

soon becomes very shallow and tortuous, navigable only by vessels of about 2 feet draft.

The north shore of the river from the mouth of the Santa Clara to Philip's Point and for several miles beyond, is an almost level alluvial plain, subject to overflow at high spring tides.

Montague Island, lying abreast of Philip's Point, on the south side of the main channel, is a low, flat island about 6 miles long in a NW. and SE. (mag.) direction, with a greatest width of 3 miles. It is covered with coarse grass and scattered drift-wood and logs, the latter giving evidence that it is subject to overflow at the time of freshets.

Montague Isl-
and.

There is a passage between it and the right-hand, or western, bank of the river, which may be used at high water by small vessels, but is entirely bare at low-water springs. Southward of the island, along the Lower California shore, a mud bank, bare at low-water springs, extends for nearly 9 miles.

Gore Island, similar in character to Montague Island, lies three-quarters of a mile eastward of the southern part of the latter, separated from it by a channel in which there is at all times over a fathom of water, excepting a narrow bar (2 cables wide), where it joins the main channel, opposite Philip's Point, which is just bare at low-water springs. Gore Island is 2 miles long north and south, and three-quarters of a mile wide, and has a mud bank, similar to that south of Montague Island, extending off from it to the southward and eastward.

Gore Island.

About 3 miles eastward of Gore Island, between the mud bank extending off from it and another similar mud bank 13 miles in length, which lies on the SW. side of the main channel, is a channel nearly a mile wide, through which $1\frac{1}{2}$ fathoms may be carried. It joins the main channel nearly opposite the mouth of the slough.

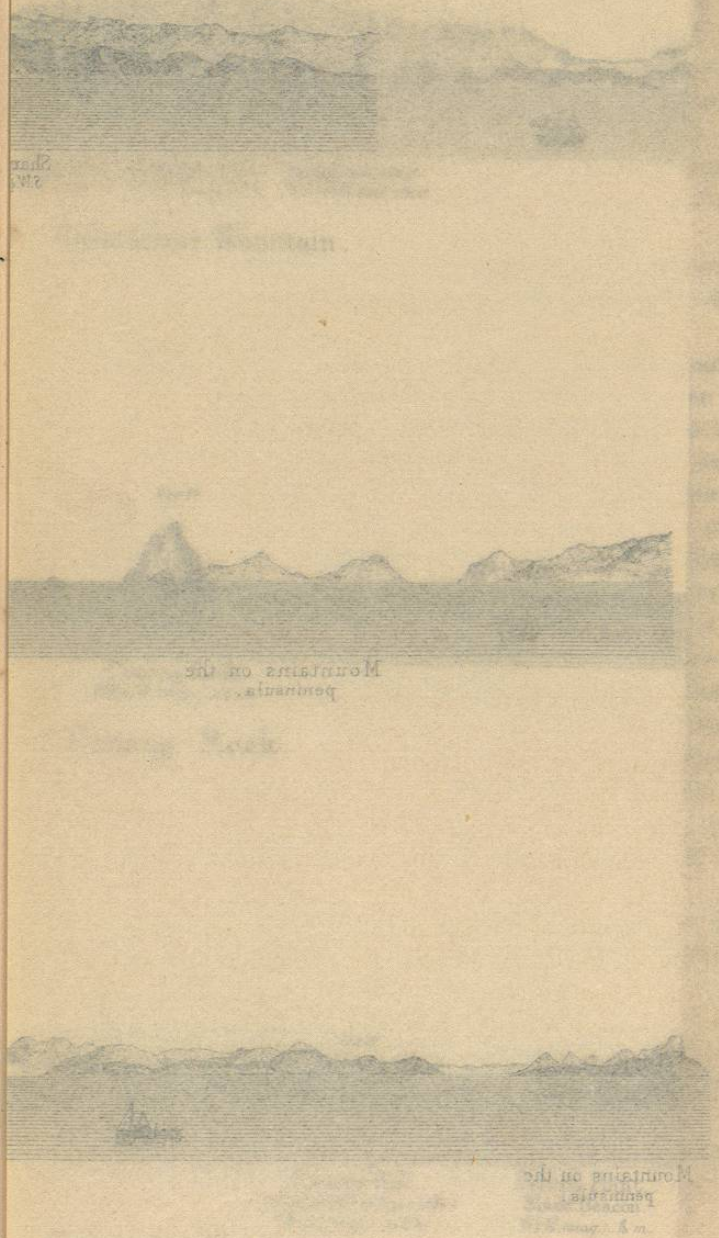
Channel.

After passing Consag Rock, bound into the Colorado River, bring the rock to bear (astern) S. $4^{\circ} 30'$ W. (S. $\frac{3}{4}$ E. mag.) and steer so as to *keep it on that bearing* until Direction Sand-hill is made out ahead, bearing N. $4^{\circ} 30'$ E. (N. $\frac{3}{4}$ W. mag.), when steer for it, *keeping it on that bearing*. It will not do to trust to compass courses, as the currents will sweep you a long way off the line of bearing. The lead

Directions for
entering the main
channel.

Caution.

Plate XIV



from

must be kept constantly going as the shoals and mud flats are subject to frequent changes.

Do not enter the river with the tide ebbing, but take advantage of the first of the flood.

When within half a mile of the shore, in about 5 fathoms water, sandy bottom, Direction Sand-hill bearing N. $4^{\circ} 30'$ E. (N. $\frac{3}{4}$ W. mag.) and Shoal Point S. 57° E. (ESE. $\frac{1}{4}$ E. mag.), change the course to N. 60° W. (WNW. $\frac{1}{2}$ W. mag.), passing inside of a sandy shoal, and continue that course until Direction Sand-hill bears E. by N. (mag.), when you will be a mile from the shore. From this point follow the shore line at the same distance from it, using the lead continually, until you make out Santa Clara Beacon, when you may steer for it until within a half a mile, when (being about the same distance from the shore) steer WNW. $\frac{1}{2}$ W. (mag.) until Range Hill, 813 feet high, with conspicuous white cliffs, 24 miles west of Black Beacon, is just open of the latter. This range leads through the deepest part of the channel. When passing White Beacon, at the mouth of the slough, haul off a little to the southward to avoid the shoal which makes off from it.

Anchorage.

The best anchorage is to the eastward of Philip's Point, off the mouth of a small estero that lies about midway between White and Black Beacons, and 2 cables off shore, where you will be in about $3\frac{1}{2}$ fathoms of water at low-water springs, muddy bottom. The name Port Isabel is frequently applied to this anchorage.

Tidal currents.

The tidal currents run with great strength at full and change of the moon, sometimes as much as six knots an hour, and there is no such thing as slack water. (View opposite page 130.)

When leaving the anchorage, bound out of the river, start on the last of the ebb and be guided by the directions for entering, applying them in a reversed manner.

Caution.

Too much reliance must not be placed in the foregoing directions, as the beacons referred to may from one cause or another be removed, and the mud flats and shoals are subject to frequent changes; the lead is the best guide.

Tides.

It is high water, F. and C., at Philip's Point at about 2^{*h*} 15^{*m*}. Spring tides rise from 25 to 30 feet; neaps, from 6

to 10 feet. The magnetic variation was $13^{\circ} 4'$ E. in 1876, increasing about 2' annually. Variation.

The Colorado River is navigable for light-draft vessels as far as Colville, Nev., which is about 600 miles above Philip's Point. The influence of the tide is felt for about 40 miles, up to a place a few miles above Heintzelman's Point, and at a short distance above Philip's Point, at or near the time of spring tides, comes in with a bore or bank of water 4 feet high, extending in one huge breaker clear across the river, while the ebb is still running out. Remarks.

Above Philip's Point the channel is crooked and obstructed in places by sand bars, some of which have at times not more than 2 feet of water over them. The channel retains an average width of nearly a half mile the entire distance to Colville. The winds at the mouth of the river are mostly from the north-west and in summer are very dry and hot.

The principal exports from the river are hemp, which grows wild in great abundance, argentiferous lead ores and copper ores. The river trade is in the hands of the Colorado Steam Navigation Company, which has three river steamers and three barges of from 70 to 100 tons burthen employed. These vessels draw about 1 foot of water when light and two feet when loaded.