



reddish brown sandstone is said to exist on one of these islands. The vegetation has been briefly noted by Edward Lee Greene, in the West American Scientist.

**ST. MARTIN:** situated in 30 degrees, 20 minutes north latitude, and 116 degrees, 121 minutes west longitude; is of moderate height, 12 miles long by 2 wide, with anchorage on its south and south-east sides in 12 to 18 fathoms. A little lagoon is found on its southern side, which is quite low, where seal used to resort in large numbers. It is quite barren, producing only cacti, shrubs and herbage that grow in a scanty soil, among broken rocks in a dry climate.

**ST. GERONIMO:** called by sea-otter hunters Round Island; of moderate elevation, long, about 2 miles wide, extremely barren, about 3 miles from the mainland. Affords a good shelter, on its northeast side, from northwesterly winds. A reef lies between the island and the shore, where the sea breaks heavily in rough weather.

**GUADALUPE ISLAND** is a high elevation of land running nearly north and south, in extent about 15 miles. There is no safe anchorage around it, the shores being bold, and its banks generally high and precipitous. The northern extremity is not less than 3,400 feet above the sea, with a growth of pines and cypress, while its deep canyons contain a palm tree peculiar to the island. Vegetation is by no means abundant, but the flora of the island is fairly well known through the collections made by Dr. Edward Palmer, and by Professor E. L. Greene. Fresh water is found here, and goats introduced to the island have increased immensely. Fur seal and the sea elephant once made its shores a favorite resort. Two barren rocky islets lie off its south end.

**ELIDE:** a naked rock, one mile in circumference, once covered with guano; from 1857 about 28,000 tons were taken off, when the supply became exhausted. The nearest water is 7 miles east, on the mainland.

**CHESTER'S ISLAND** is an islet lying close to the north side of Point St. Eugenio, named for an American sea captain, who denuded it of guano in early days.

**SAN BONITO ISLANDS** are three in number, two moderately high, the middle one quite low, 15 miles west of Cedros Island, separated from each other by narrow passages, where boats may pass in safety, but not practical for large vessels. Their united length is not over 10 miles, the largest, the western one, being about 5 miles in extent, the other two about half the size each, all very barren, affording neither wood nor water. Seal and sea-elephants were formerly found on them in large numbers. A species of cactus seems to be peculiar to these islets, but the vegetation is sparse. Anchorage may be had on the southeast side of the middle island in from 10 to 20 fathoms, but the bottom is quite rocky and poor holding-ground.

**NATIVIDAD:** lies between Cedros and the mainland, rising to 700 feet elevation, 5 miles long, by 1 broad, perfectly barren, the breeding-place of large numbers of seal and sea fowl.

**MARIA ISLAND** is an islet off the west end of Natividad Island, and has yielded some guano in the past.

**ST. ROQUE:** in 27 degrees north latitude, less than two miles off the coast, a low rock, covered with some coarse gravel and light sand, intermixed with bird-lime, about 5 square miles in extent. Its shores are the breeding-places of seals, and were once a favorite resort of the sea-elephant; large numbers of a small sea-fowl called mutton-birds burrow in the sandy soil, where they hatch their young. Good shelter can be found for a small vessel between the island and the main.

**ASUNCION:** in 26 degrees, 50 minutes, north latitude, 114 degrees west longitude, is similar to St. Roque, a little higher in elevation, and affords a good anchorage on its southeastern side in 12 to 15 fathoms, well sheltered from the prevailing northwest winds.

**SANTA MARGARITA:** a cluster of high rocky peaks and slopes, broken, extremely barren, near Magdalena bay. Veins of coal, copper and gold have been reported as existing in its mountains. Capt. Scammon reports that "two ships' companies once carried on gold-mining (as they supposed) for a few weeks pretty extensively, and large quantities of the virgin metal were taken on board, out, much to the disgust of all concerned, it proved to be nothing but iron pyrites." The extent of the island east and west is 36 miles.

**MANGROVE:** near Santa Margarita island, is low, composed of sand and mud, covered in places with a thick growth of mangrove-trees.

**CEDROS ISLAND:** see Cerros Island.  
**CERROS ISLAND:** also called Cedros, is a mass of high, abrupt peaks, the highest of 2,500 feet elevation, which may be seen in clear weather a distance of 60 miles. It bounds the west side of San Sebastian Viscaïno bay, its south point is 28 degrees, 3 minutes north latitude, 115 degrees, 25 minutes west longitude.

Capt. Scammon says:—"On near approach its sombre and barren appearance is anything but inviting. Many of the southern slopes present a dark-red hue, interspersed with high variegated cliffs that give a little change to the otherwise dull scene. On landing, one is sensible of the extremely dry atmosphere prevailing; there must be, however, occasionally heavy rains producing mountain torrents, which have cut their way through the sand and gravel bottoms that skirt the southern bases, but they are of rare occurrence, those best acquainted, who have been living there or along the coast for nearly the last five years, have never known it to be  
(To be continued.)"

10 MAR 1914





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## LOWER CALIFORNIA.

(Continued from last issue.)

visited by other than light showers, and these at long intervals apart. On the northeast side, about 3 miles from the extreme north end, a low, sandy point makes out; to the south of this there is good anchorage during the prevailing coast-winds. In a gulch near by is a small stream of fresh water, and likewise in several of the valleys leading from the shore to the southward water may be found within a mile or two of the beach. At one of these places it is of excellent quality. The only practical place, however, for a vessel to obtain a supply, is on the southeast side, where is found a spring running through rushes at the foot of a high peak close to the shore. \* \* \* Anchorage may be had off this spring within two cables of the shore in 20 fathoms water, but a much better place for a large vessel to lie is two miles farther south off a low shingle beach, where it is not so deep, and the gusts that come down the mountain when the wind is west are not so heavy as at the other anchorage. A vessel can always find shelter from the northwest winds on the south side of the island, the depth varying from 6 to 20 fathoms, and these winds blow with the regularity of a trade from May to October, and the only precaution to be kept in mind in choosing an anchorage, is to avoid fixed kelp. From October to May, much of the time the winds are light and the weather delightful. Occasionally a strong norther, or a light southeaster or southwest gale blows the first part of the winter, and strong gales from the northwest again set in about the first of May."

Dr. John A. Veatch has reported find-

ing in a few days 114 species of marine shells on this island, and a list of its fauna and flora and mineral resources would alone form a small volume. Edward Lee Greene has published a considerable list of its flora, otherwise chiefly known by the collections of Dr. Veatch, made in 1859, during a stay through the months of June July and August.

**CRESCIENTE:** a small island north-east of Santa Margarita Island, 2 or 3 miles from the mainland.

**CENISAS:** a small island near San Quentin bay, 2 or 3 miles in length.

## ISLANDS OF THE GULF OF CALIFORNIA.

Only a few of these are known to us, even by name, which must be our excuse for the brief notes accompanying the following list.

**CERALBO:** 100 miles north of Cape San Lucas, some 12 miles long, also known as "White Hills" to the early American explorers. Stated to contain copper mines of great value.

**ESPIRITU SANTO:** at the mouth of La Paz bay, 6 miles long, containing rich copper deposits.

**SAN JUAN NEPOCENO:** a small island in Pichilingue bay, near La Paz.

**SAN FRANCISCO:** small.

**SAN JOSE:** 12 miles long.

**SANTA CATALINA:** about 10 miles in circumference.

**MONTSERRAT:** five or six miles of Santa Catalina.

**CARMEN:** noted for its most peculiar and most accessible salt-mine, the richest in the world and considered inexhaustible. It is about 25 miles long by 6 broad, within a few hours' sail of the old town of Loretto.

**CORONADOS:** a few miles in extent, some 6 miles from Carmen Island.

**SAN IDELFONSO:** 30 miles from Carmen.

**SANTA ISABEL:** at the mouth of Moleje bay, only a few miles in extent.

**GALAPAGOS:** 30 miles north of Moleje bay.

**TORTUGAS:** within sight of Guaymas, Son. An extinct volcano is ascribed to this island.

**TRINIDAD:** 20 miles in circumference.

**SAN BERNARBE:** 40 miles from the Galapagos.

**SAL SI PUEIDAS:** 3 small islands in sight of two others, known as Las Animas and Raza, which together form an archipelago very dangerous for their impetuous currents.

**ANGEL DE LA GUARDA:** a great island 15 miles wide by 50 long.

**SANTA FELICIA:** a rocky islet in the bay of San Felipe de Jesus.

**SAN EUGENIO:** seven miles in circumference.

**LAS REYS:** at the mouth of the Colorado river.

**TIBURON:** some 20 miles long, and 10 broad, on the Sonora coast, noted for the tales of its cannibal Indians, the Seri tribe.

**SAN PEDRO MARTYR:** 25 miles south of Tiburon.

**SAN MARCO:** near Guaymas, Son.

**LOBOS:** 50 miles south of Guaymas, Son.

These islands possess excellent harbors and immense resources in minerals, fisheries, and pearl-oyster banks.

pronounced so differently the same idiom as to seem to a stranger to use distinct languages. Going south from the Colorado river, on the overflowed lands were the Cocopahs, the southern gulf branches of which Consay (1746) called Bagiopahs, Hebonumas, Quigyumas, Cuculutes and Alchedumas.

The Indians around the missions of Santa Catalina, San Pedro Martyr, San Miguel, Santa Tomas, and Diego (in Alta California), are described as nearly pure Yumas, but received various tribal names, like Gueymuras, and Gimielis, the Icas (at Santo Tomas and San Vicente), the Uchitas (from San Vicente to San Fernando), the Vintacottas and Villacatas, are races now nearly or quite extinguished.

Between San Fernando and Moleje were the Limonies, divided into the Cagnaguets, Adacs, and Kadakamas, as one proceeded south.

From Moleje to Loreto were the purer Cochiemies, or Guaicuris, or Vicuras, whom the Jesuits asserted were of the same language as the Limonies. From Loreto to Magdalena bay were the Monquies and Edues, and beyond to the Cape, the Pericues and Coras.

Father Copart, who was with Kino, in 1697, at the time of Admiral Otondo's expedition, reduced the language to writing, preparing a catechism. Father Begert, in 1767, prepared a meagre grammatical analysis and religious explanation, on the Cochiemies or Waicura, some three or four pages (see Charles Rau, in Smithsonian Institution, report, 1864).

The Cochiemies and Pericues are said to be totally extinct.

#### FLORA OF BAJA CALIFORNIA.

##### ATAMISQUEA EMARGINATA. Miers.

Br 2:128, "Specimens of this ill-smelling

bush have also been collected from neighboring regions by Mr. Pringle and Dr. Palmer. It is undoubtedly this species, but the structure of the fl shows so much variation from the type described and figured in Linn tr 21:1t1, that a somewhat detailed description is rendered necessary. The 2 outer larger valvate sep entirely cover the 2 inner alt somewhat obovate ones that differ from the figure in being much sh'èr and having a different form, but are of a similar color to the outer ones, and with them decid. Opp to the sep are 4 tooth-like processes, alternating with the 4 pet and apparently in the same whorl; the 2 upper pet are somewhat longer than the lower. The irregularity of the fl is apparently caused by the elongating stipe of ova developing to lower side, lifting and passing beneath the inferior tooth-like process that embraces it as an oblique ring; this tooth longer than the upper and 4 times longer than the lateral ones, becoming also superior. Sta 6, gradually tapering, from a somewhat bulbous base, not abruptly as in the figure, and in the num fls examined, no trace of staminodia has been found. The pet are all curved to the upper side. San Gregorio."

##### HELIANTHEMUM NUTANS... Br.

"Densely and minutely stellate pubescent throuut: sts woody, much branched, about 9 i hi: lvs linear, obtuse, slightly tapering to base, 5-7 mm lg, 1 mm wide: pedicels solitary from opp to the arils of the upper alt lvs, recurved, 14 mm lg, jointed near base: inner sep 6 mm lg, ovate, acute, the outer linear, half as lg: pet slightly exceeding sep, broadly cuneate, acute: sta about 20: sds covered with w strap-shaped papillae. The lower portion of the sm bushes is covered with fascicles of axillary lvs, that persist after the primary ones have fallen, and give to the plants an ericoid appearance. Very abundant in rocky soil about the plains of San Julian, Baja."—Br 2:129.

##### POLYGALA DESERTORUM. Br.

Br 2:130, "Sts erect, branched from a somewhat woody base, slightly pubescent, 1 ft hi: lvs linear-lanceolate, 18 mm lg, tapering to base, becoming bract-like above: fls upon pedicels 2-4 mm lg, soon reflexed: sep glab, all p, outer round, saccate at base, 4 mm lg, lateral oblg, mucronate, 5 mm lg: upper pet pubescent near the base, nearly as lg as keel, connected nearly half their length; keel rugose-thickened, y; crest recurved, prominent; sty tortuous; recurved, hollow, somewhat 2 lobed; ova stipitate: cap elliptical, emarginate: sd densely hairy, the sh caruncle with 2 sm wings not ¼ the length of sd. Growing upon the plain near Agua Dulce. Its persistent p sep make this a handsome species."

##### POLYGALA APOPETALA. Br.

Br 2:130t 3, "Frutescent, 2-3 ft hi, with straight, slender, grayish-pubescent branches: lvs lanceolate, entire, obtuse, attenuate to a sh petiole, alt, remote, nearly glab: fls large, pink, on slender pedicels ½ in or more lg: sep 4, upper



and lower sm, equal, cymbiform, with ciliate margins, lateral very large, nearly orbicular; pet 5, all separate, the 2 upper strap-shaped, revolute outward, two-thirds as lg as keel, the lateral ones pointed, less than  $\frac{1}{2}$  as lg, lying on the staminal tube and with it embraced by the large unguiculate cymbiform keel, which is open by the whole of the upper and a part of the lower edge, and not cristate nor appendaged; sta 8, monadelphous for half their length, united with pet only at base, anth oft apiculate, sometimes by a process as lg as anth, opening by a transverse notch near middle; ova sessile; sty curved, nearly simple, pubescent on its upper third; sds 2, large, ovoid, slightly flattened, pubescent, caruncle minute, hardly lobed. Comondu."

**LYROCARPA XANTI.** Br.

"Annual, branching near the base: sts decumbent, a ft or 2 lg: lvs, sepals and ova somewhat pubescent, with branching hairs: lvs all petioled, cordate-lyrate, repand, 2-4 i lg, 1-2 i wide: fls in an elongated flless raceme, dark p: pet obovate-lanceolate, 9 li lg: pods nearly 1 in in length, not constricted above, cells 5-10-seeded; sds wingless. This is probably the plant mentioned in B 1:44 and Am ac pr 5:153. The bright colored, handsome fls and habit of growing in masses make it one of the most showy annuals of the region. The sds differ from the generic description in being wingless.—San Gregorio and Santa Margarita Island."—Br 2:127.

**FOUQUERIA COLUMNARIS.** Kellogg.

Br 2:132. "Idria columnaria Kell, Cal ac pr 2:34; Hesperian, My. 1860. F: columnaria Kell, Cal ac b 1:133. F: gigantea Orcutt, W 2:48. First seen near San Esteban, this tree was a prominent part of the vegetation nearly to El Rosario. It grows erect to a height of 25-50 ft, gradually tapering from a base 2 or 3 ft in diam to a pointed top, and as it seldom branches, the shape is that of a huge inverted carrot. Sometimes from accident or injury, the main trunk separates into 2 or more straight or distorted branches and assumes curious forms. An abundance of sm twigs 3-4 in lg, bearing lvs and spines or sometimes only fascicles of lvs, grow upon the trunk. The wood is soft, and a knife can be stuck thru the tree unless at first the harder wood of the reticulated frame is struck. The fls, like those of the other species of the genus, grow from the top, and must be quite handsome; they are said to have a decided y tinge and to appear soon after the fall rains. The old capsules are 8-10 mm lg, sessile in a panicle, about 10 in lg. The lvs, as noticed by Dr. Engelmann concerning these of F: splendens, Bot Gaz 8:338, afford fine examples of the morphology of spines. The common name of the tree is "Cirio," called so by the inhabitants on account of its fancied resemblance to the torch of the altar of their church."

**ANODA CRENATIFLORA** ORT.

Br 2:133. "Raiate summit of fr pubescent: cusps sh: carpels 8-10, with mid-rib

separating for the upper two-thirds: septum represented only by slender threads attached near apex of carpel and to base of column: clathrate covering of sd p'ish brown, w powdery, loose, cleft at apex: sd pubescent with very fine hairs: pet 4 li lg, pale y, crenate. As there is much uncertainty concerning the species of Ortega, it seems best not to give this plant another name, especially as it is near A: parviflora, to which the general resemblance is quite strong. Steep slopes of Comondu canyon."

**SPHAERALCEA HAINESII.** Br.

Br 2:136. "Herbaceous, about 8 ft hi, with lg softer branches, densely covered with a soft spreading stellate pubescence, becoming more glabrous in age: lvs cordate lanceolate, somewhat lobed. Irregularly doubly crenate or dentate, 4 in lg or less, on petioles one-fourth as lg: axy racemes solitary or geminate, 3 in lg or less: bracteolae filiform, persistent: cx w-lanate, deeply cleft, seg acute, lg'er than fr: pet brick-r,  $\frac{1}{2}$  i lg: fr higher than its width: carpels 10-15, attached at base by slender threads to column, the sm cusps turned outward and easily separating, basal portion sh, reticulate: ovules 3, and com maturing into 3 minutely pubescent sds. Named for the collector, Charles D. Haines, who, as entomologist of the party, materially reduced the number of insects infesting it. Collected at Jesus Maria."

**CASTILLEJA BRYANTI** Br 2:192.

"Ann. 6 i.-2 ft. hi, rough-pubescent with spreading hairs: branches from near base, slender, erect; fr'g spike oft much elongated: lower 2 or 3 pairs of lvs linear, entire, the succeeding divided into 3-7 lg-linear lobes: bracts similar to upper lvs, their tips & those of cx com r ochroleucous: cx cleft half way, about equally before & behind, the lobes cleft either sh'ly or for nearly a third of their length into lanceolate seg: cor about equalling cx. 15-18 mm lg: galea less than a third as lg as tube; lower lip with 3 sh incurved lobes: sta 2, 3 or 4 in the same plant: cap oblg-oval, half as lg as cx: sds minute, the diaphanous coat rather close. S Jorge, SEsteban."—Br 2:192.

**SPOROBOLUS ALTISSIMUS.** Vasey, in Br 2:212.

"Culm 4-5 ft hi, simple; lvs lg, slender, becoming involute; panicle 6-8 i lg, narrow, the branches erect, scattered or partly verticillate, 3-4 i lg, subdivided and flower-bearing from near the base: spkt 1-flowered, about 1 line long; empty gm unequal and nearly as in S, airoides—from which it differs in its greater height, and closer panicle, as well as in details of the flower. Collected at San Diego by Dr. Edward Palmer."—Vasey, in Br. 2:212. Var: **MINOR** Vasey, in Br 2:213.

"Smaller, 2-3 ft hi; lvs shorter; panicles 4-6 i lg, p: spkt rather smaller.—San Enrique."—Vasey, in Br 2:213.

**DIPLACHNE BRANDEGEI** Vasey.

"Resembles small forms of D. dubia. Cu about 2 ft hi, 2-edged below; lvs num, nar; the lower sheaths conduplicate, ciliate on the margins; ligule ciliate; panicle

of 8-15 spk, which become spreading; spkt 3 lines lg, 1 or 2 flowered, with an imperfect rudimentary one; empty gm 1 nerved, the lower about half as lg as upper, upper one  $1\frac{1}{2}$  i lg, acuminate; fl'g gm 3 li lg, lanceolate-acute, tipped with a sh barbed point, 3 nerved; palet rather sh'er than or equal to its gm; the second flower neutral or rudimentary, stalked, half as lg as the lower flower, which has a crown of sh, silky w hairs around the base."—Vasey, in Br 2:213.

**CENCHRUS PALMERI VASEY.**

"Culm 9-18 i hi, flattened below, branching, lfy: lvs puberulent, especially the inflated, conduplicate sheaths which are ciliate on margins, and with a ligule of rather lg w hairs; sheaths mostly as lg as the internodes; blade lanceolate-linear, 4-6 i lg. Spk consisting of 2 to 4, com 3, large, roundish, closely approximate, p spikelets, 1- $1\frac{1}{2}$  i in diam, including the spines, these are flattened toward the base, the upper part slender, the long'st 6-8 lines long, diminishing to the broad base, where a few are much smaller, but there are no proper bristles. The base of the spines and the body of the spikelets are closely pubescent. Each spikelet contains 5 or 6 flowers. First collected by Dr. E. Palmer at Guaymas, Mex., in 1887, in company with a y-colored variety. The present specimens are a young and small form, with the spkt half as large as the type, but otherwise the same. Possibly it may be a distinct var.—Com thruout the southern part of the peninsula."—Vasey in Br 2:211.

**YUCCA VALIDA** Br 2:208 t II.

"Arborescent, 15-20 ft hi, trunks 8-1 to 2 ft or more in diam, growing in clumps and branching from near base or higher: lvs thin, smooth, flexible, 6-9 i lg,  $\frac{1}{2}$  to  $\frac{3}{4}$  i wide at center, tapering to a stout involute spine above, and nar'ed to less than half its width above the brown, dilated base, margin separating into slender, whitish, recurved threads; panicle pyramidal, about a ft lg, somewhat pubescent; perianth cream-w, 2-2 $\frac{1}{2}$  i broad on pedicels nearly as lg as the seg, which are broadly lanceolate & nearly equal in width: sta pappillose, less than  $\frac{1}{2}$  as lg as seg, about equaling the sty, uncinat after maturity: anth sagittate; ova obl, abruptly nar'ed to the nearly sessile stigma; ovules thick. This Yucca is certainly distinct from *Y. baccata*, and does not seem referable to any of its Mexican varieties. It does not begin to bloom until about the middle of May, when *Y. baccata* to the north of it, has already nearly mature fr. It was observed from San Jorge to San Borgia, and near Patrocinia formed forests miles in extent; the trees in general appearance strikingly like *Y. brevifolia*, though the trunks were much less covered with old reflexed lvs."—Br 2:208.

**AGAVE SOBRIA** Br 2:207.

"Euagave. Acaulescent: lvs about 20, glau, lanceolate, about 2 ft lg, nar'ed from panicle; branches 6-12, ascending, 6 in lg or less, rather few-fld; fls light y; triangular lobes 10-15 mm lg, a little exceed-

ing tube: sta adnate to base of lobes, & about twice their length: sty tubular, 3-lobed, a little exceeding sta: cap somewhat clavate-trigonal, constricted near middle, 30-50 mm lg, 8-12 wide: sds 3-4 mm in diam, smooth. Very abundant upon Magdalena & S Margarita Islands, but not seen upon the mainland. The fls were filled to overflowing with nectar, which was oft seen running down the st."—Br 2:206.

(To be continued.)

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