

idly. The remaining shores of the island consist of almost perpendicular bluffs, varying in height from 100 to 500 feet, with short stretches of gravel and shingle beaches intervening.

**Channels.** The channels between San Esteban and Tiburon on the north and San Lorenzo on the west, are free from dangers, with soundings of 100 fathoms and upwards.

**San Miguel Point.** San Miguel Point, on the Sonora coast, is low, sandy, and covered with bushes. A shoal with 3 fathoms of water at its outer edge makes off three-quarters of a mile from its southern side.

From here the general trend of the coast is S. 42° E. (SE.  $\frac{3}{4}$  E. mag.). Just south of the point it lies nearly east and west, and for a distance of 4 miles is low and sandy. Then follow steep bluffs, terminating in Dark Bluff, 175 feet high, back of which, a short distance inland, a sharp peak rises to a height of 1,480 feet. After passing Dark Bluff the coast becomes low again.

**Kino Point and Bay.** Kino Point bears S. 42 E. (SE.  $\frac{3}{4}$  E. mag.) 17 $\frac{3}{4}$  miles distant from San Miguel Point and S. 88° 30' E. (E. by N. mag.) 15 $\frac{3}{4}$  miles distant from the south-east extremity of Tiburon Island. It is a prominent point, of moderate elevation, with a group of hills, the highest of which reaches an altitude of 1,336 feet, rising a short distance back of it.

The soundings between Kino Point and Tiburon are very regular, but show comparatively shoal water, 14 fathoms being the greatest depth obtained.

Kino Bay lies just north of the point of the same name. Throughout the greater part of its extent the water is shoal, but small vessels may anchor in it and find shelter from the prevailing winds. Tides rise about 6 feet.

**Tides.**

**Pelican Island.** Pelican Island, in the northern part of Kino Bay, lies 3 miles N. 10° W. (NNW. mag.) from Kino Point and a little over a mile from the nearest main-land to the eastward, the channel between it and the main-land having a greatest depth of 1 $\frac{3}{4}$  fathoms. It is small in extent and 540 feet high. Its shores, with the exception of the south-western face, which is of rocky bluffs, are low and sandy. In its northern part is a small lagoon.

**LaCruz Lagoon.** LaCruz Lagoon, which has several branches spreading out through a low, flat country, opens into the head of Kino Bay. The entrance, which is half a mile wide, has a greatest depth

of 2 fathoms, but a bar which extends off from it a short distance has only 1 $\frac{1}{2}$  fathoms on it; the depth of water inside the lagoon was not examined.

The Sonora River, which rises near the southern boundary of Arizona, and with its tributaries drains the greater part of the province of Sonora, divides into several branches, which disappear in the low country surrounding La Cruz Lagoon. Ures, the capital of Sonora, and Hermosillo, an important city (see page 157), are situated on the banks of the Rio Sonora.

Rio Sonora.

Ures, Hermosillo.

The coast south-eastward of Kino Point is for about 5 miles rocky, sloping from the hills a short distance back. There are several small outlying rocks near the shore.

Five and a quarter miles south-eastward of Kino Point the shore becomes low and sandy, with a scanty growth of bushes, and sand hills from 25 to 50 feet in height. It retains this character for a distance of 30 miles, and is known as the San Juan Bautista Flats.

San Juan Bautista Flats.

The Rio de la Poza, which, like the Rio Sonora, divides and disappears in the San Juan Bautista Flats during the dry season, overflows them in the wet season, carrying vast quantities of sand into the gulf and creating extensive shoals along this part of the coast.

Rio de la Poza.

Twenty-two and a quarter miles south-eastward of Kino Point, a low, sandy point projects over a mile from the general coast line, and a sandy shoal, with 3 fathoms of water on its outer edge, extends over 3 $\frac{3}{4}$  miles off from the point to the south-westward. The SW. point of the shoal lies on the following bearings, viz: Highest peak of San Pedro Martir Island (1,052 feet high) S. 86° W. (WSW.  $\frac{1}{2}$  W. mag.), distant 30 miles; hill back of Kino Point (1,336 feet high) N. 21° W. (NW. by N. mag.), distant 20 $\frac{3}{4}$  miles.

Shoal.

Care should be taken to give the shoal just mentioned a good berth, as appearances seem to indicate that it is increasing in extent to the south-west and west. Only 6 fathoms of water are found 5 miles to the westward of the low sand point.

Caution.

The Estero de Tastiota, which is situated at the southern limit of the San Juan Bautista Flats, has a narrow entrance, through which only 3 feet of water can be carried at high tide. Outside the entrance the water is shoal for about a

Estero de Tastiota.

mile off shore; inside it expands to a considerable size, trending to the northward, a range of hills rising behind it.

**Fresh water.** Fresh water may be obtained near the head of the estero.

**Anchorage.** Anchorage may be had in *good weather* off the mouth of the Estero de Tastiota in 6 or 7 fathoms of water, half a mile off shore.

**Morro Colorado** Morro Colorado is a remarkable head-land 758 feet high and of a reddish color. It is situated a little less than 5 miles south-eastward of the entrance to the Estero de Tastiota, the intermediate coast consisting of steep bluffs from 50 to 75 feet high, with a number of outlying rocks. Hills rise immediately back of the coast.

From Morro Colorado to San Pedro Point, a distance of  $17\frac{1}{2}$  miles, the coast trends S.  $32^{\circ}$  E. (SE.  $\frac{1}{8}$  S. mag.) and is high and barren; rugged, bluff points from 300 to 500 feet high alternating with short, steep stretches of sand beach. Throughout the entire distance there is no shelter from the prevailing winds, nor any safe anchorage. A number of detached rocks awash and above water lie off this part of the coast.

**Las Piedras Blancas.** Las Piedras Blancas are three white rocks, one of which is 60 feet high, and the other two 15 feet in height. The largest of these rocks lies 7 miles south-eastward of Morro Colorado, and a little over three-quarters of a mile from the shore; the other two lie from  $1\frac{1}{4}$  to  $1\frac{3}{4}$  miles on either side of it—one to the northward, the other to the south-eastward.

Another group, consisting of 4 rocks, varying in height from 15 to 100 feet, lies between 3 and 4 miles to the northward of San Pedro Point and less than a quarter of a mile from the shore.

**San Pedro Point and Bay.** San Pedro Point is a bold, rocky head-land 525 feet high. San Pedro Bay is a small cove lying to the south-eastward of the point of the same name. The entrance, which is three-eighths of a mile wide, lies between two steep, rocky heads, and has a depth of from 5 to 8 fathoms. The head of the bay, which is somewhat less than half a mile from the entrance, is a sand beach, with a range of hills lying back of it. The soundings decrease gradually toward the shore.

**Anchorage.** Anchorage in from 5 to 6 fathoms of water, with shelter from the north-west winds, will be found about midway of the entrance. The magnetic variation was about  $11^{\circ} 30'$  in

**Variation.** 1877, increasing about  $2'$  annually. Tides rise about 5 feet.

**Tides.**

San Pedro Nolasco Island is a barren rock of volcanic origin, lying  $8\frac{1}{4}$  miles to the south-westward of San Pedro Point. It is  $2\frac{1}{4}$  miles in length, parallel with the coast, three-quarters of a mile wide in the centre, and varies in height from 500 to 1,071 feet. There is a place on the SE. side where a landing may be effected; in every other part it is inaccessible. Some deposits of guano are said to exist on it. Off the southern extreme there are some outlying rocks close to, elsewhere the water is deep close to the bluffs. Soundings of 35 and 40 fathoms were obtained along the eastern side, a cable's length off shore.

South-eastward of San Pedro Point the coast has the same rugged character as above it, for a distance of  $5\frac{1}{4}$  miles, or as far as Point San Eduardo, which is a rocky, bluff point 60 feet high, the land back of it sloping from a mountain  $2\frac{1}{4}$  miles distant and 2,422 feet high, known as Algodones.

Three-quarters of a mile to the south-eastward of Point San Eduardo, and close to the shore, is a small islet, or rock, 40 feet high, with a rock awash just outside of it.

Between Point San Eduardo and Point San Antonio, a distance of  $5\frac{1}{4}$  miles, the coast is low and generally sandy. Southward of Algodones Mountain, close to its foot and half a mile from the beach, is a ranch, with *fresh water* and considerable cultivated ground in the vicinity.

The Algodones are three small islands lying about  $1\frac{1}{2}$  miles to the north-westward of Point San Antonio. They extend about a mile in a line nearly at a right angle with the coast line, and the largest is a little over a cable in width.

Venado, the outermost and largest of the three, is about 150 feet high, steep and rocky. About four cables east of its SW. extremity lies a solitary rock 5 feet above water.

San Luis, the second in size of the Algodones Islands, is about 30 feet high, with a passage less than 150 yards wide between it and the main-land.

Doble, the smallest of the three, lies between the other two.

A cable to the northward of the NE. end of San Luis is the entrance to a small lagoon.

Point San Antonio is low and rocky, the hills back of it rising to a moderate height. On its NW. side, close to, is an outlying rock 30 feet high.

Along this part of the coast the soundings show deep

San Pedro Nolasco Island.

Fresh water.

Algodones Islands.

Venado.

San Luis.

Doble.

Point San Antonio.

water close to the shore, 23 fathoms being found within half a mile of the point, increasing to over 100 fathoms  $3\frac{1}{2}$  miles off.

From Point San Antonio the coast trends about east for  $2\frac{1}{4}$  miles, and is of a rocky formation, with many outlying rocks both above and below water.

**Tetas de Cabra.** The Tetas de Cabra are two remarkable peaks, 1,633 feet high, situated about a mile and a half to the eastward of Point San Antonio and less than half a mile back of the beach. They resemble, as their name implies, a goat's teats, and are a valuable land-mark in making the port of Guaymas. (View opposite page 155.)

**Point Doble.** Point Doble,  $2\frac{1}{4}$  miles east of Point San Antonio, is a head-land from 200 to 300 feet in height, and of an average width of  $1\frac{1}{2}$  cables; it projects to the southward from the general coast line nearly a mile. The southern extremity of this head-land, which is 50 feet high, is called Point Doble.

On the west side of the head-land, where it joins the coast, is a small open bay with a sandy shore, known as the Ensenada de las Tetas.

**Point San Guillermo.** Point San Guillermo is a rocky point projecting from the east side of the head-land just mentioned. A number of detached rocks lie off the point, and about half way between it and Point Doble is a *rock* 150 feet high, known as Santa Catalina Island.

**Point Paredones.** Point Paredones is a bluff point situated at the eastern side of the entrance to Puerto San Carlos. The extremity of the point is 3 cables north of Point San Guillermo, and  $1\frac{1}{2}$  cables east of the nearest part of the head-land of which Point Doble is the southern extremity.

**Puerto San Carlos.** Puerto San Carlos is a small land-locked harbor which affords an excellent anchorage, with perfect shelter, for small vessels. The entrance, which is between Point Paredones and the head-land mentioned above, is only a cable in width at its narrowest part, with from 4 to 8 fathoms of water. Inside, the width of the harbor increases to a quarter of a mile, the water shoaling gradually toward its head, 3 fathoms being found 4 cables from the narrowest part of the entrance.

**San Nicolas Island.** San Nicolas Island is a small islet about 50 feet high, and surrounded by detached rocks. It lies a scant half mile eastward of Point San Guillermo, and about the same dis-

tance from the nearest land to the northward. In the channel between it and Point San Guillermo there are from 9 to 11 fathoms of water.

The passage between it and the main-land to the northward is considered dangerous, being full of rocks and islets.

Punta de las Cuevas is a sharp bluff point situated half a mile eastward of Point Paredones. Between the two points and San Nicolas Island are some outlying rocks and islets, making the channel dangerous, as mentioned above.

The Ensenada of San Francisco is a large open bay formed by a sweep to the northward of the coast line east of Punta de las Cuevas. The shore in the western portion of the ensenada is hilly, in the eastern portion of the north shore it is low and sandy, the low-land extending well into the interior. The eastern shore is for the most part rocky, with bluffs, high land rising immediately back.

An extensive lagoon known as the Estero Soldado opens into the north-eastern part of the bay, and there are several islets and rocks within its limits.

Chapetona lies in the north-western part of the Ensenada de San Francisco, and is a barren islet about half a mile long and 40 feet high, with steep bluff shores and numerous outlying rocks.

Medio and Candelero Islands, in the eastern part of the ensenada, are respectively 20 and 35 feet high. About a cable north of Medio is a detached rock 40 feet high, and about the same distance north of Candelero is one 8 feet high, between which and Medio is a channel nearly half a mile wide and apparently free from dangers. All three of these islands are surrounded by outlying rocks close to.

The Ensenada de Bocochibampo is an open bay a little more than a mile in extent either way, lying north of Colorado Point. There is from 8 to 10 fathoms of water at the outer limit of the bay, decreasing rapidly toward the head.

Good anchorage may be had in 4 or 5 fathoms, half a mile from the beach in the north-eastern part of the bay.

Fresh water, fresh beef, fruit, &c., may be obtained.

Just back of the eastern shore of the bay is a shallow lagoon, into which only boats can enter.

Cerro Bocochibampo (two peaks), 1,643 feet high, lies about a mile to the northward of the northern shore of the ensenada of the same name.

Punta de las Cuevas.

Ensenada de San Francisco.

Estero Soldado.

Chapetona, Medio, and Candelero Islands.

Rocks.

Ensenada de Bocochibampo.

Anchorage.

Supplies.

Cerro Bocochibampo.

**Point Colorado.** Point Colorado is a prominent head land 60 feet high, connected with the main-land by a low, narrow strip of sand beach. Off its southern side are numerous detached rocks.

**Blanca Island.** Blanca Island, lying about 300 yards to the north-westward of Point Colorado, is about 230 yards long and 100 feet high.

The coast from Point Colorado to Cape Haro is irregular in its outline, high and barren, with numerous projecting head-lands and outlying rocks.

**Cape Arco.** Cape Arco, two and a half miles S. 25° E. (SE.  $\frac{3}{4}$  S. mag.) from Point Colorado, is a high, rocky bluff, with a hill 862 feet high, rising abruptly back of it. About half way between the two points, a little nearer Cape Arco, and a quarter of a mile from the nearest shore, is a solitary rock 30 feet high.

**Lobos Island.** Lobos Island is a large rock 125 feet high, lying 2 cables to the north-westward of Cape Arco and close to the shore. From 3 to 5 cables northward of Lobos Island is a group of rocks lying a short distance off the land, some of which are from 30 to 40 feet high.

**Mesquite Point.** Mesquite Point, which is 250 feet high, is a little more than  $1\frac{1}{4}$  miles eastward of Cape Arco.

**Ensenada Carisel.** Between Cape Arco and Mesquite Point there is a deep bight, known as Ensenada Carisel. It is entirely open to the southward and has a short strip of sand beach in its most northern part. Part of its northern shore is of rocky bluffs, with outlying rocks.

**San Rafael Point.** San Rafael Point is a rocky, bluff point, situated about midway between Mesquite Point and Cape Haro. Mount San Rafael, 1,200 feet high, bears N. 25° E. (N. by E.  $\frac{1}{4}$  E. mag.) from it, distant 5 miles.

**Cape Haro.** Cape Haro is the southern extremity of the peninsula upon which Guaymas is situated.

It is a prominent, rocky head-land, surmounted on its western end by a bold hill 365 feet high, and may be closely approached, upwards of 20 fathoms of water being found within a cable's length of it. There are many conflicting reports regarding the strength and direction of the currents off this part of the coast, but it is evident that they depend greatly, if not entirely, on the force and direction of the wind.

The south point of the island of San Pedro Nolasco bears N. 74° W. (W.  $\frac{3}{4}$  N. mag.), 27 miles distant from Cape Haro.

Eastward of Cape Haro is a large bay 13 miles in extent, from the cape to the nearest point of land to the eastward, and about  $4\frac{1}{2}$  miles deep from a line drawn between the two points. Throughout its extent the water is of moderate depth.

The harbor of Guaymas opens into the north-western part of this bay.

From Cape Haro to San Vicente Island the coast is steep and rocky, with an irregular and broken outline.

Point Narisson, the first prominent point north of Cape Haro, is 8 cables distant from it, and is composed of high, rocky bluffs.

Catalina Bay is a small cove, open to the eastward, the entrance being between Points Maria and Ventana, the former of which is a little more than half a mile north of Point Narisson. The soundings in the bay are regular, varying from 3 fathoms near the shore at its head, to 8 and 10 fathoms at the entrance.

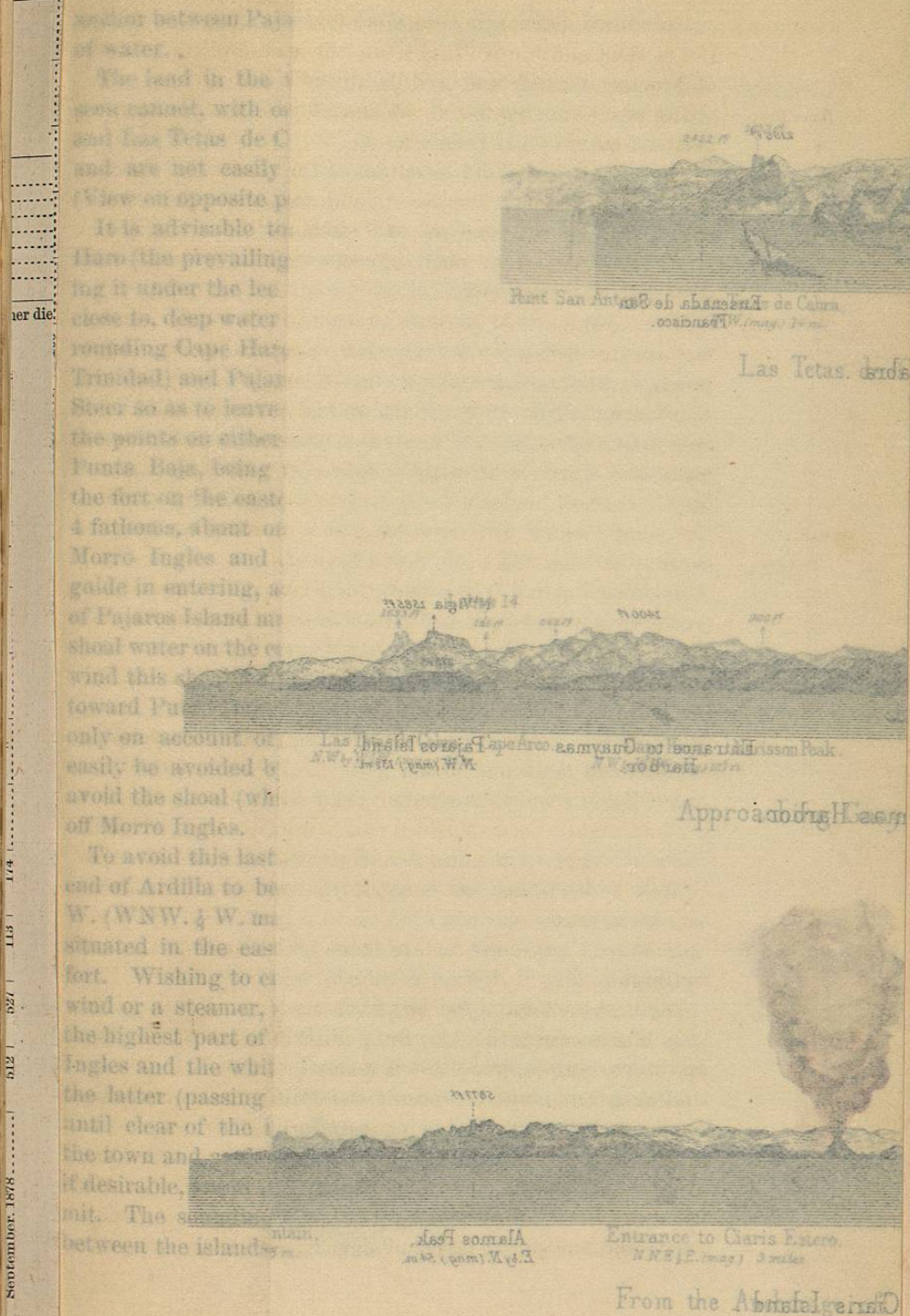
San Vicente Island, formerly known as Trinidad, is the western point of the entrance to the harbor of Guaymas. It is separated from Paz Point on the main-land by a channel 100 yards wide, through which  $2\frac{1}{2}$  fathoms of water may be carried. The name Trinidad was probably given to this island from the fact that, in connection with a large outlying rock to the northward, it appears from a short distance like three separate islands.

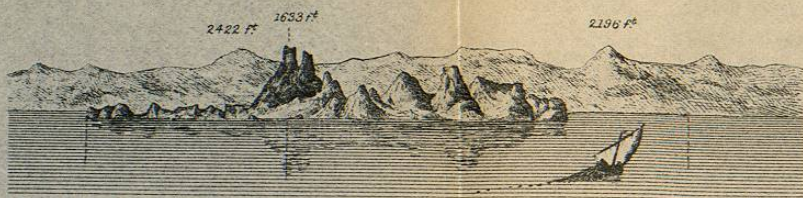
Pitahaya Island, lying just north of Paz Point, is high, rocky, and of small extent. The channel between it and the point is a little over a cable in width, with from 2 to 3 fathoms of water. On the main-land to the eastward of Pitahaya is a small stream emptying into the bay. It is said that fresh water may be obtained a short distance up this stream.

Pajaros is a long rocky island, the highest point of which is 212 feet high. It forms the eastern side of the entrance to Guaymas harbor, the channel between it and San Vicente being 8 cables in width, with 6 fathoms of water. From its SW. extremity a rocky reef makes off a short distance to the northward, and a similar one makes off from its NE. extreme.

Guaymas Harbor may be considered as divided in two parts, viz: An outer harbor, where vessels of 20 or 22 feet draught may anchor, and an inner one where those of not over 15 feet draught may lie.

- ✓ Outer Harbor. The outer harbor occupies a space inclosed between Punta Baja and Morro Ingles on the east and the islands of Almagre Grande and Ardilla on the west.
- ✓ Inner Harbor. The inner one lies inside of the islands just mentioned, between them and the main-land.
- ✓ Punta Baja. Punta Baja lies about 8 cables to the north-westward of the SW. extreme of Pajaros Island, the channel between having a depth of from  $5\frac{1}{2}$  to 7 fathoms. It is a rocky, bluff point, with some outlying rocks close to; back of it the land rises gradually.
- ✓ Morro Ingles. Morro Ingles is a solitary, rocky hill situated at the western extremity of a long, low, narrow strip of sand beach, known as the Playa de las Dolores. It bears N. by E. (N. mag.) from Punta Baja and is three-quarters of a mile distant from it, the navigable channel between them being half a mile wide, with a depth of from 3 fathoms near the shore on either side to  $5\frac{1}{2}$  and 6 fathoms in the middle.
- ✓ Shoal. A shoal which is partly bare at low water extends 3 cables westward from the Morro Ingles.
- ✓ Boca Chica. Between Pajaros Island and the Playa de las Dolores is a passage through which 12 feet draught may be carried. This passage is known as the Boca Chica.
- ✓ Almagre Grande. The centre of Almagre Grande bears S.  $78^{\circ}$  W. (SW. by W.  $\frac{1}{2}$  W. mag.) from Morro Ingles, and with Ardilla, which lies directly north of it, distant 350 yards, forms the western boundary of the outer harbor.
- ✓ Ardilla. Ardilla is somewhat smaller than Almagre Grande and 112 feet high. On its eastern end is a fort.
- The passage to the inner harbor lies between Almagre Grande and Ardilla, and is about  $1\frac{1}{2}$  cables in width at the narrowest part.
- ✓ Almagre Chico. Almagre Chico lies west of Almagre Grande and is 158 feet high.
- ✓ Anchorage. The best anchorage for large vessels is on or just inside of a line between the highest points of Almagre Grande and Morro Ingles, in  $3\frac{1}{2}$  to 4 fathoms of water, where good holding ground will be found, with protection from every wind. Smaller vessels having a draught of not over 12 or 13 feet may proceed farther in, passing between Almagre Grande and Ardilla, and anchor in  $2\frac{1}{2}$  to  $2\frac{3}{4}$  fathoms, half a mile from the landing place. The inner anchorage is perfectly land-locked. Vessels of over 22 feet draught should





Point San Antonio.

Las Tetas de Cabra.  
*N.W. (mag.) 1 1/2 m.*

Ensenada de San Francisco.

Las Tetas de Cabra.



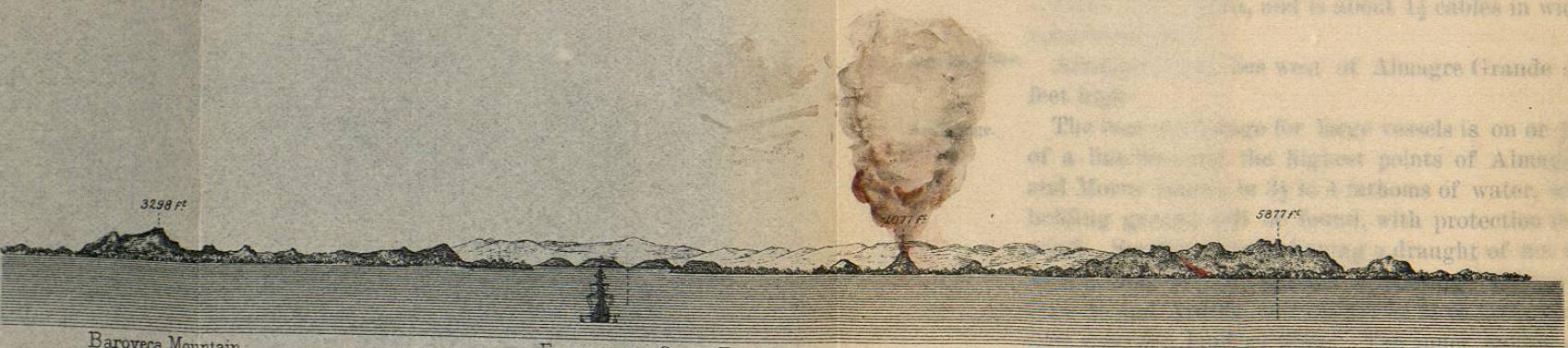
Las Tetas de Cabra, Cape Arco.  
*N.W. by W 1/4 W. (mag.) 2 1/2 m.*

Cape Haro, Narisson Peak.  
*N.W. by W 3/4 W. (mag.) 12 1/2 m.*

Entrance to Guaymas Harbor.

Pajaros Island,  
*N.W. (mag.) 13 1/2 m.*

Approaching Guaymas Harbor.



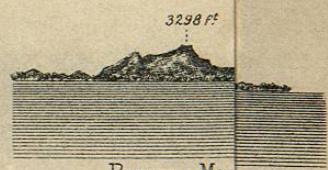
Baroyeca Mountain,  
*N 1/2 E. (mag.) 3 1/2 m.*

Entrance to Ciaris Estero.  
*N.N.E 1/2 E. (mag.) 3 miles.*

Alamos Peak,  
*E. by N. (mag.) 5 1/2 m.*

From the Anchorage off Ciaris Island.

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 Ho 93ar



3298 ft.

Baroyeca Mou  
 N ½ E. (mag.) 3

anchor between Pajaros Island and Punta Baja, in 6 fathoms of water.

The land in the vicinity of Guaymas having been once seen cannot, with ordinary care, be mistaken. Cape Haro and Las Tetas de Cabra are probably the best land-marks and are not easily mistaken even by an entire stranger. (View on opposite page.)

Directions ✓

It is advisable to make the land to windward of Cape Haro (the prevailing wind being from the north-west), keeping it under the lee until close in, when it may be rounded close to, deep water extending close up to the rocks. After rounding Cape Haro the entrance between San Vicente (or Trinidad) and Pajaros Islands will be readily distinguished. Steer so as to leave Pajaros on the starboard hand, giving the points on either side a berth of a cable. After passing Punta Baja, being in about 6 fathoms of water, steer for the fort on the eastern end of Ardilla Island and anchor in 4 fathoms, about on a line between the highest parts of Morro Ingles and Almagre Grande. The lead is a safe guide in entering, and after passing the south-western end of Pajaros Island must be kept going, to avoid getting in the shoal water on the east side of the channel. With a leading wind this shoal may be easily avoided by keeping well over toward Punta Baja. In beating in care must be taken not only on account of the shoal just mentioned, which may easily be avoided by a proper use of the lead, but also to avoid the shoal (which partly uncovers at low water), lying off Morro Ingles.

To avoid this last shoal, do not bring the fort on the east end of Ardilla to bear anything to the westward of N. 57° W. (WNW. ¼ W. mag.), or do not open the cemetery that is situated in the eastern outskirts of the town, east of the fort. Wishing to enter the inner harbor, if with a leading wind or a steamer, steer from the outer anchorage toward the highest part of Ardilla until on a line between Morro Ingles and the white fort on Point Cantara, then steer for the latter (passing between Almagre Grande and Ardilla), until clear of the islands, when haul up for the centre of the town and anchor as soon as well clear of the passage, or, if desirable, stand in as far as the vessel's draught will permit. The soundings decrease regularly from the passage between the islands toward the shore. With a head wind

CAPITA Y M. GUAYMAS