa Chilensis* Remy.)

Very rare here, but common in southern California. Supposed by Dr. Watson to have been introduced from South America. (Rarely found in herbaria.)

657. *C. Parryi* Wats.

652. *C. procumbens* Nutt.

729. *Eriogonum fasciculatum* Benth. ?

A well-marked form, and perhaps distinct. Stems almost glabrous; the leaves are glabrous above; peduncles very short or none; inflorescence more open.

667. *Pterostegia drymarioides* F. & M.

696. *Harfordia macroptera* Greene & Parry.

705. *Aphanisma blitoides* Nutt.

Said in Bot. California to have been sparingly collected at San Diego by Nuttall and Cleveland, but since obtained there by most of our western collectors. Very abundant about San Quentin.

717. *Atriplex microcarpa* Diet.

718. *A. Californica* Moq.

726. *A. Julacea* Watson.

632. *Hesperocnide tenella* Torr.

604. *Euphorbia polycarpa* Benth.

711. *Juncus bufonius* L.

A simple form; stems 6 to 15 lines high, mostly single-flowered.

623. *Brodiaea capitata* Benth.

703. *Polypodium Californicum* Kaulf.

633. *Gymnogramme triangularis* Kaulf.

730. *Pellaea andromedæfolia* Fee.

2.—PLANTS COLLECTED AT LAGOON HEAD.

From March 6 to 15 Dr. Palmer was at Lagoon Head, the Cabo-Negro of the old Spanish charts, in latitude 28 degrees. This point is said to be the termination of vegetation on the Pacific coast before reaching the sand waste around Scammond's Lagoon. Not only did he collect about the coast, but inland some 40 miles, finishing at Rosalia Bay. Here the vegetation is very peculiar, and said to be the point where

the rainy season of southern California and Mexico unite. Here he was very successful in collecting many rare and valuable specimens. These were collected under many difficulties and dried on ship-board. On his way to San Diego his precious cargo was almost lost in the terrible storm which visited the coast the last of April. Only a partial list is now given, the remainder to follow in another paper.

806. *Eulobus Californicus* Nutt.

816. *Oenothera primiveris* Gray.

Leaves sometimes 7 inches long, petals 15 lines long, "sulphur yellow," becoming purple in drying, closes by day. Sandy low places among hills 40 miles back from the sea. This extends the range of this species considerably; it has only been reported from Utah, New Mexico, and western Texas.

807. *Viguiera deltoidea* Gray.

The rediscovery of this species after a lapse of thirty years is of considerable interest. It was collected by L. J. Xantus in 1859, probably near Cape St. Lucas, Lower California, and described by Gray in Proc. Am. Acad., Vol. v, p. 161. Very poor specimens were collected, and there has been ever since considerable uncertainty respecting its habit. It is a very common plant on hills 40 miles back from the ocean, 3 to 4 feet high, shrubby at base, large, showy, orange-colored flowers, and quite fragrant. It much resembles *V. Parishii* of more northern range, but the inflorescence is more crowded, the heads sessile or on short peduncles, while *V. Parishii* has its flowers mostly single on long peduncles.

270. *Viguiera microphylla* n. sp.

Stems shrubby at base, about 2 feet high, covered with a white, close pubescence; leaves deltoid, entire, 3 to 9 lines long, on short petioles; heads two to four, on long, slender, naked peduncles; heads 4 to 6 lines; rays 3 lines long; akenes 2 lines long, covered with long silky hairs; pappus two, slender paleæ, with one to three intermediate paleæ, which are broad and laciniate. Should follow *V. laciniata*, Gray. "Loose-growing plant with bright yellow flowers." Forty miles back from the ocean.

804. *Encelia laciniata* n. sp.

Two to 3 feet high, woody at base, slightly pubescent, becoming glabrous; leaves 2 inches long, ovate, with a slender, cuneate base, laciniately serrate; peduncles 2 to 3 inches long. Heads 9 lines broad, nodding after anthesis; the involueral bracts lanceolate, somewhat tomentose; rays yellow, disk reddish; akenes $2\frac{1}{2}$ lines long, obovate, no pappus, margins long, densely villose. Grows on sand plains and hills above the bay.

805. *Encelia Palmeri* n. sp.

Stems compact, 3 feet high, with a short white tomentum, becoming green and scabrous above; leaves whitish-hirsute, becoming green and

glaucous, broadly ovate, cordate at base, entire or slightly serrate, 1 to 1½ inches long, on short, naked petioles, upper ones reduced to small bracts, heads on long peduncles, 6 to 12 lines broad; rays yellow, twenty, 3 to 4 lines long; disk brownish. The involueral bracts lanceolate, greenish above, below covered with long, white, villose pubescence. Akenes 2 lines long, no pappus, the margins long-villose, the sides glabrous. Common about the Bay Lagoon Head, Lower California, March 7 to 15, 1889.

803. *Gilia Palmeri* Watson.

This is the second station for this recently (1889) described species. First collected at Los Angeles Bay, by Dr. Edward Palmer, in 1887, and now on the other side of the peninsula, but 40 miles back from the coast. The specimens of this year make necessary a few changes in the original description. The stem is biennial, very woody at base, somewhat taller, peduncles often 2 inches long. "Gravelly hills, grows scatteringly, bloom pink color." March 6 to 15. Lagoon Head.

808. *Nama demissum* Gray.

The range of this plant is only given as far south as the southwestern borders of California in Syn. Flora. And so far as herbarium specimens go, none have been seen from Lower California. It was collected 40 miles back from the ocean in the sandy valleys. Dr. Palmer speaks of it as "a showy plant; grows quite thick, forming large patches; bloom violet."

801. *Krynitzkia Grayi* n. sp.

Small annual, 1 to 3 inches high, hispid; leaves filiform, a half-inch long; spikes bractless, simple or in pairs, closely flowered; calyx barely a line long, open in fruit; nutlets one-third of a line long, ovate, trigonous, grayish, muriculate-roughened; ventral groove broad, triangular at base, closed above; the style twice as long as the nutlets. Abundant in low places between hills. Growing with *K. maritima*. It comes between *K. ambigua* and *K. micromeres*; the calyx is more like *K. ambigua*, while the fruit resembles more closely *K. micromeres*, but totally different from either.