

Virgenes. The land comes down to the coast in steep slopes from Santa Maria Mountain, which is about $3\frac{1}{2}$ miles inland and 4,424 feet high, its ridge running parallel to the coast for several miles. The shore is of broken bluffs, varying in height from 30 to 200 feet, with occasional gravel beaches and deep arroyos.

The depth of water off this part of the coast is very great, soundings within $1\frac{1}{4}$ miles of the shore showing no bottom at 300 fathoms.

Las Tres Virgenes.

From 12 to 14 miles inland are three remarkable mountains lying nearly parallel to this part of the coast, known as Las Tres Virgenes, the highest of which reaches an altitude of 6,547 feet. They are the north-eastern end of a continuous belt of volcanic peaks extending toward San Ignacio. (View opposite page 98.)

Sulphur.

Sulphur is said to be found in abundance in the vicinity of these volcanoes.

CHAPTER III.

FROM CAPE VIRGENES TO THE ANCHORAGE OFF PHILIP'S POINT, COLORADO RIVER.

Cape Virgenes is a rocky cliff about 200 feet high, surmounted by a hill 600 feet high, the high coast-range lying a short distance inland. Soundings off the point gave 5 fathoms close to, deepening rapidly to 130 fathoms a mile off. North-westward of Cape Virgenes the coast is generally low, the mountain range being several miles in the interior.

Punta Baja, which is $4\frac{1}{2}$ miles from Cape Virgenes, is of shingle, with a shoal extending off a short distance. Just south of the point is the mouth of a cañon which leads up to a silver mine, known as *Reforma*. About three-quarters of a mile to the south-eastward of the point is a landing place, marked by a flag-staff with a white flag.

Santa Ana Point, seven and a quarter miles farther up the coast, is steep, with hills 400 feet high immediately back of it. It forms the eastern limit of Santa Ana Bay, which is about $3\frac{1}{2}$ miles wide and from a quarter to three-quarters of a mile deep. The southern and western shores of the bay consist of sand and shingle beaches, the low-land back of them sloping gradually from the mountains. The water is very deep to within a short distance of the shore.

Anchorage may be had, with shelter from south-easters. The western limit of the bay is a low shingle point, off which a shoal extends for over a quarter of a mile. On the point is the opening to a small lagoon, into which Santa Ana Creek flows. This *fresh-water creek* may be recognized by the grass and trees on its banks.

Two and three-quarter miles north-westward is another low point and opening to a lagoon, with a shoal surrounding it.

Trinidad Point is 7 miles from the point last mentioned; the intermediate coast assumes a more northerly trend and

is generally bluff. There are several outlying rocks off this part of the coast, and a range of hills rises immediately back of it. The point itself is a prominent head-land 250 feet high, surmounted by moderately high bluffs; several detached rocks lie off it.

San Carlos Bay. San Carlos Bay is an open bay formed by the falling away of the coast line to the northward of Trinidad Point. About $1\frac{3}{4}$ miles to the northward of the point is a small, rocky islet of whitish color, the highest part of which is 6 feet above high water; shoal water is found a short distance off it on all sides. Between the islet and Trinidad Point is a sandy bight, with shoal water extending nearly half a mile off shore.

Three and three-quarters miles N. 25° W. (NW. $\frac{3}{4}$ N. mag.) from the islet just mentioned is a rocky point surrounded by numerous detached outlying rocks, one of which, nearly three-quarters of a mile north of the point and half a mile from the nearest shore, is a quarter of a mile long and 6 feet high.

San Carlos Point. San Carlos Point is low, composed of sand and shingle, and may be recognized by a peak about 5,000 feet high, known as Sharp Peak, which lies $9\frac{1}{2}$ miles nearly west (true) from it.

Red water. Along this part of the coast extensive patches of the red water before mentioned were met with. Soundings made while steaming through them gave no bottom at 55 fathoms.

Variation. The magnetic variation at San Carlos Point in 1875 was $11^{\circ} 45'$ E., increasing about $2'$ annually. Tides. Tides rise about 5 feet.

From San Carlos Point to Cape San Miguel, a distance of 12 miles, the general direction of the coast line is nearly north. The coast is for the most part low, with sand and gravel beaches and an occasional low bluff, until within about $2\frac{1}{2}$ miles of Cape San Miguel, whence to the cape the shore line is an almost continuous bluff about 50 feet high. Back of the coast the land slopes gradually to the hills and is covered with low bushes and cactus.

San Juan Bautista Point and Bay. San Juan Bautista Point lies $4\frac{3}{4}$ miles to the northward of San Carlos Point. It is low and composed of sand and gravel. Shoal water extends off it a quarter of a mile.

Between the two points the coast recedes about a mile, forming the open bay of San Juan Bautista, the soundings in which are very regular.

A little to the northward of San Juan Bautista Point the hills approach the coast, ending in bluffs.

Cape San Miguel is a bold, rocky bluff, 150 feet high, with several outlying rocks a short distance to the eastward of it. Cape San Miguel. Back of it, not over 5 miles distant, is a group of conspicuous mountains, varying in height from 2,000 to 3,500 feet.

Anchorage. Anchorage, sheltered from the NW. winds, may be found just south of the cape, in 7 or 8 fathoms of water, half a mile from the shore.

A mile south of the cape is the northern end of a shoal that extends nearly 2 miles along the shore to the southward, and has only $2\frac{1}{4}$ fathoms of water on its outer edge, which is from a quarter to half a mile off shore.

From Cape San Miguel to Santa Teresa Point, a distance of $13\frac{1}{2}$ miles N. 12° W. (NNW. $\frac{1}{4}$ W. mag.), the coast is generally low, being formed of alternate sand beaches and low bluffs, the coast range lying a short distance inland.

Just north of Cape San Miguel the coast sweeps to the westward, forming an open bay.

Santa Teresa Point is a rocky bluff about 30 feet high, the land back of it rising abruptly to a height of 567 feet. Santa Teresa Point and Bay. South of the point is the small open bay of the same name. At the bottom of the bay there is a sand beach, with low land back of it, extending to San Francisquito Bay. In the southern part the shore consists of rocky bluffs, with hills about 150 feet high rising immediately back of them and some outlying rocks fronting them. The magnetic variation in 1875 was 12° E., increasing about $2'$ annually. Variation. Spring tides rise 10 feet; neaps, 6 feet (approx.). Tides.

Anchorage. Good anchorage, sheltered from the NW. winds, may be found about a quarter of a mile from the beach in 8 or 9 fathoms of water, the point bearing N. 28° E. (N. by E. $\frac{1}{2}$ E. mag.), distant from 3 to 4 cables.

On the low neck of land between Santa Teresa and San Francisquito Bays is an extensive bed of a fresh-water pond, which is dry during 8 months of the year.

A prominent, sharp peak, 6,258 feet high, lies 32 miles nearly due west from Santa Teresa Point, and is plainly visible when off the coast in this vicinity.

San Pedro Martir Island lies off this part of the coast and nearly midway in the gulf. It is a barren, triangular rock, San Pedro Martir Island. less than a mile in extent either way, its highest point hav-

ing an altitude of 1,052 feet. Off its southern face are several detached rocks, some of them half a mile from the shore.

The highest point of the island bears S. 85° E. (E. $\frac{5}{8}$ N. mag.) from Santa Teresa Point, distant 28 miles.

Northward of Santa Teresa Point, and intervening between it and San Francisquito Bay, is a prominent headland, having a rugged, bluff coast, with barren hills from 300 to 500 feet high back of it.

San Gabriel Point.

San Gabriel Point lies $1\frac{2}{10}$ miles north of Santa Teresa Point, and is a rocky bluff 45 feet high, with high volcanic hills just back of it and numerous detached rocks surrounding it. Just west of the point is a strip of sand beach a quarter of a mile long, and adjoining the western end of the sand beach is a rocky point similar in character to San Gabriel Point.

San Francisquito Bay.

The point just mentioned is the eastern point of the entrance to San Francisquito Bay, which is about a mile in width between the heads at the entrance, and the same in depth from a line drawn between them. It is open to the north and north-east, but affords good shelter from either north-west or south-east winds, which are the prevailing ones in the gulf.

Anchorage.

The best anchorage is in the SW. part of the bay in from 5 to 6 fathoms of water, about a quarter of a mile off a sand beach half a mile long and flanked on either side by rocky bluffs.

A small cove opens into the southern part of the bay. The water in the cove is shoal and the entrance narrow, being between two rocky points 300 yards apart with numerous outlying rocks off them, narrowing the passage to about 100 yards.

The country in the vicinity of the bay is extremely barren and stony.

From the NW. point of the entrance to San Francisquito Bay to San Francisquito Point, a distance of 2 miles N. 42° W. (NW. $\frac{3}{4}$ W. mag.), the coast consists for the most part of steep rocky bluffs, with table-land from 300 to 400 feet high immediately back of them.

San Francisquito Point.

San Francisquito Point is a low rocky bluff, with a number of detached rocks lying off it, close to. A short distance west of the point there is said to be a place at the foot of the hills where *fresh water* may be found.

Sal-si-puedes Channel, which lies between the main-land on the west and the islands of San Lorenzo, Sal-si-puedes, Raza, and Partida on the east, is a wide, deep channel through which the current sets strongly, especially with an ebb-tide and a north-westerly wind, against which, sailing vessels find it almost impossible to make any headway.

Owing to the great depth of water in most parts of the channel there are few places where a vessel may anchor, but anchorage *may* be found near the western shore and also in the vicinity of the islands Raza and Partida.

Soundings obtained in the northern part of the channel, $2\frac{1}{2}$ miles from the shore of the main-land, gave a depth of 716 fathoms, bottom of green ooze, and in several places between the island of San Lorenzo and the main-land, no bottom was found at a depth of 320 fathoms.

San Lorenzo Island is the southernmost and largest of the islands forming the eastern side of Sal-si-puedes Channel. It is $12\frac{1}{4}$ miles in length and between one and two miles wide.

Like most of the islands in the gulf it is of volcanic origin, high and barren. The highest peak, near the southern end, has an elevation of 1,592 feet.

Three miles from the north-western end of the island is a narrow boat passage, really making two distinct islands.

Three miles to the south-eastward of the boat passage, on the channel side of the island, is a slightly projecting sand beach where a landing may be effected in smooth weather, and at the SE. extreme of the island is another small strip of sand-beach which with the prevailing north-westerly winds affords a good landing place.

With the exception of the above-mentioned sand beaches the shores are bold, rocky bluffs predominating.

About a mile and a quarter nearly due east of the north-western point of the island, and $1\frac{1}{2}$ cables from the nearest shore, is a detached white rock 20 feet high.

Sal-si-puedes Island, lying a mile to the north-westward of San Lorenzo, is about $1\frac{1}{2}$ miles long SE. and NW., with a greatest width of half a mile. The highest peak, near the southern end, is 376 feet high. Several detached rocks lie off the island, one of which, near the north-western end, is 50 feet high.

Nearly midway between Sal-si-puedes and San Lorenzo

Islands, a little nearer the former, is a rock awash, and it is probable that there are other hidden dangers in the passage, which has not been examined, and its use is not recommended.

Isla Raza.

Isla Raza lies $4\frac{3}{4}$ miles N. 7° W. (N. by W. $\frac{3}{4}$ W. mag.) from the NW. point of Sal-si-puedes. It is about three-quarters of a mile long east and west, half a mile wide and about 100 feet high, presenting a whitish appearance, from the deposit of guano on it. Its shores consist for the most part of moderately high bluffs, with outlying rocks close to.

Anchorage.

Anchorage in from 5 to 8 fathoms, gravel and rocky bottom, will be found on the south side of the island, about 3 cables distant from the shore. There is a landing pier, house and flag-staff on the island, abreast of the anchorage. A reef of rocks extends a short distance off from the southeastern end of the island, and vessels anchoring should be careful to give it a good berth.

Raza Rock.

Raza Rock is a small white rock 75 feet high, lying a little over a mile N. 53° W. (NW. by W. $\frac{3}{4}$ W. mag.) from the NW. point of Raza Island. There is deep water, free from dangers, on all sides of it except the south-west, where at a distance of 2 cables is a rock awash, with 20 fathoms of water close to.

Remarks.

The tidal sets in the vicinity of these islands are very strong, causing heavy tide rips occasionally. North-westerly winds frequently blow with great violence for 2 or 3 days at a time.

Guano.

Raza Island is widely known for its valuable deposit of guano, which is not, as in some other places, composed of the excrement of birds, but of an igneous rock, which has undergone a chemical change by the action upon it of the phosphate and ammonia contained in their excrement.

The surface guano is collected in the form of dust and shipped in bags. The layer succeeding it is composed of "clinkers," which require crushing before using. These "clinkers" are richer in the phosphates than the pulverized guano and are more easily gathered and shipped. The birds that frequented the island at the time of the *Narragansett's* visit were principally gulls, and were present in such numbers as to literally cover the ground.

The island has been worked by a company for several years past. They removed in the first two years over

10,000 tons of the guano, shipping it principally to European ports.

Isla Partida, so called from its appearing, when seen from a distance, like two islands, is $4\frac{1}{2}$ miles N. 42° W. (NW. by W. mag.) from Raza Island. It is about $1\frac{1}{2}$ miles long, half a mile wide, and has two peaks, each 400 feet high, joined by a low, narrow, strip of land.

On the western side of the island is a small cove or bight, open to the northward, in which there are from 3 to 8 fathoms of water. A rock 85 feet high lies off the steep bluff point which forms the western side of the bight.

Off the eastern side of the island, about a third of a mile distant from it, is a small islet 75 feet high. Between this islet and Isla Partida, anchorage may be found in from 5 to 20 fathoms, with shelter from the north-westerly winds.

Six-tenths of a mile to the northward of Isla Partida is a rock 175 feet high called White Rock, from which a reef makes off to the northward about a third of a mile, ending in a rock two feet above water at low tide. The soundings are irregular, with rocky bottom, for about $1\frac{1}{4}$ miles farther north, whence they increase rapidly.

The southern point of Angel de la Guardia Island bears N. 42° W. (NW. $\frac{7}{8}$ W. mag.) from White Rock, distant $5\frac{1}{2}$ miles.

San Esteban Island. See page 145.

From San Francisquito Point the coast sweeps to the westward for about 10 miles, and then again assumes a northerly direction as far as Las Animas Point.

San Rafael Bay is an open bay formed by the receding of the coast-line north of San Francisquito Point, and affords good protection from southerly winds. Its shores consist for the most part of sand beaches, with occasional low bluffs. The land slopes gradually from the interior, with numerous ravines, and is covered with vegetation. Soundings in the southern part of the bay gave 40 fathoms at a mile distant from the shore, while in the northern and western portions, at the same distance off, from 10 to 20 fathoms were found.

From the north-western limit of San Rafael Bay to Las Animas Point the coast consists of rocky bluffs, with mountains rising immediately back of it.

Seven miles to the southward of Las Animas Point is a conspicuous group of peaks over 3,000 feet high.

Isla Partida.

Cove, rock.

Islet.

Anchorage.

White Rock.

San Rafael Bay.

Peaks.

Barnabé Rocks. The Barnabé Rocks, two in number, lie $3\frac{1}{2}$ miles to the south-eastward of Las Animas Point, and from 3 to 4 cables off a low, slightly projecting point. They are only 2 feet above water, and between them and the shore there is a shallow passage with a rocky bottom, fit only for boats.

Anchorage. There is a fair anchorage to the southward of the rocks in 7 or 8 fathoms of water, coarse, sandy bottom, about a quarter of a mile from the beach.

Variation. The magnetic variation was $12^{\circ} 15'$ E. in 1877, increasing about $2'$ annually. Tides rise about 9 feet.

Las Animas Point. Las Animas Point is a bold rocky bluff, from 75 to 125 feet high, with several detached rocks close to. Back of it steep hills of a reddish color rise abruptly to heights varying from 300 to 500 feet, with mountains over 2,000 feet high a short distance inland. The water off the point is very bold, 60 fathoms being found within less than half a mile. This point forms the south-western point of entrance to Ballenas Channel.

Ballenas Channel. Ballenas Channel, which lies between the main-land and Angel de la Guardia Island, is about 45 miles long, varying in width from 8 to 15 miles. The north-westerly winds sometimes blow through the channel with great force, raising a heavy sea, against which a vessel can make but little headway. The tidal currents are very strong at times. A current of 3 knots was experienced by the *Narragansett*.

Soundings obtained within less than a mile from the shore of Angel de la Guardia gave 205 fathoms, and the water throughout the channel is believed to be very deep.

Las Animas Bay. From Las Animas Point the coast turns suddenly to the south-westward and maintains that general direction for a distance of $5\frac{1}{2}$ miles, to the mouth of a small lagoon, whence it sweeps around to a point (not named) bearing $N. 69^{\circ} W.$ ($W. \frac{3}{4} N.$ mag.), $6\frac{1}{4}$ miles distant from Las Animas Point, forming a bay of considerable extent, known as Las Animas Bay, where good anchorage may be had, with protection from either of the prevailing winds.

The shores of the bay consist for the most part of sand beaches, with a few bluffs on that part lying between Las Animas Point and the entrance to the lagoon before mentioned.

About 2 miles north-westward from the lagoon entrance is a steep, bluff point, surmounted by a brownish-colored

mound 80 feet high. Off this point are several islets, varying in height from 30 to 75 feet.

The best anchorage is in the southern part of the bay, in from 6 to 12 fathoms of water, nearly on a line between the above-mentioned point or islets and the lagoon entrance, taking care not to approach the latter within three-quarters of a mile. Anchorage.

The point at the north-western limit of the bay is a sharp, rocky bluff from 25 to 40 feet high, surmounted by a dark hill 100 feet high, the mountains back of it rising abruptly to a height of 3,000 feet and upwards.

Off the point in a northerly direction, about half a mile distant and connected with it by a rocky shoal, is a low islet, only 2 feet above high water.

About $1\frac{1}{2}$ miles N. $21^{\circ} W.$ (NW. by N. mag.) from the point just mentioned is another prominent, sharp, bluff point (not named), formed by a spur of reddish hills from 200 to 300 feet high. The coast between the two points forms a bight a mile deep, with a sand beach at the bottom.

Rocky Island, which lies $1\frac{1}{2}$ miles farther up the coast, is a barren rock 75 feet high, lying half a mile off shore, with a three-fathom passage between it and the beach, which is of sand. Rocky Island.

From here to the entrance to Angeles Bay the coast is a succession of sharp, rocky points, with outlying rocks close to, the land back rising abruptly to a height of several thousand feet.

Angeles Bay is a fine sheet of water, which covers an area of about 25 miles. It is almost completely land-locked, having for its protection on the east and north-east no less than 15 islands and islets. The shores of the bay are for the most part sand beaches, with one or two rocky bluffs. In the southern part, shoal water extends off some distance from the shore. Angeles Bay.

There are several safe passages into the bay, which will be described in detail.

The southernmost passage is between Red Point (which is a reddish colored, rocky bluff) and two small islands, 50 and 70 feet high, which lie about 3 cables to the northward of it. This channel is believed to be entirely free from hidden dangers, and has a depth of water varying from 20 to 30 fathoms. Passages.

Another passage, which is considered perfectly safe, lies to the northward of the two islands just mentioned, between them and a larger island of a dark reddish color, on the southern face of which is a hill 225 feet high, with a stone monument on it. This channel is half a mile wide, and has from 20 to 30 fathoms of water through its centre.

Northward of the last-mentioned island is another passage, *which is not recommended and is marked dangerous* on the charts of the United States Hydrographic Office. It contains many sunken rocks and rocks awash, with deep water close to them. On the north side of this passage is a group of islands, varying in height from 90 to 125 feet, with deep water and no dangers, between them and the mainland.

The northern passage lies between Smith's Island, (which is the northernmost and largest of the islands lying off the entrance to Angeles Bay), and a long narrow neck of land that makes off in a south-easterly direction from the mainland, and is terminated by a rocky bluff. When up with this bluff, the passage lies between it and the group of islands before mentioned.

The northern passage is over a mile in width and free from dangers, except at a point about midway of the length of Smith's Island, where some dangerous rocks, lying three-quarters of a mile from the island, narrow the channel to nine-tenths of a mile. Over 10 fathoms water may be carried through it.

Neither of these passages should be attempted, unless in an emergency, when the land cannot be plainly distinguished, as that is the only guide for using them.

Directions for entering.

When coming from the southward it is best to follow the coast, using the southernmost passage (that between Red Point and the two small islands). Keep in mid-channel until past Red Point, then steer west (mag.) for the best anchorage, which is at the mouth of a small cove formed by a low sand-spit which projects over half a mile from the mainland in a southerly direction. In standing in for the southernmost passage, bring a conspicuous mountain, 3,423 feet high, called Round Top, which is 2 miles from the western shore of the bay, to bear S. 71° W. (SW. by W. $\frac{1}{4}$ W. mag.) and steer for it, keeping it on that bearing until nearly up with Red Point, when keep in mid-channel until past the point.

Coming from the northward and intending to anchor in Angeles Bay, follow the coast, passing between it and Smith's Island and keeping well over toward the high bluffs at the south-eastern end of the narrow neck of land before mentioned, to avoid the dangerous rocks lying three-quarters of a mile to the westward of Smith's Island. Upon arriving off the extremity of the narrow neck, steer SSW., passing between it and the group of islands to the southward. When inside the islands, follow the coast line, taking care to keep rather nearer the islands than the mainland, and at least a mile from the latter, to avoid a shoal that makes off from it; there are no hidden dangers outlying from the islands. When the point of the low sand spit, which forms the cove before mentioned, bears west (mag.), haul up for the anchorage.

To pass through the channel to the northward of the two islands which form the north side of the southernmost passage, it is only necessary to keep a reasonable distance off the land on either side.

Fresh water may be obtained from springs, near the anchorage, at the foot of the round-topped mountain, 3,423 feet high; their situation is marked by a growth of weeds and bushes.

The bay abounds in fish and turtle, and good oysters may be gathered along the rocky shores. Banks of pearl oysters are also reported to exist.

The country in the vicinity is said to be rich in copper ores, sulphur, and argentiferous lead.

In the northern part of the bay is a deep bight, formed by a narrow neck of land that projects $3\frac{1}{4}$ miles in a south-easterly direction from the mainland. This bight has not been examined.

The magnetic variation in Angeles Bay was 12° 20' E. in 1877, increasing about 2' annually. Spring tides rise about 12 feet.

Smith's Island is the northernmost and largest of the islands lying off the entrance to Angeles Bay. It is high and flat topped, nearly 4 miles long, from one-quarter to over three-quarters of a mile wide; and, at its north-western extreme, 1,554 feet high. An islet 60 feet high lies off its north-western point, separated from it by a narrow boat channel. Off its western face, about midway of its length and con-

Fresh water.

Fish, turtle, oysters, &c.

Minerals.

Variation.

Tides.

Smith's Island.