

the eye and lead are safe guides, care being taken not to approach the shores of the islands too closely. The magnetic variation was  $11^{\circ} 45'$  E. in 1878, increasing about  $2'$  annually. H. W., F. and C., at VIII<sup>a</sup>. Tides rise about 4 feet.

✓ Variation.  
✓ Tides.  
✓ Guaymas.

Guaymas is surrounded by high mountains, and is extremely hot in the rainy season. The fevers prevalent at San Blas and Mazatlan prevail here, but in a lesser degree. The population in January, 1874, was about 4,000, most of whom were in a state of wretched poverty, the entire business of the place being monopolized by a few wealthy firms and individuals. There is a regularly appointed sanitary commission, a military and civil hospital, and a garrison of 250 men. A number of Yaqui Indians (about 500) occupy one section of the city. These Indians are very intelligent, and possess considerable mechanical ingenuity. They are experts in saddlery and the manufacture of straw goods; their earthen ware is of good quality, and the *serapes* (shawls), which they weave by hand, are unsurpassed for beauty and fineness of texture.

Within the city are a number of fine structures of the architecture peculiar to the country, and a few of the American style. The climate from November to April is pleasant, but the heat during the summer months, from June to September, is excessive, the mercury reaching  $105^{\circ}$  to  $110^{\circ}$  and seldom falling below  $97^{\circ}$  or  $98^{\circ}$ . When the hot winds visit the town, as they often do in the summer months, it frequently reaches  $135^{\circ}$ .

✓ Supplies.

Fresh water of an indifferent quality may be procured, but the price is exorbitant; the same may be said of wood. Excellent flour, fresh bread and beef may be obtained in any quantity at moderate prices. Good oysters from the Yaqui River are found in the market at the proper season. No salt provisions or ship's stores can be purchased. At the time of the *Narragansett's* visit the Colorado Steam Navigation Company had a small amount of coal for steaming purposes on deposit here.

✓ Commerce.

The exports are wheat, corn, flour, cotton, tobacco, unrefined sugar, aguadiente, dried beef, hides, gold, silver, and copper. The imports are the products of the more southern provinces, with East Indian and European manufactured goods.

✓ La Laguna.

La Laguna is an extensive sheet of water lying to the

northward of the outer anchorage of Guaymas and the Playa de las Dolores, with an average depth of 2 fathoms in its southern part. The northern part is full of shoals and sand bars, with a narrow channel, in which there is from 6 to 8 feet of water, extending as far as Blanco Point, which is  $2\frac{1}{2}$  miles nearly north of Morro Ingles. At Blanco Point a sand-spit makes off to the eastward half a mile, nearly joining one making off the same distance from the opposite shore, the channel between them being less than 100 yards in width. Northward of this, La Laguna is with the exception of a few narrow boat channels, dry at low-water springs. A fresh-water stream, known as the Estero del Rancho empties into La Laguna a short distance north-westward of Blanco Point.

San José de Guaymas lies on both sides of the Estero del Rancho  $1\frac{1}{2}$  miles from its mouth. It is inhabited by civilized Indians of the Yaqui tribe. The country in the vicinity and far into the interior is level and sandy.

San José de Guaymas. ✓

Hermosillo is the principal town in this part of Sonora. It is situated north of Guaymas, distant from it by the road 84 (statute) miles, and lies in a gap which the Rio Sonora has cut through the western range, surrounded by high hills. It has a population of about 15,000, and is the centre of an important silver mining region. There is a mint for coining silver dollars; and cotton goods and brandy are manufactured to some extent. Maize, cotton, and fruit are exported by way of Guaymas, which is its sea-port.

Hermosillo. ✓

From Morro Ingles the coast trends nearly east for a distance of 12 miles, to another conical hill, 379 feet high, known as Cerro Yacicoris. This part of the coast, which is a smooth sand beach, is called El Cochore.

El Cochore. ✓

Two and a quarter miles east of Morro Ingles, separated from the waters of the gulf by a narrow strip of sand beach, is a small lagoon, called Estero Cochore, which has an opening into La Laguna. Three and a half miles farther east is a deserted village in a conspicuous grove of palm trees, close to the beach.

Estero Cochore. ✓

Soundings obtained off this part of the coast show a less depth of water than is given on charts made from former surveys. Four and five fathoms only were found in places where the charts gave 6 and 7 fathoms. This would seem to indicate that the mud and sand brought down by freshets

Soundings. ✓

in the streams of this vicinity is deposited in the outer bay of Guaymas, and not carried off by the coast currents.

✓ Cerro Tordillo. About midway between Morro Ingles and Cerro Yacicoris is a bluff point, with a conspicuous hill a short distance back of it, known as Cerro Tordillo.

✓ Viejo Yaqui. Eastward of Cerro Yacicoris is a deep indentation in the coast line, filled with shoals and sand bars, and navigable only for boats. The river known as Viejo Yaqui, or Rio de Matape, which takes its rise in the Sierra Yaqui, and is dry during the greater part of the year, empties into this bay or indentation.

✓ Coal mines. San Marcial, 60 miles up the Rio de Matape, is the nearest place to Guaymas where coal is found, and in the future it may be of importance to the prosperity of that place. At present the difficulties of transportation are too great to make working the mines profitable.

✓ Bacatete. Seventeen and a quarter miles N. 62° E. (NE. ½ E. mag.) from Cerro Yacicoris is a conspicuous peak of the Sierra Yaqui, known as Bacatete Mountain or Guaymas Peak.

From Cerro Yacicoris to Lobos Point, a distance of 31 miles, the coast trends nearly south, and is low and sandy, being merely a strip of sand separating the waters of the gulf from the numerous lagoons that lie back of it. None of these lagoons are navigable except by boats or vessels drawing less than 6 feet of water. Sandy shoals extend off this part of the coast from half a mile to a mile and a quarter, with not more than 3 fathoms of water on their outer edge. Outside the shoals the soundings increase regularly until about 6 miles off and about on a line between Cape Haro and Lobos Point, when they increase suddenly from about 40 to 190 and 200 fathoms.

✓ Yaqui River. The Yaqui River is the largest stream in the province of Sonora, and is indeed the only one deserving the name of river. It rises in the mountains near the Arizona boundary and, flowing in a southerly direction, empties into the Gulf of California about midway between Cape Haro and Lobos Point. The mouth of this river is filled with shoals and sand bars, and in the dry season it is navigable only by the smallest coasters. It has three outlets, which from a short distance appear like lagoons. A sand bank over 2 miles long and from a quarter to half a mile wide, over which the

sea breaks, extends across its mouth, having passages at either end between it and the shore.

The banks of the Yaqui for some distance from the coast are inhabited by the tribe of Indians of the same name.

There are said to be extensive fields of an excellent quality of coal on both sides of the Upper Yaqui, which may give it some importance in the future.

Baroyeca Mountain, which lies 50 miles S. 85° E. (E. ½ N. mag.) from the centre of the sand bar off the entrance to the Yaqui River, affords a good land-mark. It is 3,298 feet high.

Lobos Point, at the south-western extreme of Lobos Island, is low and sandy, with a dangerous shoal making off nearly 2½ miles to the north-westward. At the outer edge of this shoal from 5 to 7 fathoms of water were found, the soundings increasing within less than a tenth of a mile to 95 fathoms and over; bottom of fine, dark sand. Southward of the point vessels may anchor in good weather in 6 fathoms, half a mile from the shore.

Lobos Island is low and sandy, 4½ miles long nearly ESE. and WNW., and about 1½ miles wide. It is separated from the main-land by the Estero de la Luna, which has openings to the gulf on its north and east sides. The highest part of the island is a remarkable green mound, Monte Verde, 75 feet high, situated about a mile and a half eastward of Lobos Point. Between the hill and the point is a solitary palm-tree, which serves as a land-mark for the coasters.

The magnetic variation at Lobos Point was 11° 20' E. in 1877, increasing about 2' annually. Tides rise about 4 feet.

Strong currents, variable in direction, are often encountered in this vicinity, and fogs are of frequent occurrence.

The coast from Lobos Point to the north-western end of Ciaris Island, a distance of 42 miles, trends S. 60° E. (ESE. ¾ E. mag.), and has the same general character as above the point, viz: low, sandy, covered with bushes, and cut up by lagoons, off the entrances to which, shoal water extends from one to two miles. The soundings 3 miles off shore show a depth of from 6 to 10 fathoms.

About midway between Lobos and Ciaris Islands is the former mouth of the Mayo River, Viejo Mayo, off which there is a bar over which the sea breaks.

Eight miles north-westward of Ciaris Island and about a

Indians. ✓

Coal. ✓

Baroyeca. ✓

Lobos Point. ✓

Shoal.

Lobos Island. ✓

Monte Verde. ✓

Palm tree. ✓

Variation. ✓

Tides. ✓

Currents. ✓

Viejo Mayo. ✓

Island. ✓

mile off the entrance to a lagoon is a small sand island, 3 feet above the level of the water. At this point shoal water extends over two miles off shore.

✓ Ciaris Island. Ciaris Island is similar in appearance to Lobos Island and can only be distinguished from it by the absence of the solitary palm-tree. It is a little over 12 miles long, parallel with the coast, and from half a mile to a mile in width. It is separated from the main-land by a narrow estero of the same name, the entrance to which, at the north-western end of the island, is over a mile and a half wide, but shoal, with heavy breakers clear across it.

Just west of the north-west point of Ciaris is a low, sand islet a mile long and about 2 feet above water. A shoal makes out to the westward from it over  $1\frac{1}{2}$  miles.

✓ Anchorage. Vessels may anchor anywhere along the coast between Lobos Point and Ciaris Island, in fine weather, taking care not to approach the land within 3 miles, or to get in less than 6 fathoms of water. A view from the *Narragansett's* anchorage off the NW. point of Ciaris Island is given opposite page 155.

✓ Variation. The magnetic variation at the NW. end of Ciaris Island was  $11^{\circ} 15'$  E. in 1877, increasing about  $2'$  annually. Tides rise about 4 feet.

✓ Alamos Peak. Alamos Peak is a conspicuous sharp mountain, 5,877 feet high, bearing S.  $88^{\circ}$  E. (E.  $\frac{3}{4}$  N. mag.), 51 miles distant from the north point of Ciaris Island.

✓ Arboleda Point. Arboleda Point is an indefinite rounding point situated  $13\frac{1}{2}$  miles to the south-eastward of the NW. point of Ciaris Island, on an island  $2\frac{3}{4}$  miles long in a north and south direction, and something more than half a mile wide, separated from the main-land by the continuation of Ciaris Estero. There are some clumps of scrubby trees on this island which serve as an excellent land-mark for the coasters, being the only ones in the vicinity.

✓ Estero de Santa Lugada. From Arboleda Point the coast trends somewhat more to the eastward. Four and a half miles to the south-eastward of the point is the narrow entrance to the Estero de Santa Lugada, which is of considerable extent. There is a bar with very shoal water at the entrance.

From the entrance of the estero to Punta Rosa the coast is a bare sand beach with a few bushes, and back of the beach is a series of yellowish sand hills from 50 to 85 feet high.

Punta Rosa is a low, reddish point. From here the coast turns sharply to the north-eastward for about a mile, and then trends nearly east for  $8\frac{1}{2}$  miles, to the mouth of the Mayo River. The bight just east of the point is known as Santa Barbara Bay. ✓

Santa Barbara Bay affords an excellent anchorage in north-west winds, but is entirely open to south-easters. The best anchorage is about a mile east of the point, and the same distance off shore, in about 7 or 8 fathoms of water. ✓

The magnetic variation was  $11^{\circ} 10'$  E. in 1877, increasing about  $2'$  annually. Tides rise about 4 feet. ✓

The country in this vicinity is well watered, fertile, and quite thickly populated. There are several fresh-water lakes or ponds in the vicinity, and a small stream empties into Santa Barbara Bay. Game is very abundant, large numbers of deer, rabbits, wild geese, and ducks were seen. ✓

The Indian villages of Vacamora and Santa Cruz, the latter on the right bank of the Mayo River, lie about 4 miles to the northward of the north shore of the bay. The Indians of this vicinity belong to the Mayo tribe. ✓

The entrance to the Rio Mayo lies about  $9\frac{1}{2}$  miles east of Punta Rosa. It, like all the rivers on this coast, is closed by a bar, leaving a narrow channel on the eastern side through which 2 fathoms may be carried in the dry season. The entrance, which is a mile wide, may be recognized by a bare sand mound 85 feet high on its western side, and a mound 75 feet high, on which there is some vegetation, on the eastern side. Shoal water extends off it for nearly 2 miles. ✓

Just inside of the entrance, on the eastern side, is a snug little cove where small vessels may anchor in 3 fathoms of water and be well sheltered from every wind. The Indian town of Santa Cruz de Mayo lies on the right bank of the river, about 8 miles from its mouth. ✓

Alamos Peak, 5,877 feet high, bears N.  $57^{\circ}$  E. (NE.  $\frac{1}{4}$  E. mag.) 32 miles distant from the eastern point of the entrance to the Mayo River, and is a good land-mark. ✓

The coast from the eastern point of entrance to the Rio Mayo trends about ESE. for a distance of about 9 miles, to an Indian village near the shore, thence to the main entrance to the Estero de Agiabampo, a distance of 16 miles, it trends nearly south, and is throughout the entire distance low, ✓

sandy, covered with a growth of bushes, and cut up by lagoons. Mountain ranges lie from 15 to 18 miles back of the coast.

Estero de Agiabampo.

The Estero de Agiabampo is an extensive lagoon, the entrance to which is narrow and intricate, being obstructed by shoals and sand bars, which extend about a mile off from the general coast line. The least depth found in the channel at low water was 2 fathoms. On either side were shoal patches, with from 3 to 5 feet of water, over which the sea broke heavily.

At the southern point of the entrance is a sand hill 75 feet high, on top of which is a wooden cross that serves as a mark for entering.

Directions.

To enter the estero, bring the cross on the hill to bear S. 84° E. (E.  $\frac{1}{2}$  N. mag.) and steer directly for it until inside of the shoal on the north side of the channel, on which there is but 3 feet of water, then haul up, running parallel to the southern shore and heading for the eastern side of the north point of entrance. This will carry you along the south-eastern side of the outer shoal (on which the sea breaks continually) in from 3 to 5 fathoms of water. There is another channel, with from 2 to 3 fathoms, that may be taken after passing the bar. It lies along the southern shore of the entrance, separated from the one first mentioned, in which there are from 3 to 5 fathoms, by a narrow shoal. Between the north-eastern end of the outer shoal and the north point of the entrance, there is a narrow channel into the estero, with a least depth of 6 feet.

Channel.

At the time of the *Narragansett's* visit there was another passage over the bar through which 2 fathoms might be carried. It was less than a cable in width, between the SW. end of the long outer shoal and the small one, (with 3 feet of water on it,) lying on the north side of the channel first described. To enter this channel bring the cross to bear S. 66° E. (ESE.  $\frac{1}{3}$  E. mag.) and steer for it until inside the line of breakers, then proceed as before. The bar and channels are undoubtedly subject to change and the greatest care is necessary. The best time to enter the estero is with the first of the sea-breeze.

Anchorage.

The best anchorage outside the estero is in about 7 fathoms of water  $1\frac{3}{4}$  miles off shore, the cross on the hill bearing E. (E. by N. mag.), Alligator Hill S. 7° 30' W. (S.  $\frac{3}{4}$  E. mag.), and Alamos Peak N. 23° E. (N. by E. mag.) The

two latter are the best guides for finding the entrance to the estero when off shore, the coast being a long line of sand hills without distinguishing marks.

The magnetic variation was 11° E. in 1877, increasing about 2' annually. Tides rise about 4 feet.

The town of Agiabampo is situated on the north shore of the estero, about  $10\frac{1}{4}$  miles from the bar, and is a place of some importance, being the sea-port of the cities of Alamo (40 miles distant) and Fuerte (45 miles distant), with both of which it is connected by roads. It has a custom-house, and exports treasure, silver ore, and dye-wood.

The coast south of the Estero de Agiabampo trends about S. 25° W. (S. by W.  $\frac{1}{4}$  W. mag.), to the outer edge of the shoal off the mouth of the Rio del Fuerte, a distance of  $22\frac{1}{2}$  miles. It is similar in character to that north of Agiabampo, being low, sandy, and, that part of it lying south of the Alamos River, cut up by lagoons.

The mouth of the Alamos River, which is narrow and has shoal water extending off from it a quarter of a mile, lies  $10\frac{1}{2}$  miles to the southward of the cross on the south side of the entrance to the Estero de Agiabampo. It is navigable only for the smallest coasters. The sea breaks almost continually over the bar at its mouth.

The Rio del Fuerte, or de Santa Maria de Ahome, forms part of the boundary line between the provinces of Sonora and Sinaloa. The entrance, which, like that of all the rivers along this coast, has a bar extending across it, lies 12 miles to the southward of that of the Rio del Alamos.

Fronting the mouth of the river is a sand island a mile long and half a mile wide; at either end of the island are shallow channels leading into the river, which are navigable only by the small coasters. Two or three miles up the river, on either bank, are thick clumps of green trees and bushes. The village of Ahome is on the left bank of the river, about 10 miles from its mouth, and the town of El Fuerte, in an important mining region, is about 75 miles from the mouth of the river.

During the rainy season the river is swollen considerably, and large quantities of dye-wood are floated down in rafts or on flat-boats.

Ahome Point is the north point of entrance to the river just described and is a low sand point projecting over a mile

Variation.

Tides.

Agiabampo.

Exports.

Alamos River.

Rio del Fuerte,  
or de Santa Maria  
de Ahome.

Channels.

Dye-wood.

Ahome Point.

from the general coast line. An extensive shoal, over which the sea breaks, extends off from it in all directions, from a mile to a mile and a half.

✓ Alligator Hill. Alligator Hill is a remarkable flat-topped hill situated 6 miles N. 45° E. (NE. by N. mag.) from Ahome Point and is a good land-mark.

Eastward of Alligator Hill and about 18 miles from the coast is the Sierra de San Pablo, 2,000 feet high.

✓ Lagoon. A lagoon, lying parallel to the coast and having two shallow openings to the gulf, extends 8 or 9 miles northward from Rio del Fuerte.

From Rio del Fuerte to Point San Ignacio, a distance of 19 miles, the coast trends about south, and is low and sandy, consisting of a series of islands, on which are some low sand hills and a scanty growth of bushes. The islands are separated from the main-land by lagoons that lie parallel to the coast.

✓ Estero de las Piedras. The Estero de las Piedras is the northernmost of the two entrances to the lagoons lying between Rio del Fuerte and Point San Ignacio. It is about half a mile in width and has a narrow bar extending a short distance off, over which the sea breaks. The bar is 6 miles south of the sand island off the entrance to the Rio del Fuerte.

✓ Lechuguia. The island of Lechuguia lies south of the Estero de las Piedras. It is 8½ miles long N. and S. and from 1 to 2 miles wide, with a ridge of sand hills from 25 to 50 feet high and some scattered bushes. At its southern end is an entrance to the lagoons, known as Lechuguia Estero, which is 1¼ miles wide, and has an island a mile long and a quarter of a mile wide in its outer part.

✓ Shoal. Off Lechuguia Estero and extending around Point San Ignacio, is a dangerous shoal, over which the sea breaks heavily. Soundings of 5½ fathoms were obtained 4½ miles N. 62° W. (WNW. ½ W. mag.) from Point San Ignacio, the depth increasing suddenly to 60 and 100 fathoms a short distance to the south-westward.

✓ Directions. To clear this shoal, keep the Farallon de San Ignacio on a bearing to the eastward of S. 15° E. (SSE. ¼ E. mag.); when the southern and highest peak of the Sierra de San Pablo bears N. 50° E. (NE. ½ N. mag.) you are to the northward of the shoal.

✓ San Ignacio Point and Bay. Point San Ignacio is a low, sandy point at the southern

end of a small sand island, which lies off the western end of Santa Maria Island, separated from it by a narrow, shoal channel.

From San Ignacio Point the coast turns sharply to the northward for about 2 miles and then curves around to the south-eastern point of Santa Maria Island, known as Santa Maria Point, forming the open bay of San Ignacio.

There is good anchorage in San Ignacio Bay in 5 or 6 fathoms of water, from half a mile to a mile from the northern shore, with protection from the north-westerly winds, but it is entirely open to winds from the southward. Anchorage. ✓

Santa Maria Island, which forms the north shore of San Ignacio Bay, is a sandy island 13½ miles long, with an average width of about a mile. It has a steep beach, with a range of sand hills from 50 to 100 feet high back of it, and a scanty growth of bushes. It is separated from the main-land by a lagoon. Santa Maria Island. ✓

Santa Maria Point, the south-eastern extreme of the island of the same name, is the northern point of the entrance to Topolobampo Harbor. It bears S. 71° E. (E. ¾ S. mag.), 11½ miles distant from Point San Ignacio. Santa Maria Point. ✓