

'Amerī, about 4 miles northward of Karri, has a conspicuous square tower near its center and a date grove northward of it. A mosque at the northern end of this village is obscured to vessels coming from northward but shows up well from southward.

5B-12 Bū ol Kheyr ($28^{\circ}32' N.$, $51^{\circ}05' E.$) is a village on the shore of a small bight just northward of 'Amerī; several date palms are on either side of the village, and a prominent round tower is at its northern end. Vessels with local knowledge can anchor in 3 fathoms about $\frac{3}{4}$ mile off Bū ol Kheyr.

Gahī, a village about 1 mile northward of Bū ol Kheyr, is nearly surrounded by date palms; between the two villages is a conspicuous mosque. A sandspit, on which the sea always breaks, is off Gahī.

Rostamī, about $1\frac{1}{2}$ miles northward of Gahī, can be easily identified by a high round tower about in the center of the village. A prominent mosque is about midway between Gahī and Rostamī.

A low cliff is about 2 miles northward of Rostamī, and about 2 miles farther northward, low cliffs extend for some distance along the coast.

Bāshī, a village having a round tower, and with a date grove nearby, is about 7 miles northward of Rostamī. In this vicinity, the coastal hills trend away from the coast and then fall to the plain inland of Būshehr, about 10 miles northward. A 16-foot shoal is about 2 miles southwestward of Bāshī.

Between Bāshī and Ra's-e Halileh, about $12\frac{3}{4}$ miles northwestward, the coast is indented by a bay having low sandy shores and general depths of less than 2 fathoms, mostly mud bottom. Narges Zār and Delvār, about 3 and 5 miles northward of Bāshī, are villages surrounded by date groves. Khowr Khuvair, a small stream, the entrance of which dries, is near the head of the bay; close to it is a small fort and date grove. About 2 miles northwestward is the mouth of a considerable stream which drains a large salt-water swamp. From here on to Ra's-e

Halileh, the coast consists of a grass-tufted sand ridge about 5 feet high.

Ra's-e Halileh is low and from it a narrow reef extends about $\frac{1}{2}$ mile southwestward; about 1 mile eastward of the cape, clumps of date palms extend inland to the swampy area. The village of Halileh is nearly $\frac{3}{4}$ mile north-northwestward of Ra's-e Halileh. Good anchorage for small craft during a shamāl is available in about 18 feet $\frac{1}{2}$ mile offshore with Ra's-e Halileh in range with the tower in the village bearing about 329° .

A 7-fathom patch and a 10-fathom patch, positions doubtful, are reported about 10 miles southward and 9 miles southwestward of Ra's-e Halileh; an 11-fathom patch is also reported about 35 miles west-northwestward of the cape. None of these patches were closely examined and their depths may be less than charted.

5B-13 Between Ra's-e Halileh and Ra's-e Rishahr ($28^{\circ}54' N.$, $50^{\circ}49' E.$), about $6\frac{1}{2}$ miles north-northwestward, the coast is cliffy and reefs extend about 400 yards offshore. Two clumps of date palms are about 1 mile northward of Halileh, but then, between the coast and the marshes, the ground rises to a 150-foot tableland. Some trees near the coast about $4\frac{1}{4}$ miles northwestward of Ra's-e Halileh are conspicuous. The shores of the small bay eastward of Ra's-e Rishahr are cliffy; the conspicuous ruins of a white house, surmounted by a white staff, are on the cliff close to the point, and on the fore-shore southwestward of the ruins is the 78-foot chimney of a distillery. Conspicuous radio towers, one about 200 feet high, are centered nearly $\frac{1}{4}$ mile north-northeastward of Ra's-e Rishahr.

Emāmzādeh, comprising a conspicuous 150-foot domed mosque surrounded by a small village, is on the highest part of the land about $1\frac{1}{2}$ miles eastward of Ra's-e Rishahr. The conspicuous country house formerly used by the British Resident is about $\frac{1}{2}$ mile southward of Emāmzādeh; a flagstaff is nearby.

In 1911, a vessel anchored in 4 fathoms, about 2 miles offshore westward of the radio towers,

dragged anchor during a shamāl. Throughout the period of the northwesterly set of the tidal current, a very heavy sea made up and the vessel had to leave. In 1908, however, a vessel anchored near the same position rode out a 3-day shamāl without dragging.

During calm weather, an indifferent landing can be made under the ruins of the white house near Ra's-e Rishahr, but with any wind or swell it is impracticable.

Anchorage is prohibited off Ra's-e Rishahr between lines drawn 220° and 265° from the ruins of the white house; on the latter bearing, the ruins of the white house and the mosque of Emāmzādeh are in range. A 3-fathom shoal is in the prohibited anchorage area about 1 mile west-southwestward of Ra's-e Rishahr; a 3-fathom patch is nearly $\frac{3}{4}$ mile westward of the point.

Between Ra's-e Rishahr and Būshehr, about 5 miles northward, the coast is fringed by a reef extending as far as $\frac{1}{4}$ mile offshore; in many places, drying boulders lie on the outer edge of the reef. A small clump of date palms is about 1 mile north-northwestward of Ra's-e Rishahr, and $\frac{1}{2}$ mile farther is Ra's ash Shaghāb, the western extremity of a low sandy projection. From hereon, for $3\frac{1}{2}$ miles northward, the coast is low and sandy, thence 15-foot cliffs continue to the outskirts of Būshehr.

A light is shown about $2\frac{3}{4}$ miles northward of Ra's-e Rishahr; an **aviation light** is also shown.

Moqkeh, a small fishing village about midway between Ra's ash Shaghāb and Būshehr, has a boat harbor formed by a break in the coastal reef. A building having high arched windows and two towers with a flagstaff between them is at the southern end of Moqkeh; two radio masts are about $1\frac{1}{4}$ miles east-southeastward of the building. A tower is at the northern end of Moqkeh.

A conspicuous building having two towers and surrounded by a wall is about $1\frac{1}{4}$ miles

north-northeastward of Moqkeh, and about $\frac{1}{4}$ mile farther northward is the old British Residency, near which is a flagstaff.

Kūh-e Khormūj, a 6,430-foot mountain about 37 miles southeastward of Būshehr, appears as a long convex ridge when seen from southwestward; from west-northwestward it appears as a sharp peak with a long rounded slope on its northern side.

5B-14 Kūh-e Būriāl ($28^{\circ}30' N.$, $51^{\circ} E.$), rising to a height of 2,494 feet about 21 miles southwestward of Kūh-e Khormūj, consists of two pinnacles, close together, with a smaller one northward of them. (See View No. 55.)

Kūh-e Gisakān, about 34 miles northeastward of Būshehr and 5,327 feet high, rises at the northern end of a range in the crest of which there is a step.

In clear weather, the position of a vessel can be determined at some distance from Būshehr by bearings of Kūh-e Khormūj, Kūh-e Būriāl, and Kūh-e Gisakān.

The roadstead of Būshehr consists of Outer Anchorage and Inner Anchorage. Outer Anchorage, for deep-draft vessels, is in the vicinity of the 5-fathom curve about $4\frac{1}{2}$ miles west-southwestward of Būshehr. Inner Anchorage, about $2\frac{1}{4}$ miles northwestward of the town, is more sheltered; it has been reported that it can be approached at any stage of the tide by vessels drawing up to 15 feet, except during a shamāl.

The 3-fathom curve is about $3\frac{1}{2}$ miles westward of Būshehr, and two 2-fathom patches are about $1\frac{1}{2}$ miles west-northwestward of the old British Residency.

ANCHORAGES

5B-15 Khalij-e Nāy Band.—See section 5B-6.

Taheri.—See section 5B-7.

Akhtar.—See section 5B-8.

'Ayānāt.—See section 5B-8.

Kangān.—See section 5B-8.

Deyyer.—See section 5B-9.

Batūneh.—See section 5B-9.

Ra's-e Khān.—See section 5B-11.

Khor Ziārat.—See section 5B-11.

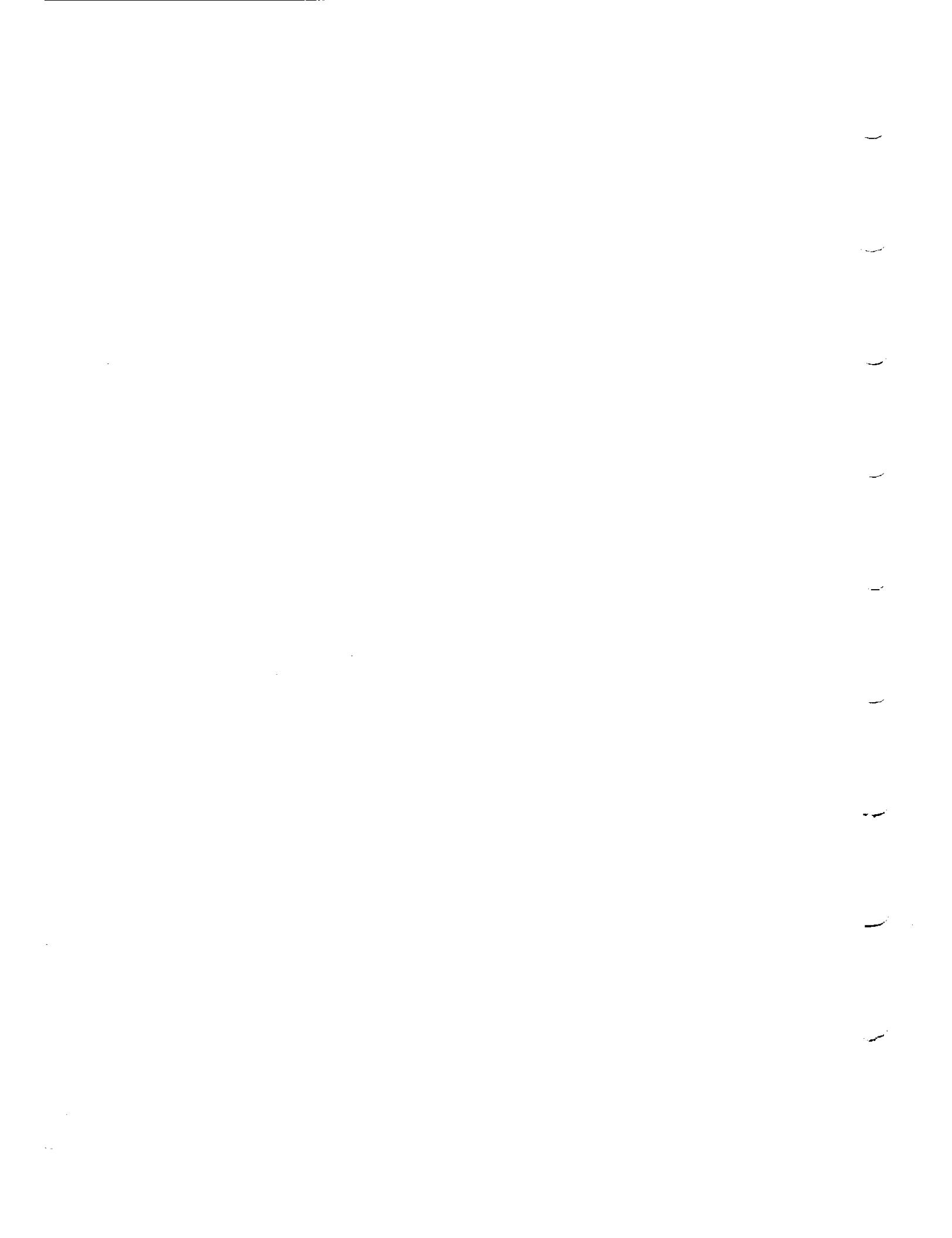
Bālangestān.—See section 5B-11.

Karī.—See section 5B-12.

Bū ol Kheyr.—See section 5B-12.

Halileh.—See section 5B-12.

Ra's-e Rishahr.—See section 5B-13.



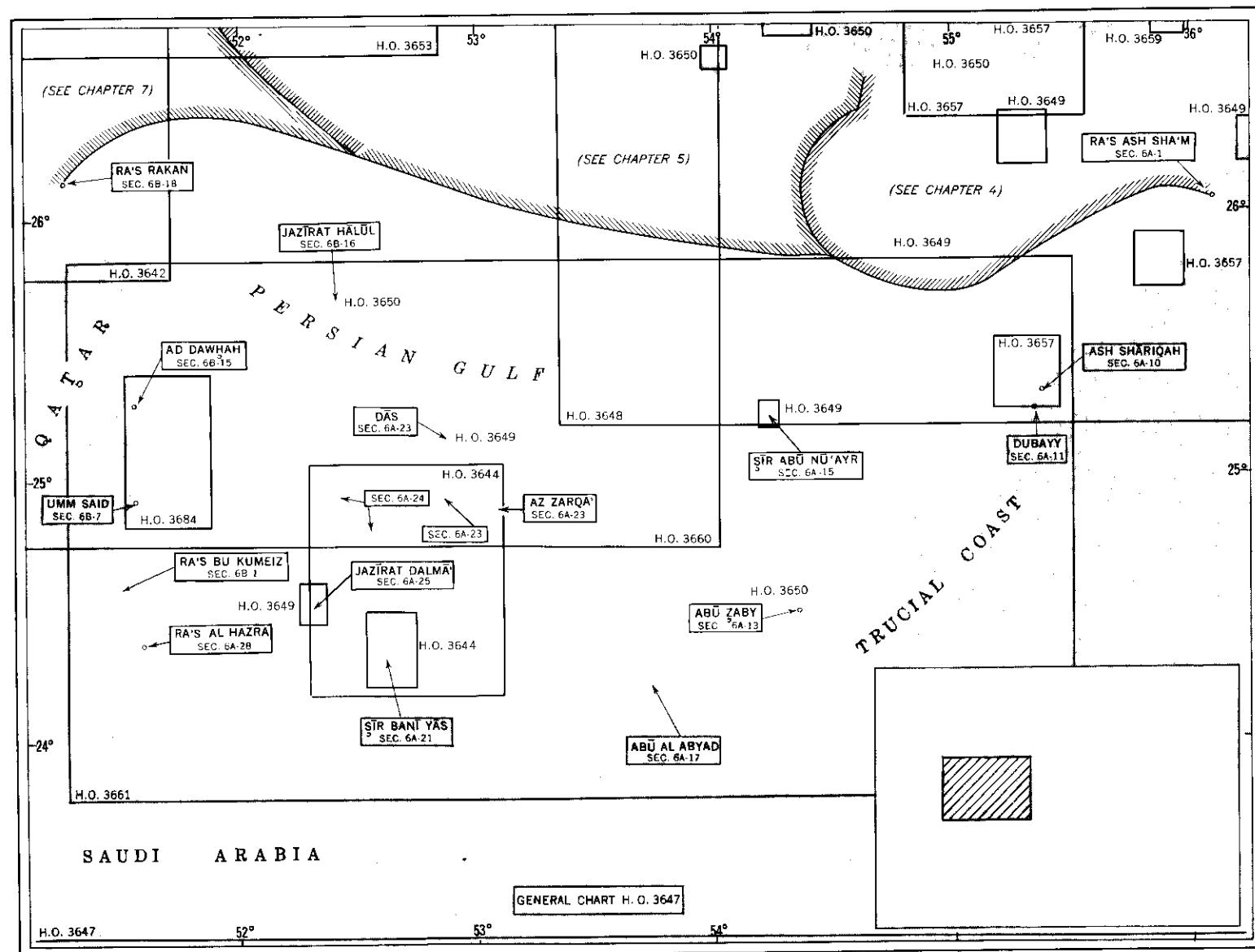
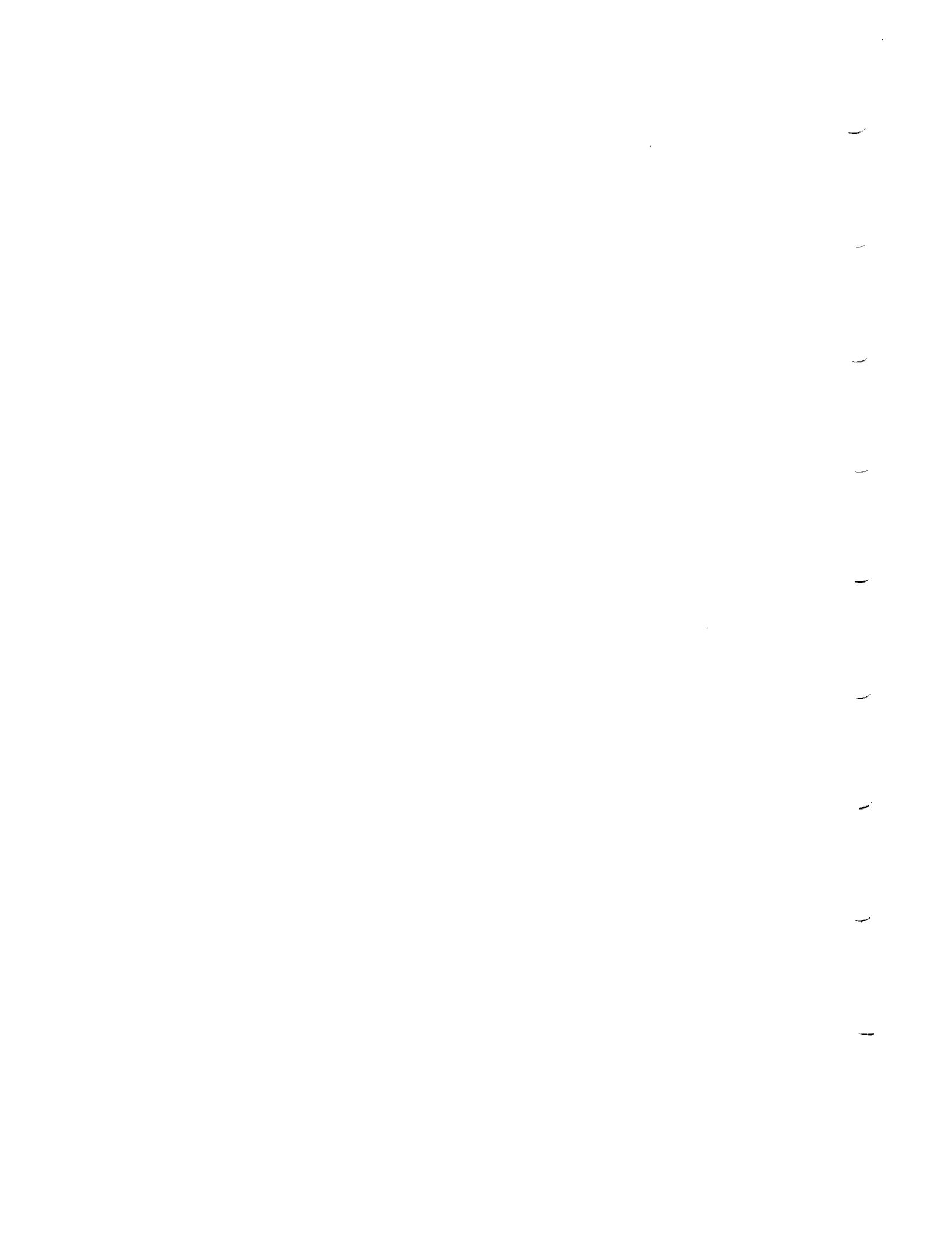


Chart limits shown are of the best scale charts issued to naval vessels by the U. S. Naval Oceanographic Office. Section numbers refer to the place in the text where a description of the designated locality begins.

CHAPTER 6—GRAPHIC INDEX



CHAPTER 6

SOUTHERN SIDE OF THE PERSIAN GULF—RA'S ASH SHAM TO RA'S RAKAN

Part A. Trucial Coast and Great Pearl Bank

Part B. Qaṭar—Eastern Side

Plan.—This chapter describes the coast, islands, and dangers along the southern side of the Persian Gulf between Ra's ash Sha'm and Ra's Rakan. The arrangement is southwestward, westward, and northward from Ra's ash Sha'm.

GENERAL REMARKS

6-1 The approaches to the south coast of the Persian Gulf are generally shallow, with a few offshore reefs and small rocky islands. Inside the 20-fathom curve, which comprises roughly the area of Great Pearl Bank, the depths are irregular because of the reefs and shoals which extend offshore for many miles and bar access to the coast except at a few points. The coastline is only partially surveyed, and some shoals and reefs are reported to be uncharted. Coral reefs and rocks, however, are generally discernible as dark patches, and sandbars and shoals can be easily identified as yellowish green patches in the nearshore area. The bottom is usually visible in depths of $3\frac{1}{2}$ to 5 fathoms.

In the Persian Gulf, the sea makes up quickly and is characterized by choppy waves, which are often all out of proportion to the wind force; the sea quickly subsides after a gale.

In the Strait of Hormuz at the entrance of the gulf, the tidal current is often greatly opposed by a strong northwesterly wind, at which time the sea becomes troublesome and breaks heavily. Currents off the coast are variable but are not strong generally. The prevailing wind is the northwesterly shamāl, but in winter it is often interrupted by winds from varying directions. Squalls are common throughout the year. A high degree of refraction or mirage occurs along all of this coast, especially in the

early morning. The land features become greatly distorted, villages sometimes appear as clumps of rounded trees, and small uncharted hillocks or dunes assume a considerable height.

The whole of the coastal strip is desert plain, with a few small isolated hills and scattered tablelands and is backed by alternating regions of drifting sand and patches of rock and salt flats. There are many salt creeks and tidal backwaters, the entrances of which are often changed by the wind, swell, and tidal scour. The towns are all very similar in appearance.

Because of the hard bottom in many places, anchorage off the whole eastern portion of the Trucial Coast is poor. On the approach of a winter shamāl, which in this vicinity blows from west-northwestward or even from westward, vessels should leave their anchorage. In winter, vessels should anchor farther offshore than in summer.

NAVIGATION

6-2 The following is an offshore track suitable for vessels bypassing the coast described in this chapter and proceeding toward Ra's Rakan.

From a position about 4 miles southward of Jazīreh-ye Forūr (sec. 4D-11), a course 278° for about 110 miles leads to a position about $1\frac{1}{2}$ miles southward of Shah Allum Light Float ($26^{\circ}25'N.$, $52^{\circ}31'E.$) moored about 72 miles east-northeastward of Ra's

Rakan. From thereon steer 276° for about 79 miles, which leads to a position about $1\frac{1}{2}$ miles southward of Bahrein Lightship. This latter course leads close southward of the light buoy ($26^{\circ}30' N.$, $51^{\circ}19.5' E.$) marking a 5-fathom patch about 20 miles northeastward of Ra's Rakan; four mooring buoys are positioned close southward of the light buoy. These courses lead over charted depths of not less than 9 fathoms.

The courses for vessels entering the Persian Gulf through the Strait of Hormuz and thence to the position 4 miles southward of Jazireh-ye Forūr are given in section 4D-4.

WINDS—WEATHER

6-3 The prevailing wind during the summer months is the northwesterly shamāl, but between October and March the shamāl is often interrupted by the southeasterly kaus, the northeasterly nashi, or the southwesterly suahili.

From June to September, the shamāl blows over the whole area of the Persian Gulf, producing rough seas, stirring up dust clouds that affect visibility at sea, and reaching a considerable force which lasts for several days at a time.

Winter storms which pass through the gulf region are generally preceded by southerly winds and seas, which usually veer to northwesterly behind the storm. Cold fronts occasionally penetrate the area with these storms, accompanied by squalls and seas of variable direction, and are followed by a shamāl. Summer winds and seas seldom vary from a northwesterly direction.

The climate of the Arabian Peninsula as a whole is dry and hot. Average annual rainfall is less than 5 inches, except in some of the higher areas. Precipitation is erratic; long droughts are common but may be broken by intense downpours which result in flash floods.

Temperatures are moderate in winter but high in summer and are extremely high in the interior on summer afternoons. Nighttime temperatures are low enough to offer relief from

the oppressive daytime heat. In winter, afternoon temperatures in the coastal areas are normally between the middle 60's and middle 80's; nighttime temperatures are from about 50° to 70° F. In summer, temperatures at coastal locations are from the low 90's to about 110° in the afternoon and in the 70's and 80's at night.

Relative humidity at coastal locations is high throughout the year; it is greatest in the early morning and lowest in the afternoon, except at some places on the coast where afternoon sea breezes bring moist and cooler air over the land area.

CURRENTS—TIDAL CURRENTS

6-4 The currents in the Persian Gulf have a predominantly counterclockwise circulation throughout the year. In that part of the gulf covered by this chapter, there are sometimes strong currents in the southeastern part which set between northeastward and eastward, especially in January and in April, May, and June. Their speed has been observed to be from 0.4 to 0.8 knot in January, and from 0.6 knot to 1.7 knots in April.

Through the Strait of Hormuz there is a distinct inward flow from the Gulf of Oman during the Southwest Monsoon and a slightly outward flow during the remainder of the year. In the latter period, some water continues to flow into the Persian Gulf, but these currents trend more to the northern side of the gulf.

Any notable local peculiarities in tides and currents are described with the related features.

Part A. TRUCIAL COAST AND GREAT PEARL BANK

6A-1 Ra's ash Sha'm ($26^{\circ}04' N.$, $56^{\circ}30' E.$) rises eastward to a mountain about 2,500 feet high.

COAST—GENERAL

6A-2 The Trucial Coast between Ra's ash Sha'm and the town of Abū Zaby, about 134 miles southwestward, is low and sandy. In clear weather, the mountains of Ru'us al Jibāl

(sec. 4-1) are visible until a vessel has passed Dubayy, about 64 miles southwestward of Ra's ash Sha'm.

The southern shore of the Persian Gulf is low and sandy or stony, with occasional hills of rock or sand of moderate height; it is entirely barren and desolate with few, if any, distinctive features. Reefs, on which are many low islands, lie from 10 to 30 miles off this coast. Some of the islands are of considerable size and overgrown with mangrove; a few are inhabited seasonally.

Along the eastern part of this coast are many creeks and backwaters; channels through the reefs have been only partially examined. The land consists of stony desert, with small detached groups of volcanic hills; on the coast are low cliffs. The apparent coastline, for about 30 miles southwestward of Abū Zaby, is formed by a number of low islets with creeks running in between and meeting behind them. The mainland is a considerable distance inside them and has not been examined. The creeks, which are reported to have shallow entrances but greater depths inside, are visited by fishermen.

From hereon, the stony desert coast trends westward about 50 miles to Ra's as Ṣawāmi'. Along this section of coastline a chain of islands, collectively called Bazm, lie along the southern edge of Bazm Reef between Jazirat as Salāli and Al Bazm al Gharbī.

Beyond Ra's as Ṣawāmi', low ranges of volcanic hills extend westward along the coast for about 28 miles to Jabal Dhanna. The coastal hills continue southwestward about 22 miles to Jabal al Wutayd, which is about 3 miles inland; from thereon to Ra's as Sila', about 28 miles westward, the shore consists of the Sabkha Matti, a low, swampy, and desolate salt marsh area.

Northward of Ra's as Sila', for about 13 miles, the coast consists of a succession of small rocky points; the land rises gradually to a level tableland in a series of small terraces. Low

white cliffs continue northwestward about 3 miles to Ra's Mushayrib, between which and Ra's al Harza, 11 miles northwestward, are two inlets with hilly shores. A large bay lies between Ra's al Harza and Ra's Bu Kumeiz, nearly 15 miles northwestward. The latter projection separates the bay from Khawr al 'Udayd, which trends southwestward about 10 miles into the southeastern base of the Qaṭar peninsula, and forms the approximate eastern end of the boundary between the Trucial Coast and Qaṭar. Ash Shāriqah is the most important town on the Trucial Coast.

DEPTHs—DANGERS

6A-3 The 20-fathom curve is 10 miles offshore at Ra's al Khaymah (sec. 6A-7) and 80 miles offshore at about midway along the Trucial Coast. The 10-fathom curve varies from about 5 miles offshore at Ra's al Khaymah to approximately 40 miles in the central portion.

The offshore area contained within the 20-fathom curve is Great Pearl Bank. It is an extensive shoal filling the great bight of the southern part of the Persian Gulf between the peninsulas of Ru'us al Jibāl and Qaṭar. The depths on the banks average 10 to 15 fathoms, but in places are depths of 20 to 25 fathoms. Many islands lie on Great Pearl Bank, some of which are close to the coast and others far offshore. Of these, some are high, many are barren, and most have a low projecting sandy point at the southeastern end.

CURRENTS—TIDAL CURRENTS

6A-4 See sections 1-29 and 6-4.

WINDS—WEATHER

6A-5 See sections 1-43 and 6-3.

COASTAL FEATURES—LANDMARKS

6A-6 Between Ra's ash Sha'm and the town of Ash Sha'm, about 2 miles southward, the low and sandy coast is bordered by a bank with depths of 2 to 3 fathoms which extends

about $\frac{1}{4}$ mile offshore; a partly cultivated plain, 1 mile to $1\frac{1}{2}$ miles wide, lies behind the coast.

Between Ash Sha'm and the town of Ar Rimth, about $8\frac{1}{2}$ miles south-southwestward, the coast is low and backed by mountains. The coastal bank, with depths of 2 to 3 fathoms, extends from 400 yards to 1 mile offshore. A small ruined tower stands on a 50-foot hillock about 1 mile southward of Ash Sha'm; seen from southward, the hillock appears to have a peaked summit. Hanna, a village of mud huts, is on the northern side of a creek about 4 miles south-southwestward of Ash Sha'm; the creek can be entered by boats during high water. Depths of 10 and 20 fathoms are found $\frac{1}{2}$ mile and 3 miles westward, respectively, of Ash Sha'm; the bottom is generally sand.

Ar Rimth lies on the southeastern side of a lagoon, the entrance of which is obstructed by a bar on which the sea breaks. The seaward side of the lagoon is formed by a long sandy spit; the lagoon is used by dhows. In 1922, the depths off Ar Rimth were reported to be less than charted.

The town can be identified by a round fort at the southwestern end and a minaret at the northeastern end. About 1 mile northeastward of Ar Rimth is a small fort on a hill, but it does not show up well against the mountains behind it. The mouth of a small creek, which trends southward and runs into the shallow lagoon at Khaymah, is about $1\frac{1}{2}$ miles south-southwestward of Ar Rimth. The coast in the vicinity is swampy, but a short distance from it are date groves which extend far inland and continue southward along the eastern side of the lagoon.

6A-7 Ra's al Khaymah ($25^{\circ}50' N.$, $55^{\circ}59' E.$) is the extremity of a low sand spit which parallels the coast for a distance of about $3\frac{1}{2}$ miles and encloses the shallow lagoon at Khaymah. The passage leading to the lagoon is entered at the northern end of the sand spit and should be approached from northeastward, keeping close to the coast. There is a depth of 2 feet in the entrance of this channel, but inside are depths of 9 feet as far as the town.

In 1949, it was reported that the long passage into the lagoon was clear and easily accessible to boats drawing about 3 feet. In 1953, however, it was reported that the passage was unstable and that large dhows were sometimes marooned inside; at other times a least depth of 10 feet was available.

Another passage into the lagoon is about $\frac{3}{4}$ mile northeastward of the conspicuous fort described below. In 1959, this channel was about 200 yards wide with a least depth of 8 feet; at that time the bar had 5 feet on it and lay about 300 yards seaward of the entrance.

The town of **Khaymah**, located at the southwestern end of the spit, consists mainly of stone buildings. A white house at the northern end of the town stands considerably higher than the surrounding buildings and is a good landmark.

A conspicuous fort ($25^{\circ}48' N.$, $55^{\circ}57' E.$), with two square towers, stands on a wall extending across the peninsula at the southern end of the town. A light is occasionally shown on the southeastern corner of the fort. A detached tower, in ruins in 1935, stands about 800 yards southwestward of the fort, and about 1 mile farther southwestward is a conspicuous tower near the foot of some red sandhills. A white circular tower stands on the northern summit of these hills about 2 miles southward of the port. Charted towers on the eastern side of the lagoon are obscured by trees and scarcely visible from seaward.

In the vicinity of Khaymah, the coastal plain is about 6 miles in width, but southward this width increases rapidly so that when seen from northward the town appears to be situated where the mountains end. Red sandhills, about 130 feet high, extend about 12 miles southwestward from Khaymah; their northern end forms a good guide to the locality when seen from westward. A tower at their southwestern end is small and inconspicuous and is only visible from westward.

Anchorage can be taken in $5\frac{1}{2}$ fathoms with the fort at Khaymah bearing 138° , distant about $3\frac{1}{2}$ miles.

Small vessels can anchor in $4\frac{1}{4}$ fathoms with the fort bearing 123° , distant nearly 2 miles; the holding ground is good. Locally, it is considered that there is not as much sea at this anchorage during a shamāl as at other places in the vicinity.

Caution is necessary in approaching the anchorage because of $2\frac{1}{2}$ - to 3-fathom patches lying within $3\frac{1}{2}$ miles of the coast in the vicinity and southwestward of the anchorages; the bottom is mostly sand. The locality has not been thoroughly examined. A small shoal with a depth of less than 1 fathom lies about 1 mile northwestward of the fort, and another with a depth of $1\frac{1}{2}$ fathoms lies about $1\frac{1}{4}$ miles north-northwestward of the fort.

6A-8 Jazirat al Hamra' ($25^{\circ}43' N.$, $55^{\circ}47' E.$) lies close off the mainland about 12 miles southwestward of Ra's al Khaymah, and on it is the town of Hamra', which has a fort with several towers and a few round trees in the vicinity. A high square tower with two rows of windows stands close to the fort, and a high slender tower is at the western end of the town; a solitary palm is near a tower at the eastern end of the town. In 1951, the population of Hamra' was about 2,500, with pearl fishing the principal industry. The southwestern end of the red sandhills trending southwestward from Khaymah is about 3 miles southward of Hamra'.

Ra's Abu Ahmad, about $\frac{3}{4}$ mile northeastward of Jazirat al Hamra', is a low sandy point at the entrance of an inlet which trends southwestward between Hamra' and the strip of sandy beach forming the mainland; depths of 2 to 3 feet are in the inlet entrance, and 7 to 8 feet inside, but off the town the inlet is shallow.

From Jazirat al Hamra', the coast trends southwestward about 14 miles to Umm al Qaywayn. A reef, which nearly dries in places and has been reported to be advancing seaward, extends from 1 to $1\frac{1}{2}$ miles offshore; it shows up well in the daytime. About 10 miles southwestward of Jazirat al Hamra', the 5-fathom

curve is about $2\frac{1}{2}$ miles offshore, and close inside it are depths of 2 fathoms; this coast has not been thoroughly examined.

Khawr al Bayda, entered about 7 miles southwestward of Jazirat al Hamra', trends southwestward and connects with Khawr Umm al Qaywayn; it is available only to boats with local knowledge.

Khawr Umm Al Qaywayn.—This inlet comprises an extensive backwater in which are several low islets. It is entered between the western extremity ($25^{\circ}36' N.$, $55^{\circ}36' E.$) of Jazirat Seneya and the peninsula of Umm al Qaywayn.

Jazirat Seneya, about 5 miles long, is low with sandhills covered with grass and scrub; a conspicuous square structure with twin towers stands near the center of the island. A conspicuous tree stands about $\frac{2}{5}$ mile, and another about $\frac{5}{6}$ mile, southwestward of the latter structure.

The peninsula of Umm al Qaywayn, on which is the town of that name, is connected with the mainland westward of it by a narrow isthmus about 100 yards wide. A square fort near the center of the town has two round towers and a flagstaff. Bakhut Tower, conspicuous from northward and west-northwestward, stands on the eastern side of the peninsula; on the southern side of the town, and also westward of the peninsula, are several other towers, of which Mashsum Tower is conspicuous.

Extensive banks, on which are drying patches, extend seaward from Jazirat Seneya and from the peninsula of Umm al Qaywayn; between these two banks is a narrow channel leading to Khawr Umm al Qaywayn.

The inlet is approached from a position about $1\frac{3}{4}$ miles northward of Bakhut Tower ($25^{\circ}35' N.$, $55^{\circ}35' E.$). The approach channel runs in a southerly direction and is narrow and tortuous; the bar, over which there is a least depth of 2 feet, lies about midway between the channel entrance and the entrance of the inlet. Northward of the bar, depths of about 6 feet are available to boats with local knowledge; south-

ward of the bar, depths increase gradually to 6 fathoms.

Inside the entrance, the inlet divides into three arms. The eastern arm connects with Khawr al Baydā; the southern and western arms are divided by an extensive drying bank on which lies low Jazirat al Ghubba with a conspicuous tree. The eastern and western arms of the inlet are shallow; in the southern arm, a depth of about 19 feet is available as far as a position about $\frac{3}{4}$ mile southeastward of the southeastern extremity of Jazirat al Ghubba; beyond that are general depths of 9 to 12 feet for about $1\frac{1}{4}$ miles farther southward.

Anchorage, in 6 to 7 fathoms, can be taken outside the inlet about $\frac{3}{4}$ mile northwestward of Mashsum Tower; in winter, vessels should anchor farther offshore in 8 fathoms.

Landing on the shores outside the inlet is bad, except during good weather.

6A-9 The coast between Khawr Umm al Qaywayn and 'Ajmān, about 13 miles south-southwestward, is low and sandy, and in the vicinity of the various villages are a few date palms. The depths offshore are regular with rocky bottom; between Khawr Umm al Qaywayn and a position about 2 miles northeastward of 'Ajmān, depths of 5 or 6 fathoms are about 1 mile from the coast.

A dangerous wreck, marked by a light buoy, lies about 6 miles westward of the entrance of Khawr Umm al Qaywayn.

Vessels should not anchor close inshore because of the possibility of losing an anchor.

At Al Hamriyah, about 7 miles south-southwestward of Khawr Umm al Qaywayn, a fort with a tower is a good landmark. A date grove is near the northeastern end of the village.

In 1922, a British naval vessel anchored in $4\frac{1}{4}$ fathoms, sand, about $\frac{1}{2}$ mile offshore, and in 1931, another naval vessel anchored in 5 fathoms, sand, with the fort at Al Hamriyah bearing 140° , distant slightly less than 1 mile.

Landing can be made in a creek on the southern side of Al Hamriyah; a bar is at the creek entrance.

'Ajmān ($25^\circ 25' N.$, $55^\circ 26' E.$), a town located on the southeastern side of Khawr al

'Ajmān about 6 miles southwestward of Al Hamriyah, has a small but high fort with a 65-foot conspicuous tower; a watch tower, 46 feet high, stands nearly $\frac{3}{4}$ mile south-southwestward of the fort.

A shoal with a depth of 16 feet lies nearly $\frac{3}{4}$ mile offshore northwestward of the fort. Depths in the vicinity are irregular; at night, the coast should not be approached in depths of less than 10 fathoms.

Anchorage off 'Ajmān is bad, the bottom being hard coral and sand. In 1932, a British naval vessel anchored in 4 fathoms with the fort bearing 139° , distant $1\frac{1}{4}$ miles.

Khawr al 'Ajmān, easy of access, is available to dhows. The entrance is northwestward of the fort between two sandspits, which extend about $\frac{1}{4}$ mile offshore; the sandbar at the entrance has a depth of 2 feet. Inside the bar are two channels, one trending southwestward past 'Ajmān and the other extending about $\frac{1}{2}$ mile east-northeastward into Khawr Zora. This latter channel, with depths of 4 to 8 feet, passes close along the southern side of the northeastern entrance point and then opens into the drying lagoons which form Khawr Zora. Off the town, there are depths of 2 fathoms in the inlet.

A date grove extends about 1 mile southwestward of 'Ajmān, but from thereon to Al Hayrah ($25^\circ 23' N.$, $55^\circ 25' E.$), about $2\frac{1}{4}$ miles southwestward of the fort at 'Ajmān, the area is uncultivated. Between Al Hayrah and the northern end of Ash Shāriqah, about $1\frac{1}{4}$ miles southwestward, the date groves are continuous.

Two detached towers are located at Al Hayrah. Several villages are between Al Hayrah and Ash Shāriqah, but, seen from seaward, they appear to be connected to Ash Shāriqah.

6A-10 Ash Shāriqah lies mainly along the eastern side of Khawr Shārja, which parallels the coast; several towers and a fort are in the town. The Sheik's residence is a large white two-story building about 200 yards southward of the fort, the latter having a flagstaff on its eastern tower.

Red OBSTRUCTION LIGHTS are shown on six radio masts standing about 1 mile east-northeastward, and on three radio masts about 1 mile southeastward of the Sheik's residence.

Khawr Sharja is very small and shallow; its entrance, with a depth of about 1 foot on the bar, is about 1 1/4 miles north-northeastward of the fort. After passing the town, the creek opens into a wide but shallow lagoon, which connects with Khawr Khan, another lagoon southwestward of it.

Aliya (Laiya), a large suburb of Ash Sharqah, is located on the seaward side of Khawr Sharja about 1 mile westward of the fort. The village consists of mat huts, and a few mud buildings stand on the sandy arm abreast Ash Sharqah.

At the southern end of Ash Sharikah, rocky ground rises to a 27-foot bluff on the bank of Khawr Sharja; a small ruined tower is about 2/5 mile southeastward of the bluff. The beach fronting Aliya is white sand, but the bluff and Ra's Aliya, a small rocky projection, which, when in range with the bluff appears about 167°, are both dark colored but inconspicuous until close to.

In summer, ANCHORAGE off Ash Sharqah is in about 5 fathoms with Ra's Aliya bearing between 160° and 180°, and in winter in about 7 fathoms on the same bearings; the holding ground of rock and coral covered with a little sand is bad. In 1931, a British naval vessel anchored in 4 1/2 fathoms with the fort bearing 130°, distant about 1 mile.

CAUTION should be used in the approach to the anchorage from west-northwestward because of a southerly set which is often experienced after passing Jazireh-ye Sirri (sec. 4D-13).

The best landing place is a jetty on the eastern side of Ra's Aliya. Ferries are available to cross the creek to Ash Sharqah.

In 1955, the population of Ash Sharqah was about 3,000. Berthing space is for the accommodation of local craft and lighters only, the limiting draft being 2 feet. The tidal rise at springs is 4.6 feet. There is air service to Al Bahrain, Al Basrah, Baghdad, India, and Europe.

From Aliya, the coast trends southwestward about 7 1/2 miles to the town of Dubayy. The holding ground off this stretch of coast is bad; vessels anchoring should veer plenty of chain.

KHAN, a village situated on the northern side of the entrance of Khawr Khan, about 2 miles southwestward of Aliya, is the most easily distinguished in this locality, the surrounding area being low and swampy for some miles inland. The village consists mainly of mat huts, a conspicuous 40-foot minaret, two round towers, and one square tower. Khawr Khan divides into two branches, one trending northward into the lagoon at Ash Sharqah and the other extending southwestward toward Abu Hayl; the latter village is inhabited only during the date-picking season. Ferij al Muhadham, about 3/4 mile farther southwestward, is a small group of huts used as a quarantine village; Nahar Tower, a battlemented structure, 54 feet high, stands about 1 1/4 miles southwestward of these huts.

A detached shoal, with a depth of about 3 fathoms, lies about 1 1/4 miles northwestward of Nahar Tower.

6A-11 DUBAYY (DIBAI), a town situated a short distance inland on the southern side of Khawr Dubayy about 1 1/4 miles west-southwestward of Nahar Tower, has a date grove extending about 2 miles southwestward from it and terminating in a detached clump.

The residence of the Shaikh is in Dubayy, and his flag is displayed on the flagstaff of a square fort having a 56-foot round tower (25° 16' N., 55° 18' E.). Two lights are shown vertically from a flagstaff about 400 yards west-northwestward of the fort. Conspicuous, square, white, Nayif Tower, 63 feet high, and a 69-foot minaret, both less than 1 mile northeastward of the fort, can be identified by vessels approaching Dubayy. A watertower stands about 500 yards eastward of the fort. About 6 miles southwestward of Dubayy is a conspicuous white two-story house set back from the shore among palm trees. It is the only conspicuous landmark between Dubayy and Jabal al 'Ali (sec. 6A-12).

A LIGHT BUOY with black and white horizontal bands is moored about two miles west-northwestward of Nayif Tower.

Two fixed white aviation lights are shown at Dubayy; one is located about 1 1/6 miles southwestward and the other about 2 1/6 miles southward of the above-mentioned fort.

Khawr Dubayy is entered, about 3/4 mile northward of the fort, between two breakwaters. The entrance has been dredged to 7 feet (1961). Khawr Dubayy extends several miles southeastward beyond the town but is used only by fishermen. In Khawr Dubayy, off the town, dredged depths are 6 to 9 feet.

In 1960, the population of Dubayy was about 40,000. Customs Quay, on the southern side of Khawr Dubayy has depths alongside of 6 feet. Eight cranes with capacities up to 10-ton are available. Numerous lighters are available. Water is available. Several ferries operate between Dubayy, Daira, and Shendagha. Dubayy has a hospital.

ANCHORAGE can be taken off Dubayy, but the holding ground is bad and there is no shelter from the shamal. Vessels anchor about 1 1/4 miles offshore west of the town.

In 1961, a U.S. naval vessel found satisfactory anchorage with the fort bearing 108° distant about 2 miles.

Between Dubayy and Abu Zaby, about 70 miles southwestward, the coast is very low and uniform in appearance, quite barren, and mostly uninhabited; a small village with its date palms is situated about 4 miles southwestward of Dubayy, and about 2 1/4 miles farther southwestward is a conspicuous small square house (25° 11' N., 55° 14' E.). Hillocks, separated by creeks or by extensive swamps, have tufts of coarse grass growing on them. Landing unarmed along this coast is not recommended.

6A-12 FROM DUBAYY TO RA'S HASAN, about 30 miles southwestward, the soundings are regular with depths of 3 fathoms, fine sand, being found at a distance of about 4/5 mile offshore.

JABAL AL 'ALI, about 16 miles southwestward of Dubayy and about 3 miles inland, is a 220-foot flat-topped hill (25° 02' N., 55° 07' E.). This hill and the conspicuous white house (sec. 6A-11) are the best landmarks on this section of coast.

A small foul area is about 1 3/4 miles west-northwestward of the summit of Jabal al 'Ali.

JEBAJIB BAY, a slight coastal indentation, is about 7 miles west-southwestward of Jabal al 'Ali. The 3-fathom curve lies about 1/2 mile offshore, but shoals with a least depth of 17 feet are farther seaward. The coast in the vicinity is fringed by shelving reef in places. Behind the coast, irregular sandhills and hummocks rise to a height of 30 feet.

RA'S HASAN, small and rocky and which projects only slightly from the coast, appears as a dark patch in the white sand but can be identified only from close offshore. Ra's Kantut, similar to Ra's Hasan, is about 5 miles farther southwestward.

KHAWR GHANADAH, entered about 3 1/2 miles southwestward of Ra's Kantut, has depths of 1 foot to 21 feet in the narrow channel leading to it; the deepest part is about 400 yards southward of Ra's alGhanadah, the eastern entrance point.

FROM KHAWR GHANADAH TO ABU ZABY, about 30 miles southwestward, there is a succession of inlets, mostly connecting with each other and separated from the sea by narrow strips of sand. Some of these inlets have deep water inside, although their entrances are very shallow; they all form extensive swamps and backwaters which extend many miles inland.

RA'S HANJURAH, about 8 miles southwestward of the entrance of Khawr Ghanadah, is the low sandy northern entrance point of Hanjurah Bay; the latter is shallow and its shores are intersected by numerous creeks. Maraifjain, the low sandy southern entrance point of Hanjurah Bay, is about 4 miles southwestward of Ra's Hanjurah. Both points can be identified from a distance of about 5 miles.

A small cliff with a slightly overhanging top is at the head of the bay and is the southern end of a small tableland 20 to 30 feet high; it can be identified from a distance of about 7 miles and serves as a guide to the bay.

HADD AT TAHЛИ is an extensive reef which begins near Ra's Hasan and fringes the coast to about 2 1/2 miles southwestward of the fort on Abu Zaby; in the vicinity of Maraifjain, the reef extends about 6 miles offshore. Depths of 5 and 6 fathoms are close outside this reef, but because of the uneven bottom, soundings can not be depended upon when approaching it.

6A-13 RA'S AL GHURAB (24° 37' N., 54° 30' E.), about 11 miles southwestward of Ra's Hanjurah, is rocky with low sandhills nearby; the edge of the reef is about 3 miles from the point.

KHAWR ESSADIYAT is entered between Ra's al Ghurab and Ra's Sadiyat, about 2 miles southwestward. The approach is unmarked and shallow.

RA'S LAFFAN, about 8 miles southwestward of Ra's al Ghurab, is on the northern side of an inlet which trends southward and joins the great backwater southward of Abu Zaby.

ABU ZABY, a town consisting mostly of mat huts, extends nearly 2 miles along the coast. In the town, a small fort, partly surrounded by trees, has five towers, on one of which is a flagstaff (24°29'N., 54°20'E.). A small tower stands on the beach, and in its vicinity are several prominent stone buildings, one of which is on the low sandy point projecting slightly northwestward from the town.

The following landmarks are located with reference to the fort; a minaret about 100 yards northward, a flagstaff about 1/3 mile northward, a radio mast with obstruction lights about 1 1/2 miles southwestward, a conspicuous water tower about 1 mile southwestward and a radio mast about 1 1/4 mile southward.

It has been reported that Abu Zaby is a fair radar target at a distance of 5 miles under normal conditions.

A coral reef which dries 1 foot in places, extends from a position 1/2 mile north-northwestward of the fort for a distance of 1 1/4 miles north-northwestward. A 10-foot deep channel passes around the southern side of this reef.

A 15-foot patch lies about 2 1/2 miles north-northwestward of the fort. A coral pinnacle with 13 feet over it lies 2 miles northwestward of the fort.

In 1934, a 3 1/2-fathom patch was reported in an approximate position about 14 miles north-northwestward of the old fort at Abu Zaby. In 1960, a 17-foot patch was reported to lie about 7 3/4 miles north-northwestward, of the fort.

About 2 1/2 miles southwestward of the fort is the mouth of a channel leading into a large backwater which is 3 1/2 miles wide at its entrance and extends inland for a considerable distance. The greater part of this inlet is shallow and has not been surveyed; in it are many deep channels and several islands. In its inner part, the inlet connects with a channel which in turn connects with the inlet trending southward from Ra's Laffan so that the town becomes an island at high water;

there is one place, however, where it can be forded at low water.

The following buoys mark the approach to an anchorage for vessels of medium draft off Abu Zaby, distances and bearings from the fort: A light buoy with a red can topmark about 11 1/2 miles north-northwestward; a red can buoy about 8 1/2 miles north-northwestward; and a lighted black spherical buoy about 4 miles northwestward.

A red and white checkered buoy is moored about 3 miles northward of the fort.

6A-14 ANCHORAGE can be taken in 4 to 5 fathoms, sand and shell, with the fort bearing 110°, distance 2 to 3 miles. This anchorage is exposed to the shamal.

In 1961 a British naval vessel anchored with the fort bearing 110°, at 1 1/2 miles, in 23 feet sand and shell.

Small vessels with local knowledge and a draft of not over 9 feet can anchor in depths up to 2 fathoms between the coral reef and the coast, with the fort bearing 174°, distant about 3/5 mile. It may be approached with the fort bearing 120°; this will lead close southwestward of the coral reef, which shows up well. This anchorage is sheltered by the reef but is reported to be fully occupied by local craft.

DIRECTIONS.—A vessel approaching Abu Zaby from northeastward should give Hadd at Tahli a wide berth.

Those approaching from northward should make the island of Sir Abu Nu'ayr, and after passing it steer with the island's summit

bearing 356° astern. After losing sight of the island, a course of 176° can be made good, care being taken to avoid the 3 1/2-fathom patch about 14 miles north-northwestward of the old fort at Abu Zaby. The depths are irregular which cause considerable overfalls. Tidal currents set northeastward and southwestward at a probable rate of about 1 knot.

Al Futayst (Jabal Fataisa), a hill about 8 1/2 miles south-southwestward of the fort at Abu Zaby, appears dark colored when first seen from seaward, but on nearer approach the white sand of its lower part becomes visible.

A good lookout should be kept from aloft, as there are depths of 8 fathoms close to the reefs. Having identified the fort, anchorage can be taken as previously outlined. See section 6A-13 for buoys marking the approach to the anchorage off Abu Zaby.

FACILITIES.—A concrete jetty, about 135 feet long, extends from the shore northeastward of the flagstaff. In 1962, owing to silting, the head of the jetty dried, the seaward end of the southwestern side dried 1-foot and the northeastern side of the jetty could not be used at any stage of the tide.

A SUBMARINE PIPELINE extends northwestward about 1 mile from a position on shore about 1 1/4 miles northeastward of the flagstaff. The seaward end of the pipeline is marked by a black buoy; two mooring buoys are positioned in the vicinity.

A radio station is maintained by the oil company at Abu Zaby, but service is slow. A very irregular schedule is maintained

for incoming radio traffic, and initial contact may be very difficult.

A small airfield is located about 1 mile southeastward of Abu Zaby. Planes from Al Bahrain fly in twice a week on regular schedule.

GREAT PEARL BANK

6A-15 Great Pearl Bank, the northern limit of which is in depths of 20 fathoms, fills the great bight in the southern part of the Persian Gulf. The eastern limit of this extensive bank is northwestward of Ash Sharqah, and its northern boundary trends in a general westerly direction to Jazirat Halul (section 6B-16), passing about 20 miles northward of the island Sir Abu Nu'ayr ($25^{\circ} 13' N.$, $54^{\circ} 14' E.$); from Jazirat Halul it trends northwestward to a position about 35 miles north-northeastward of Ra's Rakān (sec. 6B-18). Most of the known pearl banks are situated southward and southwestward of this line. (See View No. 59.)

Depths on Great Pearl Bank, while irregular, average 10 to 15 fathoms, but there are 20 to 25 fathoms in places; many shallow knolls, with depths of 3 to 9 fathoms, lie on the bank. Depths change suddenly by as much as 2 or 3 fathoms in places. Extensive reefs, with depths of $1/2$ fathom to 3 fathoms are found within 45 miles of the coast, some having channels or open water inside them; the reefs are stony or of broken coral and they show up well except on cloudy days or when the sun is ahead.

There are heavy overfalls in places, especially about 35 miles northwestward of Sir Abu Nu'ayr. In navigating in the vicinity of the reefs, the eye is the only guide, and a good lookout should be kept from aloft. It is not safe to be underway after dark when near or within the reefs.

Many islands, some close to the coast and others far offshore, lie on the banks. Some are high, many are barren, and most have a low projecting sandy point at their southeastern end. With the exception of Jazirat Dalma' (sec. 6A-25), few have permanent inhabitants, though they are frequented by pearl boats in summer and by fishermen from Abu Zaby in winter.

CAUTION.—Extreme care must be taken when a vessel is on Great Pearl Bank, for the tidal currents are strong and uncertain, and the bank has not been completely surveyed. When southward of the parallel of $25^{\circ} 1/4' N.$, and westward of the meridian of $53^{\circ} 1/4' E.$, particular caution is required, and the safety of the vessel is dependent upon a vigilant lookout being maintained. Soundings give little or no guidance when approaching the islands and reefs. A vessel drawing more than 10 feet should not be underway after dark anywhere in the area.

From observations made by a British naval vessel in 1924, it appears that between Sir Abu Nu'ayr and a position about 30 miles northeastward, the tidal currents set eastward and westward at a rate of about $3/4$ knot; that between the same island the meridian of $53^{\circ} 10' E.$ they set east-southeastward and west-northwestward at a rate of about $1/2$ knot; and that between the meridian of $53^{\circ} 10' E.$ and Jazirat Halul they set northward and southward at a rate of about $1/4$ knot.

PILOTS.—A vessel visiting this coast or navigating among the reefs of Great Pearl Bank should have a pilot on board. The best pilots for the coast can be obtained at Abu Zaby.

SIR ABU NU'AYR (Jazirat Sir Abu Nu'ayr).—This island, lying about 44 miles northward of Abu Zaby, consists mainly of small volcanic hills, except that its southeastern

extremity is a very low sandy point. The summit, a table-topped peak, rises to a height of 240 feet near the southern end of the hills; it is fairly conspicuous except when seen from northward.

The island is bordered by a reef which extends from 400 yards to 1/2 mile offshore. Boat landings can be made on the southeastern coast, with the summit bearing 285°. Two rocks lie awash about 2/5 mile off the northern end of the island. The southeastern point should be given a good berth at night. Soundings are not a good guide for a vessel approaching the island.

The island is uninhabited, but during the pearl season, it is visible by a number of boats.

Anchorage is obtainable anywhere around the island.

A white mooring buoy is positioned about 16 1/2 miles westward of Sir Abu Nuayr.

6A-16 SOUTHEASTERN PART OF GREAT PEARL BANK—DANGERS.—Ruqq az Zaqqum, with a least depth of 13 feet, is a pearl bank lying about 34 miles west-northwestward of Abu Zaby; it is not marked by discoloration, and soundings give little guidance when approaching it. It lies at the eastern end of a 5-fathom bank which extends about 8 1/2 miles west-northwestward and west-southwestward from its shoalest part; depths of 23 to 26 feet are on the western edge of the bank.

A lighted drilling platform is positioned about 35 miles southwestward of Sir Abu Nu'ay. Numerous drilling operations are in progress (1964) within an 8 mile radius of the platform. A steel pipe projects about 35 feet above the sea 11 miles westward of the platform.

Between Ruqq az Zaqqum, Abu Zaby, and Ruqq al Hajji (sec. 6A-18), the area has not been satisfactorily surveyed; there are heavy overfalls in many places. In 1926, a shoal with a depth of 3 1/2 fathoms was reported to lie about 11 miles southward of the shoalest part of Ruqq az Zaqqum, and in 1927 other shoals were reported to lie about 12 miles southwestward, 8 miles southward, and 10 miles south-southeastward of that same part; the latter three shoals have not been examined and their charted positions are approximate.

Within 25 miles of Abu Zaby depths are very irregular and many patches with 3 to 6 fathoms exist. Between these patches northward of Abu Zaby and southward of Sir Abu Muayr there is an extensive detached bank with depths of less than 10 fathoms over it; there are depths of 6 fathoms on the southwestern part of this bank, westward of which the survey is incomplete.

SOUTHERN SIDE OF THE PERSIAN GULF—ABU ZABY TO SIR BANI YAS

6A-17 From Abu Zaby, the coast trends westward about 100 miles to the island of Sir Bani Yas. In the eastern part of this coast are many creeks and backwaters, and channels through and between the reefs which have been only partially examined. The land behind the coast is stony desert with small detached groups of volcanic hills; low cliffs are along the coast. For about 30 miles southwestward of Abu Zaby, the apparent coastline is formed by a number of low islets with creeks running in between them and meeting behind them. The mainland is a considerable distance within these islands

and has not been examined. All of the creeks are reported to have shallow entrances but are deeper inside.

The tidal currents are reported to be strong in places, particularly around the points of the islands, through the narrow channels, and between the reefs.

HALAT AL Bahrani, on the southwestern side of the entrance of the backwater southward of Abu Zaby, is a low sandy island with some mangrove on it. A channel through the reefs, about 5 miles westward of Halat al Bahrani, is marked by light buoys and beacons.

Ra's Abu Kashashah (Jabal Abu Kashashah) is a small hill on the island lying about 1 mile southward of Halat al Bahrani. Ra's Zubbaya is close northwestward of Ra's Abu Kashashah. Ra's al Kahf, about 7 miles southwestward of Ra's Abu Kashashah, is a comparatively high flat-topped rocky point, which is probably part of the mainland.

Al Jirab and Al Qantur, two low islands lying 3 1/2 and 5 miles south-southwestward, respectively, of Ra's al Kahf, are covered with mangrove and separated from each other and from the mainland by small creeks.

The above-mentioned islands are fringed by a reef which extends about 3 miles northwestward from Halat al Bahrani and 8 miles northwestward from Al Qantur.

KHAWR QANTUR, a passage through the reefs, is entered about 23 miles west-south-

westward of Abu Zaby; it is about 1 mile wide at its entrance where there are charted depths of 2 and 3 fathoms with 4 and 5 fathoms farther in. It trends southward about 8 miles and then branches, one part extending eastward around the southern side of Al Qantur and the other extending westward around the southern side of Jazirat as Salali.

FASHT AL BAZM (Bazm Reef), which forms the western side of Khawr Qantur and extends about 53 miles westward from it, also forms the northern side of Khawr al Bazm (sec. 6A-19). The northern edge of this reef lies from 12 to 17 miles off the mainland and is charted only approximately. Soundings are no guide to a vessel when approaching the reef as depths of 5 to 10 fathoms are found both close to it and at a distance of 15 miles from it.

JAZIRAT AS SALALI, about 2 3/4 miles westward of Al Qantur, is low, except for a hill near its northeastern end. A channel westward of the island leads into Khawr al Bazm which is used by boats at high water.

ABU AL ABYAD, an island about 1 1/4 miles westward of Jazirat as Salali, is the largest in this vicinity; low sandhills are on its western part. Salahah, a rocky islet about 4 1/2 miles westward of Abu al Abyad, lies on the reef about 1 mile within its southern edge; a number of detached rocks are in the vicinity of Salahah.

AL JUNAYNAH, a rocky islet about 4 1/2 miles westward of Salahah, lies on the south-

ern edge of the reef; Umm Amim, a smaller islet, is about 1 1/2 miles north-northwestward of it.

AL FUAY' (Marrawah), an island 24 feet high at its western end, lies about 3 miles northwestward of Al Junaynah; a small village stands on its northwestern part. A cairn is located on the southern side of the island about 1/2 mile from its western end.

FIYYA, a small island 12 feet high, lies close westward of Al Fuay' and is separated from it by a drying flat of sand and coral; a few houses are on its northeastern part. The island is covered with scrub, except at its eastern end where there is some mangrove and a tank. A sand and coral spit extends about 3 1/2 miles west-southwestward from Fiyya.

6A-18 AL BAZM AL GHARBI, 8 feet high, sandy, and covered with scrub, lies about 4 1/2 miles west-northwestward of Fiyya and is the westernmost island on Bazm; it has some mangrove along its eastern shore. Fasht al Bazm extends about 1 1/2 miles southeastward, 3 miles westward, and 2 1/2 miles northwestward of Al Bazm al Charbi.

Al Fuay', Fiyya, and Al Bazm al Gharbi are fringed on their southern sides by reefs which extend 1 mile to 1 1/2 miles offshore.

REIDEIM, a detached and drying reef lying about 5 1/4 miles northwestward of Al Bazm al Gharbi, is about 5 miles long and 1 1/2 miles wide and marks the northern limit of

Fasht al Bazm. A number of shoal patches, with depths of 18 to 23 feet, lie within 3 miles of the northwestern extremity of Reideim and of the northern and western edges of the reef surrounding Al Bazm al Gharbi.

HALAT AL HAIL, lying about 6 1/2 miles northeastward of Al Fuay', is low, sandy, and 4 feet high with a landlocked lagoon in its center. An 8-foot cement cairn stands on the northwestern side of the island. Shoals, with depths of less than 2 fathoms, extend about 1 mile northward and northeastward from Halat al Hail.

RUQQ AL HAJJI is an extensive unsurveyed shoal area which has on it a few drying sandbanks. Halat al Mubarraz, a sandy islet about 3 feet high, lies within the southern edge of Ruqq al Hajji in a position about 4 miles north-northwestward of Halat al Hail. A light is shown on Halat Mubarraz.

KHAWR BASHUBAR, the channel between Fasht al Bazm and Ruqq al Hajji, is about 1 1/2 miles in width and has depths of 4 to 8 fathoms in the fairway. The tidal currents set eastward and westward through this channel and are strong at springs.

BU TINI, an extensive circular area about 9 miles in diameter within the 3-fathom curve, consists of low sandbanks surrounded by coral reefs lying about 6 1/2 miles west-northwestward of Ruqq al Hajji; a considerable part of the northern portion partially dries. Halat Tini, a small sandy islet 4 feet high, lies toward the (continued on page 187)

southwestern edge of the area; it is sparsely covered with scrub and is the only portion of Bū Tīnī identifiable at all stages of the tide. On Bū Tīnī, as on many other shoals of Great Pearl Bank, fisherinen can be seen wading, far from their boats, in search of pearl oysters.

Depths of 4 to 6 fathoms are about 1 mile outside the 3-fathom curve encircling Bū Tīnī, except eastward and westward of its southern extremity. Two patches, with depths of 15 and 16 feet, lie about 6½ miles north-northwestward and 6 miles northward of Reideim. A shoal, with a least depth of 13 feet, lies about 3½ miles westward of the southern extremity of Bū Tīnī.

Khawr Halj, lying between Ruqq al Ḥājjī Reideim, and Bū Tīnī, has general depths of 4 to 6 fathoms, but the navigable depth is 22 to 28 feet over the ridge extending between the aforementioned 15 and 16 foot patches.

6A-19 Directions.—Khawr Halj is navigable by day in clear weather. The drying banks of Bū Tīnī can be seen from aloft at some distance from the area, and Al Bazm al Gharbī is visible from aloft when in midchannel.

When proceeding eastward through Khawr Halj, a vessel should favor the Bū Tīnī side of the channel, keeping the sandbanks of that shoal in sight until past it. A good lookout should be kept for the pale green water on Ruqq al Ḥājjī.

To proceed through Khawr Bashūbar from a position southward of Bū Tīnī, a vessel should steer eastward with caution until Ruqq al Ḥājjī is sighted, thence along its southern edge, passing about 1 mile southward of Ḥālat al Hu-barraz.

These passages should be used only with the sun astern.

Khawr al Bazm, a blind channel except for boats, leads between Fasht al Bazm and the mainland for about 45 miles; it has a width of about 3½ miles at its entrance which decreases to about 1 mile at its head.

The best approach to it is from the direction

of the island of Sir Bani Yās (sec. 6A-21) and northward of Bill Islet and Jazirat al 'Ishā; it can also be entered from northwestward of Al Bazm al Gharbī.

A vessel proceeding to Khawr al Bazm should follow the directions for Sir Bani Yās anchorage (sec. 6A-22) until Bill Islet bears 133°, distant 5¼ miles. Then steer 100° until Bill Islet bears 171°, distant 2.9 miles, and then alter course to 126°, keeping to this charted recommended track. The least depth on this track is 27 feet about 2½ miles northward of Bill Islet. When Bill Islet bears 257° astern, alter course to 077°, thence alter course to 100° when Hook Islet bears 280° astern, and to 126° when Fatair bears 306°. Then proceed on an easterly course for Khawr al Bazm when the northern extremity of Jazirat al 'Ishā bears 270°. When the southeastern end of Al Bazm al Gharbī bears about 069°, it should be approached on that bearing, and **anchorage**, completely sheltered by the reef, can be taken in 5 fathoms, clay, good holding ground, about 1 mile offshore.

Khawr al Bazm can also be approached from northward, passing westward of Reideim. The northern part of this channel has not been surveyed.

Passage into Khawr al Bazm from either of the above directions should not be attempted during periods of poor visibility as the low-lying islands are difficult to see and the tidal currents are strong and unpredictable in direction and velocity.

Proceeding through Khawr al Bazm from southward of Al Bazm al Gharbī, the depths appear to be more regular than in the approaches; vessels should pass about 1 to 2 miles southward of the islands of Fasht al Bazm, being guided by the eye when approaching the edge of the reef. Al Junaynah (sec. 6A-17), which is rocky, can be passed close to.

6A-20 Ra's as Ṣawāmi', low, rocky, and fringed by coral reefs, is situated about 9 miles south-southeastward of Al Bazm al Gharbī; it

is backed by Hadwaniya, a range of stony flat-topped hills, 125 feet high. **Jabal Gharain**, a conspicuous 122-foot hill close inland from the extremity of Ra's as Ṣwāmi', shows white against the darker background of Hadwaniya; it is prominent when bearing more than 160°.

From Ra's as Ṣwāmi', broken ground and shallow banks, with depths of 4 to 13 feet, extend about 3 miles northward and 7½ miles northwestward; an 11-foot patch lies in the fairway of Khawr al Bazm in a position about 4½ miles north-northeastward of Ra's as Ṣwāmi'.

A chain of low scrub-covered islands, coral reefs, and drying banks extend from Ra's as Ṣwāmi' to about 5 miles northwestward of Jazirat al Hamar, which is 8 feet high and lies about 20 miles westward of Ra's as Ṣwāmi'. Of these islands, Bū Shiyarah and Jazirat Dagallah are inhabited by a few fishermen during the winter months. Thimairiyah, 7 miles westward of Ra's as Ṣwāmi', is mostly low but rises to a 49-foot cliffy headland at its northwestern end. The coast, lying 1½ to 2½ miles southward of these islands and reefs, is generally low and sandy; an exception is conspicuous Ra's Jaliya, a promontory with cliffs 90 feet high, situated about 8½ miles westward of Ra's as Ṣwāmi'. Ra's Jaliya is fringed by a coral reef which extends a little more than ½ mile offshore. Most of the water area between these islands and the coast is available only to boats of light draft.

The land behind the coast is desert, with ranges of stony, rugged, and generally flat-topped hills running southeastward; the latter are separated from one another by large flat sandy areas which flood during abnormally high tides.

The coast extending westward from southward of Jazirat al Hamar is generally low and sandy with a few small stony hills rising to a height of 30 feet. It is fringed by a coral reef extending from 400 yards to ½ mile offshore and backed by a large area of sandflats which flood and partly cover at high water; there are some breaks in the reef.

Jabal Dhanna (Az Zannah), a conspicuous 384-foot peak surrounded by numerous smaller peaks interspersed with ravines, rises about 5½ miles southward of Sir Bani Yās. Oil tanks and radio masts stand near the summit. The low point fronting Jabal Dhanna has reef extending about 1 mile northeastward and 2½ miles northwestward from it.

Off-lying islets—Dangers.—From Rashid (Jazirat Ghasha) (sec. 6A-21), a complex bank with deep channels, coral reefs, and drying sandbanks extends about 16½ miles east-southeastward; a number of low islands lie on this bank.

Umm Kirkum, a sandy islet, 3 feet high, lies 6 miles east-southeastward of Rashid.

Umm Qassar, 11 feet high, is separated from Umm Kirkum by a narrow channel.

Hook Islet, a very small sandy islet, 9 feet high, lies 1¾ miles southwestward of Umm Qassar. A dangerous sunken rock lies about 1 mile east-southeastward of the southern extremity of Hook Islet.

Fatair, a small sand ridge, 3 feet high, lies on a coral reef in a position 5 miles eastward of Hook Islet. Two small sandbanks, each of which dries 6 feet, lie about 1 mile westward and 1 mile southwestward, respectively, of Fatair.

Jazirat al 'Ishā, 9 feet high, lies at the southern end of a fairly extensive coral reef about 3½ miles south-southeastward of Fatair; this reef has a small lagoon, with a depth of 7 fathoms at its northern end. An underwater rock lies 1½ miles northward of Jazirat al 'Ishā; a reef with depths of 6 to 10 feet lies about 3½ miles east-northeastward of the islet.

Niwat al Boom, consisting of two coral heads, each with a depth of 1 foot, lies about 4 miles south-southeastward of Hook Islet.

Coral heads and reefs with depths of less than 18 feet extend southward of Niwat al Boom and southeastward from Jazirat al 'Ishā as far as Jazirat Dagallah (sec. 6A-20). Numerous shoals extend northward and westward from

Ra's as Sawami' in the entrance of Khawr al Bazm.

SAMMAN, a sandy spit and off-lying sandbank with a depth of 7 feet at its outer end, extends nearly 3 1/2 miles west-southwestward from Al Bazm al Gharbi.

Shoals, with depths of 19 and 20 feet, lie about 5 1/2 miles west-northwestward and 5 3/4 miles westward, respectively, of the northern extremity of Al Bazm al Gharbi.

6A-21 SIR BANI YAS AND OFF-LYING ISLETS AND DANGERS.—Sir Bani Yas (Jazirat al Yas) is about 5 1/2 miles northward of Jabal Dhanna (sec. 6A-20); it rises to volcanic hills, nearly 500 feet high, in its central portion. Qarn al Khabta, its most conspicuous peak, is 484 feet high, conical, and lighter in color than the rest; a CAIRN, 5 feet high, is on its summit. Mount Stewart (24° 19' N., 52° 36' E.), a black peak 483 feet high, rises about 400 yards west-southwestward of Qarn al Khabta; it is also surmounted by a small CAIRN. Sydney Hill, 443 feet high, stands about 1 mile northward of Mount Stewart and being slightly detached is conspicuous when seen from westward. (See View No. 60.)

Stokes Bluff, the eastern extremity of the island, is 71 feet high, but the coast on each side of the bluff is low. Cliffs on the northern and western side of the island have a maximum height of 48 feet and 15 feet, respectively. From the southern limit of the hills, the ground slopes down to a low sandy plain, covered with coarse scrub, which terminates in Ra's al Khuza'iri, the southern extremity of the island.

Dhahar, a village on the north coast of Sir Bani Yas, consists of a few mud houses. Awafi, a village on the western side of the island which is inhabited only during the winter months, is made up of rush huts and tents. Khawr al Bab, a break in the fringing reef off Awafi, has a least depth of 1 foot and provides shelter for a few small dhows; it is marked by a 5-foot BEACON.

Duwaisir (Meriton Bay), a small lagoon in the southeastern part of the island, provides excellent shelter for small craft. The 100-yard wide entrance has a depth of 1 foot, but inside are depths of 30 to 37 feet. A tripod BEACON surmounted by a white diamond daymark stands near the eastern entrance point.

A fringing reef extends about 200 yards to

3/5 mile off the eastern side of the island, and from 2/5 mile to 1.1 miles off its northern and western sides.

WALTERS SHOAL, with a depth of 12 feet, lies about 7 3/4 miles northwestward of Sydney Hill.

RASHID, a low flat scrub-covered rocky islet, 9 feet high, lies on a shoal in a position about 3 1/2 miles north-northeastward of Sir Bani Yas. These shoals, several of which dry in the form of low sandy islets, have not been closely examined, but it is extremely doubtful whether there is any navigable passage through them. A CAIRN, 24 feet high, stands near the western extremity of Rashid and is a useful mark to a vessel approaching the anchorage off Sir Bani Yas.

AYAYAT GHASHA, part of which dries, is a coral reef lying about 1 mile south-southeastward of Rashid; a narrow channel, not closely surveyed, separates it from that islet. Low sandy islets (sec. 6A-20) lie about 6 miles eastward and east-southeastward of Ayayat Ghasha.

CRABBE SHOAL (Niwat Ghasha), a shoal area with a least depth of 24 feet, lies about 2 1/4 miles northwestward of the cairn on Rashid; it is usually marked by overfalls. A LIGHT BUOY is moored near the southern extremity of Crabbe Shoal, about 1 1/4 miles east-southeastward of Ghasha Light.

GHASHA LIGHT (24° 26' N., 52° 34' E.), stands about 4 miles west-northwestward of the cairn on Rashid.

THE RIDGE, a steep-to rocky spit with a least depth of 17 feet, extends about 1 1/2 miles southwestward from Rashid; it is usually marked by overfalls. A LIGHT BUOY marks the western extremity of The Ridge. Two shoals with least depths of 22 and 18 feet lie about 1 1/2 miles and 1 mile west-southwestward, respectively, of the cairn on Rashid.

6A-22 (HARRISON BANK (Bu San'a); with a least known depth of 14 feet, but having probably less, lies about 2 miles northward of Sir Bani Yas. A LIGHT BUOY marks the eastern extremity of Harrison Bank. It is separated from the reef which fringes the northern side of that islet by a channel about 3/4 mile wide with a least known depth of 23 feet in the fairway; this latter depth is found about 3 1/4 miles northward of Sydney Hill on Rashid.

PARKS SHOAL, with a least depth of 25 feet, lies 2 3/4 miles northwestward of Sir Bani Yas; the shoal is fairly steep-to outside the limits of the 6-fathom curve which contains it.

A sandbank which nearly dries lies on the outer edge of the shoal which extends about 1 mile from the northeastern part of Sir Bani Yas. A bank with a depth of 11 feet at its outer edge, extends about 1 mile from near the middle of the eastern side of that island. A 35-foot patch lies about 1 1/2 miles southward of the southern extremity of Rashid.

LOVEJOY SHOAL (Rig Bu Aitr), with a depth of 10 feet, lies 1 1/2 miles east-southeastward of Stokes Bluff; a 16-foot patch lies about 1 mile east-southeastward, and some rocks nearly awash lie about 1.1 miles southeastward of the bluff. A detached shoal, with a depth of 10 feet, lies about 1 1/4 miles southward of the bluff.

BILL ISLET (Jazirat Yabr), sandy, 3 feet high, and steep-to on its southern side, lies about 4 miles eastward of Stokes Bluff. A reef extends about 1 1/4 miles northward from the islet. A shoal with a least depth of 47 feet lies about 2 3/4 miles southwestward of Bill Islet.

PRICE SHOAL, with a depth of 4 feet, lies about 1 3/4 miles south-southwestward of Bill Islet. Two patches with depths of 5 and 12 feet, lie about 1/2 mile northward and about 1/3 mile northwestward, respectively, of the shoalest part of Price Shoal.

MARSHALL ISLET (Hlat al Alaq), sandy and 2 feet high, lies about 3 3/4 miles southeastward of Ra's al Buwaitir, the southeastern extremity of Sir Bani Yas. A reef extends about 400 yards from the northern and eastern sides of this islet; the islet is fairly steep-to on its southwestern side. A LIGHT BEACON stands about 3/4 mile southeastward, and a LIGHT BUOY painted red and white is moored about 2 1/2 miles southward, respectively, of Marshall Islet.

A bank with depths of less than 6 feet in a number of places extends about 1 mile south-southeastward from Ra's al Khuzairi, the southern extremity of Sir Bani Yas.

LONG REEF, on which are numerous coral heads, lies about midway between Ra's al

Buwaitir and a point on the mainland about 1 1/2 miles northward of Jabal Dhanna (sec. 6A-20).

ANCHORAGES—DIRECTIONS.—Good anchorage can be taken in 8 fathoms, gray clay, about 2/5 mile off the reef fringing the southeastern side of Sir Bani Yas with Stokes Bluff bearing 008° and Ra's al Buwaitir bearing 255°.

Anchorage can also be taken in 9 fathoms, mud and sand, with Qarn al Khabta in range 339° with Ra's al Buwaitir and with Ra's al Khuzairi bearing 259°.

A vessel should approach these anchorages from northward of Sir Bani Yas with Qarn al Khabta bearing 175°.

When the cairn on Rashid bears 147° steer for it on that bearing. When the western edge of the cliffs close eastward of the Village of Dhahar is in range 191° with the 247-foot hill about 700 yards northeastward of Qarn al Khabta, steer on this bearing. As the hill may not be clearly distinguished until the transit is nearly reached, the bearing of Qarn al Khabta should be checked. This 191° course leads between Crabbe Shoal and Rashid and then between Harrison Bank and The Ridge, the latter being cleared when the cairn on Rashid bears 049° astern.

Then steer for the center of Bill Islet bearing 133°, and when Qarn al Khabta bears 244° change course to about 175°; when Qarn al Khabta comes to bear 285° alter course southwestward and steer with the center of Bill Islet bearing 053 1/2° astern.

When Ra's al Khuzairi bears about 259°, steer on that bearing for the anchorage. Ra's al Khuzairi open southward of Ra's al Buwaitir just clears the shoal southward of Lovejoy Shoal.

The aforementioned tracks have depths of not less than 30 feet, the shoalest part being between Crabbe Shoal and Rashid.

Vessels with a draft of more than 15 feet should not attempt to enter when visibility is less than 8 miles.

If proceeding to the lagoon of Duwaisir (sec. 6A-21), a vessel should close Ra's al Buwaitir until the entrance is reached, then turning into

the lagoon and keeping between the shoals which can easily be seen.

JABAL DHANNA OIL TERMINAL (24° 13' N., 52° 40' E.).—Two submarine-pipeline loading berths are positioned about 2 2/3 miles offshore of the Jabal Dhanna terminal area.

Pilots board inward bound vessels westward of Ghasha Light. Pilots also direct loading operations.

An ETA should be sent 48 hours before arrival to Abu Dhabi Petroleum Company through ship's agents. Bahrain Radio (GNV) handles traffic of approaching vessels. A statement of vessel's health should be included in the ETA message. Pratique can be granted by radio. The port is equipped with VHF radiotelephone service on Channel No. 16.

Anchorage may be taken in the vicinity of Marshall Islet.

The tidal range at the berths is 7 1/4 feet at springs, 5 feet at neaps. Currents in the vicinity have a velocity of 1/4 knot.

Berth No. 1 has 51 feet alongside and Berth No. 2 has 53 feet alongside. The maximum loading rate is 5,000 tons per hour. Vessels berth heading northwestward and load by gravity.

Two sets of LIGHT BEACONS, each set in range 248°, lead into No. 1 Berth and No. 2 Berth, respectively. A LIGHT is shown from the head of an L-head pier near the port area. Many of the mooring and other buoys at No. 1 and No. 2 Berths carry small lights.

Maximum draft for sailing at any stage of the tide is 41 feet. Deeper draft vessels can sail on the tide (draft minus 41 feet gives the height of the tide required). At least 5 feet keel clearance should be maintained.

Vessels are berthed only during daylight; there are no tugs. Water, provisions, fuel, repairs, medical, or other services are not available.

OUT LYING ISLANDS AND DANGERS

6A-23 AZ ZARQA' (24° 53' N., 53° 04' E.), about 39 miles northeastward of Sir Bani Yas, a LIGHT is shown near the summit of the island. The greater part of the southern half of the island is fringed by reef. A sandspit, which offers good landing on its eastern side, extends from the southern extremity of Az Zarqa'. (See View No. 61).

Shoal patches with depths of less than 18 feet lie up to 2 3/4 miles southward of the latter island. Other shoals, with depths of 6 fathoms or less, extend southward to Bu Tini (sec. 6A-18).

ANCHORAGE can be taken in 5 1/2 fathoms with the southern extremity of Az Zarqa' bearing 300°, distant 1 1/5 miles; this berth is fairly sheltered from the shamal, but some swell rolls in around the island.

TIDAL CURRENTS in the vicinity of Az Zarqa' are variable, being strongest at neaps, and causing a rippling effect resembling breakers at the southern end of the island.

JAZIRAT AL QARNAYN, about 11 miles west-northwestward of Az Zarqa', has three prominent detached peaks at its northern end, the tallest rising to a height of 190 feet; the southern part of the island is low. It is too small to offer any protection from the shamal. The best landing place is on a sandy beach on the western side of its southern extremity, the remainder of the island being fringed by reef. A spit, with depths of 11 to 23 feet, extends about 3 miles southward from Jazirat al Qarnayn. (See View No. 62.)

An oil pipe, marked by a light, stands about 16 miles northwestward of Jazirat al Qarnayn. A pattern of mooring buoys are located about 2 1/2 miles northward of the above light.

DAS (25° 09' N., 52° 52' E.), a small island about 12 miles northward of Jazirat al Qarnayn, rises to a height of 154 feet in its northern part, but its southern part is low, sandy, and fringed by reef. A spit with depths of 12 to 23 feet extends about 2 1/2 miles southward from the island. A LIGHT is shown on the northern extremity of the island.

A LIGHT BUOY with RADAR REFLECTOR is moored about 4 miles south-southeastward and a BUOY with RADAR REFLECTOR is moored about 5 miles southeastward, respectively, of Das Island. Vessels should pass south of these BUOYS. A BUOY with RADAR REFLECTOR is moored about 1/4 mile southward of Das Island.

Numerous lighted wellhead towers and pipelines connecting with Das are located in a charted area extending about 25 miles eastward of the island. Vessels are requested to keep outside this area.

A freighter anchorage in 40 feet about 1/2 mile southeastward of the harbor area of Das is marked by an orange buoy and offers shelter during shamals. A white mooring buoy is positioned 330 yards north of the freighter

anchorage. Other anchorages are westward of the island. A strong current runs from west to east along the south coast of the island. Although there are tides of up to 5 feet, the usual variation is 3 feet.

PILOTAGE is compulsory for tankers and available for other vessels on request. Pilots are stationed about 4 miles southeastward of Das.

A small harbor area, enclosed by rock breakwaters, is located at the southeastern tip of Das. The harbor entrance has a navigable width of 200 feet with a depth of 13 feet at LLW. Lights mark the entrance. Two berths along North Breakwater have depths of 12 feet at low water. Three 100-foot berths at South Breakwater have a depth of about 9 feet alongside at low water. Three tugs and a mooring launch are available. Only minor repairs can be accomplished. Oil and water pipelines are laid to two of the berths at South Breakwater, but only small amounts of either oil or water can be supplied. Mobile cranes with a capacity of up to 80 tons are available. There is a small hospital. An airfield is located on the western side of Das; radio communication is maintained. Radiotelephone service on 2182 kcs. is available. An AERONAUTICAL RADIOBEACON transmits from the island. A light is shown from a radio tower having red OBSTRUCTION LIGHTS near the northeastern extremity of Das. Conspicuous gas flares are about 3/5 mile farther west-southwestward. A mosque stands near the southwestern extremity of the island.

A landing place, other than at the harbor, is situated about 700 yards southward of the northeastern extremity of the island; it is sheltered from winds westward of north.

An offshore tanker berth with mooring dolphins is nearly 1/2 mile north-northeastward of the harbor entrance. This berth can accommodate tankers up to 65,000 tons in 55 feet of water. LIGHTS in range 320° lead to the tanker berth. The front light stands about 865 yards southward of the northern extremity of the island.

A lighted oil well structure is located about 26 miles north-northeastward of Das.

6A-24 JAZIRAT ARDANAH (24° 47' N., 52° 34' E.), about 25 miles northward of Sir Bani Yas, is 215 feet high near its northern end; its southern part is a plain. The island is

fringed by a reef except at its southern extremity, which terminates in a sandy spit; the best landing is on the eastern side of the spit.

Shoals with depths of 9 to 18 feet lie within 4 miles northeastward, 2 1/2 miles eastward, and 3 miles southward of Jazirat Ardanah. This shoal area prevents any but shallow-draft vessels closing the island from southeastward, but it breaks the force of the sea during a shamal. Fairly comfortable ANCHORAGE can be taken in 7 1/2 fathoms, sand, with the summit of the island bearing 319°, distant about 3 1/4 miles. It should be approached with caution as the depths decrease abruptly from 36 feet to 9 feet, and the shoals do not show up well, even during calm weather.

A shoal with a depth of 24 feet lies 6 1/2 miles eastward of the island. Three small patches with a least depth of 15 feet lie 2 1/2 to 3 1/2 miles northward of Jazirat Ardanah. Patches with depths of 19 and 20 feet lie about 4 1/4 and 5 1/4 miles north-northeastward of the island, and a 21-foot patch lies about 6 3/4 miles northward of it.

Depths of less than 36 feet lie southward and eastward of the main shoal area described above.

CREAGH SHOAL, with a least depth of 24 feet, is about 10 miles southeastward of Jazirat Ardanah and lies at the northern end of an atoll-like formation having irregular depths of 25 to 35 feet on its outer reefs and 24 feet to 12 fathoms within. The outer reefs extend about 4 1/2 miles in a northerly and southerly direction and about 4 miles in an easterly and westerly direction. CREAGH SHOAL LIGHT FLOAT, painted red with the name in white letters, and having a red framework tower, is anchored about 9 miles east-southeastward of the southern extremity of Jazirat Ardanah.

LIGHT BUOYS.—Light Buoy No. 1 is moored about 13 miles eastward, Light Buoy No. 3 about 8 1/4 miles southeastward, and Light Buoy No. 5, about 9 1/2 miles south-southeastward, respectively, of the southern extremity of Jazirat Ardanah. Light Buoy No. 7 is moored about 10 miles eastward of the southern extremity of Jazirat Dalma' (sec. 6A-25).

Directions.—When approaching Sir Banī Yās from northward, a vessel should pass about midway between Az Zarqā' and Jazīrat al Qarnayn on a southerly course until the summit of Az Zarqā' bears 058°; then steer 248° for about 14 miles passing southward of Light Buoy No. 1 and northward of Creagh Shoal Light Float. Thence steer 205° until Light Buoy No. 3 is abeam to starboard, whence alter course to 220° until Light Buoy No. 5 is abeam. Then steer 244½° for about 10½ miles until Jazīrat Dalmā' Light Float bears about 127°, whence alter course to 134° which leads to the pilot station off Ghasha Light. Vessels proceeding to the anchorage or tanker berths off Jabal Dhanna, should follow the directions given in section 6A-22.

Dayyinah, about 12 miles northwestward of Jazīrat Ardānah, is a flat sandy island sparsely covered with scrub; a detached 12-foot black rock at its northern end is the highest part. The northern part of the island is fringed by a reef extending up to ½ mile offshore in places. Patches with depths of 23 and 28 feet lie a little more than ⅔ mile south-southeastward and 1¼ miles southward of the island; a 31-foot patch lies about 4¾ miles southwestward of Dayyinah.

Two rocks with depths of 2 feet and 10 feet lie about ¾ mile northwestward and the same distance north-northwestward, respectively, of the detached black rock.

A can buoy is moored about 6½ miles east-northeastward of the northern extremity of Dayyinah.

An extensive and irregular shoal, with depths of less than 6 fathoms and many scattered patches with depths of less than 4 fathoms, lies from 17 miles northwestward to 15 miles eastward of Dayyinah and joins the 3-fathom bank northeastward of Jazīrat Ardānah.

An 18-foot patch lies about 3½ miles eastward and a 20 fathom patch lies about 3 miles east-northeastward, respectively, of the southern end of Dayyinah; a 21-foot patch lies about 6 miles east-northeastward of the island.

Another 18-foot patch, with a 20-foot patch about 3½ miles northwestward and a 21-foot patch 1½ miles south-southeastward of it, lies about 8¾ miles northward of Dayyinah. All

of these patches lie on the above-mentioned extensive shoal area.

Anchorage can be taken in 5½ fathoms about 1,800 yards south-southeastward of the southern extremity of Dayyinah; this berth offers more shelter from the shamāl than might be expected from the small size of the island.

6A-25 Shurā'awah (25°02' N., 52°14' E.), a 40-foot-high islet lying about 9 miles west-northwestward of Dayyinah, has on it a number of small hummocks oriented in an east-west direction; the middle of the islet is low.

There is little or no fringing reef, but depths of only 18 feet are found up to ½ mile southward of the islet. It has a good sandy beach. A rock, 8 feet high, lies about 1 mile northward of the islet.

Between Dayyinah and Shurā'awah, the depths are very irregular; the depths in the approach from southward are also irregular. The least depth in the approach from northward, with Shurā'awah bearing between 180° and 190°, appears to be 5 fathoms, but there may be reefs in this area. A 1-fathom patch lies on the southern side of Quarna al 'Ashairiq, the latter being an extensive pearl bank situated about 5½ miles northwestward of Shurā'awah. A coral reef with a depth of 30 feet lies about 2½ miles northward of Shurā'awah, and a 20-foot patch is about 7 miles south-southeastward of that islet.

A fair anchorage berth during a shamāl is about 600 yards offshore in 5 or 6 fathoms, sand, on the southern side of Shurā'awah; a vessel about 200 feet in length would swing into a depth of 4 fathoms; there is no shelter farther offshore.

Jazīrat Dalmā', about 15 miles northwestward of Sir Banī Yās, has a series of low hills in its northern part, which from a distance appear as a tableland; the highest hill, near the northern end, has an elevation of 305 feet. The southern part of the island is low and sandy and tapers away in a long sandspit.

A village with a tower and a population of about 60 in 1953 is located on the southwestern side of Jazīrat Dalmā'. Except off the aforementioned sandspit, the island is fringed by reef extending from 600 yards to ¾ mile off-

shore. A landing can be made on either side of the sandspit.

Good anchorage, sheltered from the shamāl, can be taken in about 9 fathoms with the southern tip of *Jazīrat Dalmā'* bearing 245°, distant about 2.1 miles.

Jazīrat Dalmā' Light Float, painted red, is moored about 8½ miles eastward of the northern end of *Jazīrat Dalmā'*.

Knight Shoal, with a depth of 9 feet, lies about 3½ miles west-northwestward of the southern tip of *Jazīrat Dalmā'*. A 15-foot patch lies about 1 mile off the mideastern side of the island, and **Baker Shoal**, with a least depth of 17 feet, lies about 1¼ miles farther eastward. A depth of 16 feet was reported (1963) about 1¼ miles eastward of **Baker Shoal**.

Hālat Masuma, about 1½ miles southward of *Jazīrat Dalmā'*, is a drying reef on which lie some shifting sand cays; there is a passage for boats between the reef and the island.

Drinkel Shoal, with depths of 11 to 17 feet, lies about 9 miles south-southwestward of *Jazīrat Dalmā'*.

Martin Shoal, an isolated danger with a depth of 20 feet, lies about 8¾ miles northward of *Jazīrat Dalmā'*.

Petty Patches, consisting of three detached heads, has the center pinnacle, with a depth of 15 feet, lying about 6½ miles eastward of *Jazīrat Dalmā'*; the other two heads, with depths of 20 and 23 feet, lie about ½ mile northward and ½ mile southwestward, respectively, of the center pinnacle.

Walters Shoal (sec. 6A-21) lies about 5 miles south-southeastward of Petty Patches.

Haslam Patches, with depths of 14 to 28 feet, lie from 4½ miles southward to 9 miles south-southeastward of *Jazīrat Dalmā'*. There is a channel about 3 miles wide between the extremity of Haslam Patches and **Dalrymple Rock**.

Soundings give little or no indication of the numerous shoals in the vicinity of *Jazīrat Dalmā'*. With good light and sea conditions, shoals with depths of less than 5 fathoms normally show up, but this cannot be relied on.

From Jabal Dhanna (sec. 6A-20), the coast trends west-southwestward about 18 miles to **Jabal Barāka** and is fringed by reef which

extends up to 1½ miles from shore. The shore itself is low, sandy, and covered by hummocks and desert grass. A group of hills, the highest and most conspicuous rising to 165 feet, lies about 6 miles west-southwestward of **Jabal Dhanna**.

Jazīrat Mashat, about 9½ miles west-southwestward of **Jabal Dhanna**, is connected with the mainland by a drying sandspit. Steep-sided flat-topped hills on the island rise to a height of 163 feet.

6A-26 Zabūt (24°08' N., 52°26' E.), a small island 136 feet high, lies close northward of *Jazīrat Mashat*; a stone cairn is on its summit.

Both *Jazīrat Mashat* and *Zabūt* lie at the southwestern end of a considerable area of shallow bank which extends about 6 miles northward from the mainland and terminates about ½ mile eastward of **Hālat Idai**. Both islands are also fringed by reefs that dry; landing is difficult except at high water.

Hālat Idai, about 4 miles northward of *Zabūt*, consists of a drying patch of sand on a coral reef. Shoals extend northward and north-northwestward from **Hālat Idai**; they terminate in **Beckford Shoal**, with a least depth of 9 feet, about 6½ miles northward, and in **Dalrymple Rock**, with a depth of less than 6 feet, about 5 miles north-northwestward.

Lewis Rock, with a depth of 12 feet, lies about 4 miles northeastward of **Hālat Idai**. Patches, with a depth of 17 feet and 20 feet, lie about 1¾ miles and nearly 1 mile, respectively, of **Lewis Rock**.

Stutter Shoal, with a depth of 14 feet, lies about 2 miles north-northwestward and **Beech Bank**, with underwater rocks and depths less than 3 fathoms, lies about 3½ miles westward of **Hālat Idai**. An 8-foot patch lies about ½ mile northward of **Beech Bank**.

Jabal Barāka (24°00' N., 52°20' E.) attains a height of 210 feet about 8¼ miles southwestward of *Jazīrat Mashat*. On the seaward side, it rises steeply from cliffs 20 feet high. **Jabal al Wutayd** rises to a height of about 147 feet about 5 miles southwestward of **Jabal Barāka**; it is the westernmost of a low range of coastal hills which extend from **Ra's as Sawāmi'** (sec. 6A-20).

Cobb Rock and **Burden Rock**, each with a depth of less than 6 feet, lie about $3\frac{1}{4}$ miles west-northwestward and $2\frac{3}{4}$ miles west-southwestward, respectively, of Zabūt. A 3-fathom patch lies about $2\frac{1}{4}$ miles south-southeastward of Burden Rock, with underwater rocks about 1 mile eastward and 1 mile southward of it.

Webb Rock, with a depth of less than 6 feet, lies about $6\frac{1}{2}$ miles northwestward of Jabal Barāka. Soundings give no indication of its proximity, and it cannot be seen, even during good conditions, except at very close range. It is dark brown and there is no sand on it to give the usual warning of lighter-colored water; it should be given a wide berth. A 3-fathom patch lies about 3 miles southward of Webb Rock.

The district of Sabkha Matti extends from the vicinity of Jabal al Wutayd to Ra's as Sila', about 28 miles west-northwestward, and is mostly desolate, low, and swampy; it is said to be the hottest part of the Persian Gulf. From Jabal Barāka, the coast trends west-southwestward about 6 miles and is fringed by reef which extends up to $1\frac{1}{2}$ miles offshore. Beyond this, the coast is imperfectly surveyed, and foul ground is reported to extend from 4 to 6 miles offshore; the mainland cannot be seen from the edge of the foul ground. A detached 18-foot patch lies about $18\frac{1}{2}$ miles west-northwestward of Jabal Barāka. Foul ground extends about $22\frac{1}{2}$ miles eastward from Ra's as Sila'.

From Ra's as Sila' to Ra's Mushayrib, about $15\frac{1}{2}$ miles northward, the coast consists of a succession of small rocky points, and the land rises to a level tableland, 100 feet high, in a series of small terraces or steps. This tableland is light colored and sometimes sparkles in the sunlight because of fragments of crystals in its surface. Kassār al Baya is an islet on the coastal reef about 4 miles northward of Ra's as Sila'. A patch, with a depth of 3 feet, lies about 1 mile southeastward of Kassār al Baya.

At Ra's Sarab ($24^{\circ}16' N.$, $51^{\circ}47' E.$), there is a small, conspicuous, table-topped hill, 60 feet high, and for a distance of about 1 mile farther northwestward the coast consists of low, white cliffs; from thereon, for about $1\frac{3}{4}$ miles, it falls toward Ra's Mushayrib, a very low, rocky, and shelving point. Between Ra's Sarab and Ra's

Mushayrib, the coast is fringed by reef which extends up to $\frac{1}{2}$ mile offshore.

6A-27 Al Yāsāt, about 15 miles east-eastward of Ra's Mushayrib, consists of four islands, about 15 feet high, bordered by low cliffs; two islets and a drying sandbank lie close southward of them.

The largest and northern island is separated from the next largest by a boat channel about 200 yards wide and 20 feet deep; an islet, 5 feet high, lies off the northern end of the latter.

A reef extends about $4\frac{1}{2}$ miles northward and $5\frac{1}{2}$ miles northeastward from the northern island of the group, and then a chain of extensive reefs continues about 60 miles northward; there is no known ship channel through it except that between Fasht al 'Udayd and Ruqq Kareinein (sec. 6B-12).

Anchorage can be taken southwestward of Al Yāsāt with the southern islet bearing between 068° and 090° , distant about $\frac{1}{2}$ mile.

Westward and northwestward of Al Yāsāt, along the coast and inshore of the extensive outlying reefs as far as Khawr al 'Udayd (sec. 6B-6), the survey is more complete than eastward of those islands, but it is probable that many uncharted rocks and shoal patches exist.

Mahamaliya, about 6 miles southwestward of the southernmost islet of Al Yāsāt, is a small light-colored islet, about 30 feet high, which has a flat top with a notch in it and is bordered by cliffs. A small detached patch, with a depth of 8 feet lies about 1 mile southeastward of Mahamaliya.

Umm al Hatab, about 6 miles north-northwestward of Mahamaliya, is a scrub covered island 8 feet high; its coast is rocky except in its southern part which is sandy. The islet lies on a reef with several above-water rocks off its northern end. This reef extends about 200 yards from the eastern and western sides of the islet, but the southern side is clear. **Rugg Musfair**, an extensive drying reef, lies about $3\frac{1}{4}$ miles north-northeastward of Umm al Hatab; a patch with a least depth of 6 feet lies 2 miles eastward Umm al Hatab.

Naita, an islet about 5 feet high, lies about $2\frac{1}{2}$ miles eastward of Ra's Mushayrib and has

on it some tufts of coarse grass and a few graves; several detached rocks lie off its northern end. The islet lies on the southwestern edge of Had et Tair, an extensive reef which appears to be joined to that extending northward from Al Yāsāt. A spit extends about 1 mile southeastward from Naita, and a 16-foot patch lies $\frac{1}{2}$ mile farther southeastward.

In the area southward of Naita and westward of Al Yāsāt, the depths are irregular, and in places where they do not exceed 3 or 4 fathoms there are overfalls. In the deeper parts the bottom is mud, but the shoaler patches are of rock or sand.

Naita Strait, $\frac{1}{2}$ mile wide, leads between the reef which extends 4 miles northwestward from Naita, and the reef which fringes the coast between Ra's Sarab and Ra's Mushayrib; foul ground extends 1 mile northwestward from the latter point. A depth of 20 feet can be carried through the strait, which is the only navigable passage leading northward between the mainland and the extensive reefs extending northwestward from Al Yāsāt. The greatest depth is on the northern side of the strait, and when passing Naita care must be taken to avoid the spit which extends more than 1 mile from the mainland and into the channel. The 16-foot patch, $1\frac{1}{2}$ miles southeastward of Naita, lies in the center of the southeastern approach to the strait and may be passed on either side.

Tidal currents in the strait set northwestward and southeastward, reaching a maximum velocity of $1\frac{1}{4}$ knots; the time of their turning is not known.

Dawhat an Nukhala is entered immediately westward of Ra's Mushayrib. There is a least depth of 11 feet in the fairway between shoals whose position can best be seen on the chart, but inside the inlet are depths of over 5 fathoms. A small islet 20 feet high, lies 3 miles southwestward of Ra's Mushayrib and is joined to the mainland, 1 mile westward, by a drying reef.

Jazīrat al Fadīyal, a narrow island about $2\frac{1}{2}$ miles long, lies with its southern extremity 1 mile northwestward of the small islet,

and is joined to the mainland, about $\frac{3}{4}$ of a mile southward, by a drying reef. At the northern end of the island is a plateau about 90 feet high and at its southern end a hill 96 feet high. The island and the coast in its vicinity are light in color.

Dawhat al Kawaisat is entered between the northern extremity of Jazīrat al Fadīyah and the mainland $1\frac{1}{4}$ miles westward. Two islets 15 feet high lie on the coastal reef on the western side of the entrance channel which is barely 100 yards wide between the reefs and is tortuous; inside the inlet the depths are over 5 fathoms.

6A-28 Ra's al Hazra ($24^{\circ}23'N.$, $51^{\circ}36'E.$), about 10 miles west-northwestward of Ra's Mushayrib, is very low, rocky and shelving. Several rocky islets lie on the reef which extends about $\frac{1}{2}$ mile offshore between the entrance of Dawhat al Kawaisat and Ra's al Hazra. A 4-foot shoal lies $3\frac{1}{2}$ miles southeastward of Ra's al Hazra and $1\frac{1}{2}$ miles offshore; a 9-foot shoal lies $3\frac{1}{2}$ miles eastward of the same point.

North Fareijat and South Fareijat are two islets, nearly 2 miles apart, which lie on the southwestern extremity of the great chain of reefs extending northward and northwestward from Al Yāsāt. These islets are about 20 feet high, table-topped, and light in color. The southern islet is situated about 6 miles eastward of Ra's al Hazra.

A number of dangerous detached shoals lie within 5 miles southeastward and eastward of South Fareijat.

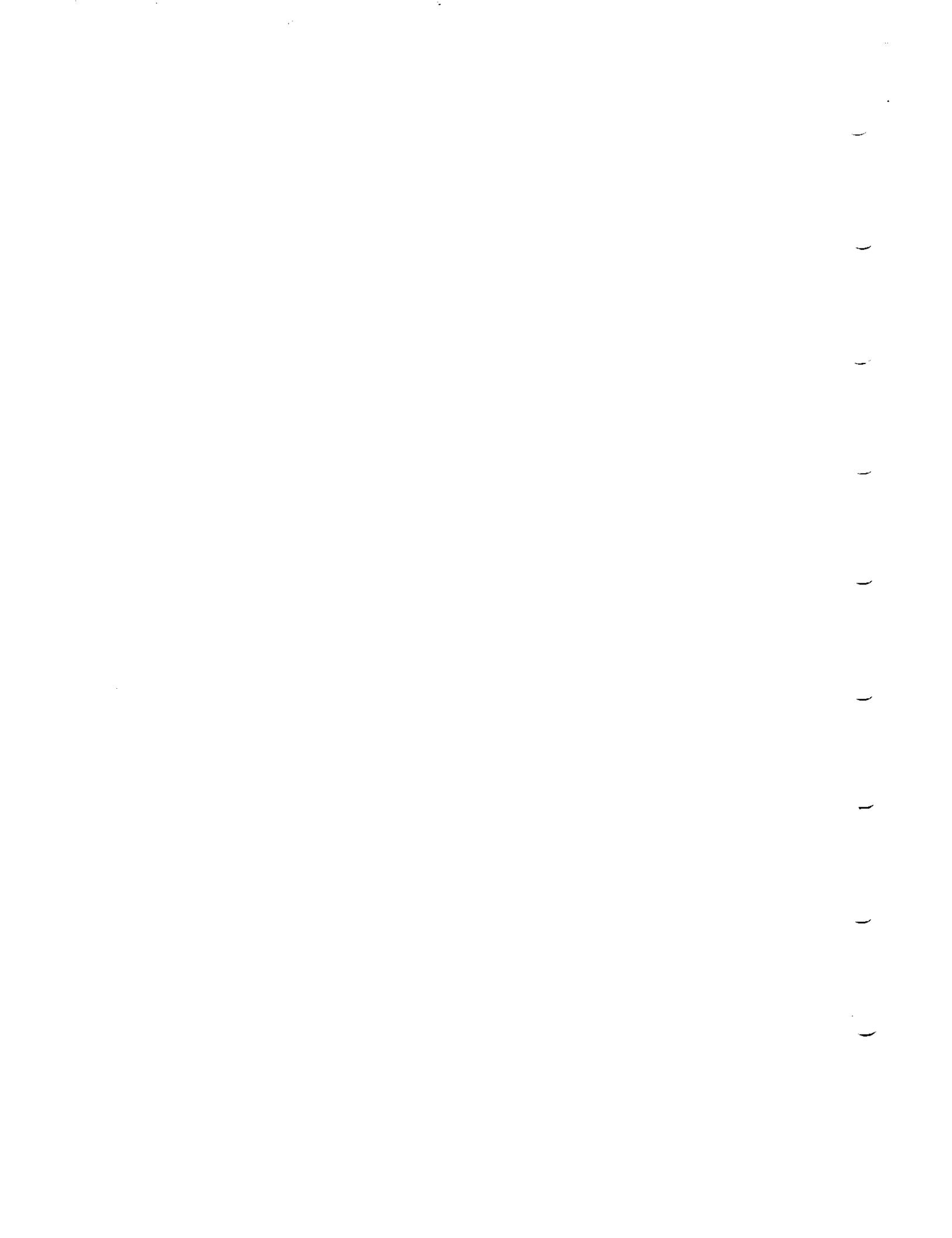
Niyamat Entin are three very low islets lying in a north-south direction on the reef extending northward $4\frac{1}{2}$ and $6\frac{1}{2}$ miles from North Fareijat. The group are separated from North Fareijat by a deep channel $1\frac{1}{2}$ miles wide. Fasht 'Azizi, a drying reef $1\frac{1}{4}$ miles long and separated from the main reef by a narrow channel, lies $2\frac{1}{2}$ miles southwestward of the group. The area for a distance of more than 15 miles eastward of Niyamat Entin is reported to be encumbered with shoals through which no known passage exists, and it has not been examined.

Kafāi, about 13 miles north-northeastward of Ra's al Hazra, is the largest of three islands, all about 30 feet high, with a number of off-lying rocks and islets. A drying reef extends 2 miles southward and a $\frac{1}{2}$ mile northward from the main island. A spit with 17 feet over it extends $1\frac{1}{2}$ miles northward of Kafāi, and an isolated 15-foot shoal lies 2 miles northeastward of this island. An extensive shoal, with a depth less than 6 feet, lies $4\frac{1}{2}$ miles north-northwestward of Kafāi.

Makhāsib, about 7 miles northeastward of Kafāi, is a flat rocky islet, about 7 feet high fringed by a reef extending as much as $1\frac{1}{2}$ miles from it. A channel, about $1\frac{1}{2}$ miles in

width and having depths of 24 to 30 feet, separates the fringing reef from Ruqq Umm el Umbar, an extensive shoal lying southeastward of the islet; the limits of Ruqq Umm el Umbar have not been determined. A 25-foot patch lies about $1\frac{1}{2}$ miles west-southwestward of Makhāsib.

Caution.—In the area westward of the reefs on which the Fareijat islets stand and as far as the mainland southward of Ra's Khumais, there are numerous shoal areas with depths between 1 foot and 3 fathoms; between these shoals are channels which can be navigated by vessels of moderate draft.



COASTAL FEATURES—LANDMARKS (Continued)

6A-29 Between Ra's al Hazra and Ra's Bu Kumeiz (sec. 6B-1), about $12\frac{1}{2}$ miles north-northwestward, a large bay indents the coast with Khawr Adh Dhuwein along its western side. The shores of the bay, except in the vicinity of Khawr Adh Dhuwein, consist of low white cliffs.

Numerous shoals, with depths of less than 3 fathoms, lie up to $7\frac{1}{2}$ miles northwestward of Ra's al Hazra; Jazair Ghagha and a number of above- and below-water rocks lie on the shoals. Jazirat Ghagha, Qasar Khuyain, and Qasar Haram are the most important islets of Jazair Ghagha. In 1956, a **beacon** consisting of oil drums stood on the southern end of Qasar Haram. Jazirat Ghagha comprises two islands which lie close together about 2 miles northwestward of Ra's al Hazra and are 35 and 37 feet high. A 2-fathom patch lies about $\frac{3}{4}$ mile northward of the eastern island.

Fasht Umm Janna, with depths less than 6 feet, lies with its outer edge about $3\frac{3}{4}$ miles eastward and 2 miles northward of Ra's Bu Kumeiz from which it is separated by a narrow channel leading northwestward. Numerous shoals, with depths of 5 to 18 feet, lie within 5 miles northward, eastward, and southward of Fasht Umm Janna. A channel (see "Directions" below) leads from northwestward, around Fasht Umm Janna, to Khawr Adh Dhuwein.

Khawr Adh Dhuwein (Khawr Adh Dhuwaihin), lying westward of the shoals that extend westward and northwestward from Ra's al Hazra, is approached from a position about 6 miles northward of Ra's Bu Kumeiz where a channel, available to vessels drawing about 15 feet, leads to its head; the whole area has numerous shoal patches, mostly of sand and coral, and the bottom is very irregular except at the southern end, away from shoal patches, where it is very even. In 1956, a **beacon** consisting of oil drums stood at the head of Khawr Adh

Dhuwein in a position about 20 miles southwestward of Ra's Bu Kumeiz.

For safe navigation in these waters, passage should be made only during favorable conditions of visibility and not before 0930 or after 1630 hours, or at any time during a flat calm; shoal patches do not show up well then.

Directions.—From a position in $24^{\circ}40'25''$ N., $51^{\circ}31'55''$ E., about $5\frac{3}{4}$ miles north-northeastward of Ra's Bu Kumeiz, a vessel should steer 129° for 6 miles, thence 218° for 7.3 miles, passing close eastward of shoals with depths of 5, 11, and 9 feet, which extend as far as $3\frac{1}{4}$ miles southward from Fasht Umm Janna.

After passing the southern end of the 9-foot shoal at a distance of about 400 yards, alter course to 246° for 8.3 miles; when very shoal water fringing the western shore is sighted ahead, speed should be reduced to about 5 knots. At the end of this leg the vessel will pass between a spit, with a depth of 11 feet at its outer end, and a shoal patch about $\frac{1}{2}$ mile east-southeastward, the latter situated about $9\frac{1}{4}$ miles south-southwestward of Ra's Bu Kumeiz; then steer 215° for 5.1 miles and thence 180° for about $4\frac{1}{2}$ miles to an **anchorage** in about $3\frac{1}{2}$ fathoms at the head of Khawr Adh Dhuwein.

The coast for a distance of about 5 miles southwestward of Ra's Bu Kumeiz forms a bight, at the northeastern end of which is a bay with a sandy beach. Good anchorage, sheltered from the shamāl, can be taken in about 8 fathoms off this bay in a position about 2 miles west-southwestward of Ra's Bu Kumeiz. The coast for a distance of about $1\frac{1}{2}$ miles west-southwestward of the latter promontory is fronted by a drying bank extending up to 1 mile offshore and on which lie some islets.

ANCHORAGES

6A-30 Khaymah.—See section 6A-7.

Khawr Umm al Qaywayn.—See section 6A-8.

Al Hamriyah.—See section 6A-9.

'Ajman.—See section 6A-9.

Ash Shāriqah.—See section 6A-10.
Dubayy.—See section 6A-11.
Khawr Ghanādah.—See section 6A-12.
Abū Ḥaby.—See section 6A-14.
Ṣir Abū Nu'ayr.—Section 6A-15.
Khawr al Bazm.—See section 6A-19.
Sir Bani Yas.—See section 6A-22.
Az Zarqa'.—See section 6A-23.
Dās.—See section 6A-23.
Jazirat Ardānah.—See section 6A-24.
Dayyinah.—Section 6A-24.
Shurā'awah.—See section 6A-25.
Jazirat Dalmā'.—See section 6A-25.
Al Yāsat.—See section 6A-27.
Khawr Adh Dhuwein.—See section 6A-29.
Ra's Bu Kumeiz.—See section 6A-29.

Part B. QATAR—EASTERN SIDE

6B-1 Ra's Bu Kumeiz ($24^{\circ}34' N.$, $51^{\circ}30' E.$), low and rocky, is the eastern extremity of the coastal projection forming the southeastern side of Khawr al 'Udayd (sec. 6B-6).

COAST—GENERAL

6B-2 From Khawr al 'Udayd, which has sheltered anchorage off the inlet entrance, the coast trends northeastward about 30 miles to Ra's al 'Arq, and for the first 20 miles it is bordered by the large white sand dunes of An Niqyan. The oil port of Umm Said is about $4\frac{1}{2}$ miles southward of Ra's al 'Arq.

From Ra's al 'Arq, the coast continues northward about 8 miles to Jabal Al Waqrah; the shore is sand and is backed by a low sandy or stony desert. The town of Al Waqrah, just northward of Jabal Al Waqrah, has a small craft harbor and an anchorage for large vessels about 3 miles eastward of it.

The coast then trends northward to Ra's Abū al Mūshūt, the eastern entrance point of the bay containing Ad Dawhah Anchorage. Ad Dawhah, the capital of Qaḥar, is at the southwestern corner of the bay, the latter being bordered on the south and west by stony flat-topped hills.

Northward of Ad Dawhah, for about 10 miles, the area consists chiefly of stony desert with a few low hills, but farther northward it becomes sandy and very flat. A slight indentation in the coast northward of Ra's al Quṭaifān provides shelter for small local craft, and beyond it are Khawr Shaqiq and Khawr Adh Dhakhira, two small shallow inlets.

Ra's Laffān is a very low and sandy promontory 43 miles northward of Ad Dawhah. Ra's Umm Hasāh, $16\frac{1}{2}$ miles farther northwestward, is a small rocky cape, close inland of which is a flat area covered with low sand dunes topped with grass tufts. Still farther inland, the terrain consists of an undulating desert of sand and stones rising 50 to 75 feet. The offshore anchorage in this area provides no shelter from any direction because of the low desert to the west and the open gulf to the east.

The coast northward of Ra's Umm Hasāh is backed by flat stony desert with occasional sandy hillocks. Ra's Rakan is the northwestern point of a low islet lying off the northern tip of the Qaṭar peninsula. Local small craft utilize the sheltered anchorage provided by the islet.

DEPTHES—DANGERS

6B-3 The sea approaches to the coastal areas covered by Part B of this chapter are shallow and generally obstructed by reefs, shoals, and islands. Fasht al Arrif extends 7 miles southeastward from the vicinity of Ra's al 'Arq; Mishiryāt, a low islet, lies on the southwestern side of the reef about $1\frac{1}{2}$ miles offshore. The coast from Ra's al 'Arq to Jabal al Waqrah is fronted by a fringing coastal reef which extends up to 2 miles offshore and has depths of less than 3 fathoms.

Ra's Abū al Mūshūt, the eastern entrance point of the Ad Dawhah harbor area, is fringed by reef. Reef also fringes the coast for a distance of some 10 miles northward of Ad Dawhah, and the 3-fathom curve lies as far as 11 miles offshore; the bottom consists of white

sand or rock and shows up well in clear weather. In the approach to this coast, the bottom generally becomes visible before the mainland is sighted.

In the vicinity of Ra's Läffän, the coastal reef does not lie much more than $\frac{1}{2}$ mile seaward. The approaches to the coast between Ra's Läffän and Ra's Rakan are clear, except off Ra's Rakan; the islet, of which Ra's Rakan is the northwestern extremity, is situated about 1 mile within the edge of the coastal reef at the tip of the Qaṭar peninsula. This section of the coast is the only part of the peninsula which

'Udayd to a low rocky point about $2\frac{1}{2}$ miles farther westward.

A drying bar of sand and coral with some small rocks on it, and over which a depth of 3 feet can be carried, lies across the entrance of Khawr al 'Udayd; farther offshore depths of less than 3 fathoms extend 2 miles eastward, northward, and northwestward from the eastern entrance point of the inlet.

A sandy shoal, about 2 miles long, extends along the northern shore of the entrance of Khawr al 'Udayd. There is deep water between the outer end of the shoal and the shore, but

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(1895) PERSIAN GULF—Umm Said approach—Wreck.—A stranded wreck (British Crown), will be charted in $24^{\circ}52'35''$ N., $51^{\circ}32'23''$ E.

(N.M. 46/66.)

(N.M. 41(1852), London, 1966.)
H.O. Charts 3684, 3660.
H.O. Pub. 62, 1960, page 199.

WINDS—WEATHER

6B-5 See sections 1-43 and 6-3.

COASTAL FEATURES—LANDMARKS

6B-6 Khawr al 'Udayd ($24^{\circ}36'$ N., $51^{\circ}20'$ E.), trends about 9 miles southwestward along the northwestern side of the promontory of which Ra's Bu Kumeiz is the eastern extremity. The southeastern shore of the inlet consists of Jabal al 'Udayd, a ridge of rocky hills, the northeasternmost of which is 190 feet high, table-topped with an indented edge, and light colored; about $\frac{1}{2}$ mile southwestward there is a ridge about 300 feet high. An Niqyān (Jabal an Niqyān), on the northwestern side of Khawr al 'Udayd, consists of round white barren sandhills, 50 to 80 feet high. The inlet is frequented by fishermen in winter. A sandy beach extends from the outer entrance point of Khawr al

the inlet is between reefs extending from a depth of 6 feet. depths of from 12 by banks and rocky f Khawr al 'Udayd part has a charted r in the inlet is said clear.

in the shamal, can be taken off the entrance of Khawr al 'Udayd in a position about $\frac{1}{2}$ mile from shore with Jabal al 'Udayd bearing 200° , distant $4\frac{1}{2}$ miles; depths are 4 to 5 fathoms, sand and shell. In approaching this anchorage care should be taken to avoid the shoals fronting Khawr al 'Udayd, and also to avoid getting too close inshore since the sandhills westward of the anchorage appear farther off than they actually are.

An Niqyān is an irregular range of white sandhills up to 150 feet high which borders the coast for a distance of about 18 miles north-northeastward of the northern entrance point of Khawr al 'Udayd; Naga Abu Anfus, the northernmost of these hills, is 138 feet high. An oil terminal is located about 1 mile southeastward of Naga Abu Anfus; a number of beacons are close northward and southward of the terminal. At the town of Umm Said, about

3 miles farther northeastward, the coast recedes and forms Dawħat Umm Said, thence it continues northeastward about $4\frac{1}{2}$ miles to Ra's al 'Arq ($25^{\circ}01' N.$, $51^{\circ}38' E.$). This part of the coast is low and large areas are subject to inundation at very high tides.

UMM SAID (Oil Terminal)

Position: $24^{\circ}54' N.$, $51^{\circ}34' E.$

Depths: Anchorages, 7 to 9 fathoms.

Pipeline berths, 42 feet.

Tidal rise: MHHW, 6.4 feet; MLLW, 2.6 feet.

6B-7 The oil terminal port of Umm Said consists of two offshore pipeline berths, each with 5 mooring buoys, designed for tankers heading 040° or 180° to allow for different winds.

Navigation.—From a position on the offshore track (sec. 6-2) close southward of the light buoy ($26^{\circ}14' N.$, $51^{\circ}53' E.$) moored about 35 miles eastward of Ra's Rakan, a course of 185° for a distance of about 57 miles leads to a position about $\frac{1}{2}$ mile westward of Mishut Light Float. This track passes over depths of not less than $6\frac{3}{4}$ fathoms. From hereon, see section 6B-10 for "Directions" leading to the anchorage area off the oil terminal.

A vessel coming from eastward can approach Jazirat Ḥalūl (sec. 6B-16) and bring it to bear $055\frac{1}{2}^{\circ}$ astern, thence steering $235\frac{1}{2}^{\circ}$ to pass about 1 mile northward of Kareinein Light Float and about $\frac{1}{4}$ mile northwestward of Mishut Light Float.

Winds and weather.—The prevailing wind in this area is the northwesterly shamāl from which the oil terminal is sheltered by the land; shoals afford some protection from easterly winds. See sections 1-43 and 6-3.

Tides and tidal currents.—The tides in this area have a large diurnal component and at times only one high water and one low water occur during 24 hours. This feature is more pronounced at Umm Said than at Ad Dawħah. Meteorological conditions may affect the tides by as much as plus or minus 2 feet. The mean tidal range is 4.3 feet.

At the northern end of Outer Channel, the time of high water is approximately 1 hour before that at Umm Said, and the rise of tide is less than that at Umm Said, comparing more closely with that at Ad Hawħah.

Westward of Ruqq Kareinein (sec. 6B-12), the tidal current sets nearly parallel to the shore and its rate hardly exceeds 1 knot. In the channel between Fasht al Arrif and Fasht al 'Udayd, the current sets north-northeastward and south-southwestward and attains a rate in excess of 2 knots at springs. Southwestward of Fasht al Arrif there is little tidal current.

In the approach to Umm Said through Outer Channel and Inner Channel, the flood current generally sets south-southwestward and the ebb current north-northeastward; the rate is as much as 2 knots at springs.

Cross currents will be experienced in these channels, particularly in the northern part of Outer Channel, between Outer Channel and S.E. Arrif Light Buoy, and between S. Arrif Light Buoy and Turning Light Buoy.

6B-8 Depths and dangers.—In Outer Channel, the least depth in 1964 was 37 feet just south of No. 1 and No. 2 Outer Channel Light Buoys.

Between Outer and Inner Channels, the depth varies from 40 feet at No. 9 and No. 10 Outer Channel Light Buoys to 12 or 13 fathoms between S.E. Arrif Light Buoy and S. Arrif

(7750) **PERSIAN GULF—Umm Said and approach—Buoys withdrawn.**—The following buoys no longer exist and will be expunged as indicated:

(a) Umm Said Outer Channel Lighted Buoy No. 5 ($24^{\circ}59'38''$ N., $51^{\circ}42'20''$ E. approx.).

(b) Umm Said Bay North Anchorage Lighted Buoy ($24^{\circ}54'13''$ N., $51^{\circ}34'39''$ E. approx.).

(N.M. 130, Bahrain, 1968.)

(N.M. 50/68.)

H.O. Chart **3684**.

H.O. Pub. 112, No. **35700**.

H.O. Pub. 62, 1960, pages **202, 203**.

lie in midchannel between Fasht al 'Udayd and Hālat Dalma and northward of the latter.

The channel southward of Hālat Dalma leads eastward into deep water, but an 8-foot shoal lies across the eastern entrance. Neither of the channels should be attempted without local knowledge: the water is opaque and the usual signs of discolored water marking the limits of the shoals are lacking.

A dangerous wreck lies sunk about $3\frac{1}{4}$ miles northeastward of Jessoura Beacon (sec. 6B-9).

A 29-foot shoal lies close eastward of Inner Channel Light Buoy No. 1.

6B-9 Aspect and landmarks.—In the town of Umm Said, about 3 miles north-northeastward of the oil terminal berths, a number of buildings stand near the coast.

A signal station is located on the shore abreast the anchorage off the oil terminal berths.

Navigational aids.—Kareinein Light Float, equipped with a radar reflector and having a letter "K" in white on each side of the red superstructure, is moored about $27\frac{1}{2}$ miles northeastward of Ra's al 'Arq. A light buoy and a mooring buoy are moored about 34 miles northeastward of Ra's al 'Arq. A light buoy and two mooring buoys are about 34 miles northeastward of Ra's al 'Arq and about $8\frac{1}{2}$ miles northward of Kareinein Light Float.

Mishūt (Mūshūt) Light Float ($25^{\circ}16.5'N.$, $51^{\circ}47'E.$), with the letter "M" in white on each side of the black superstructure, is moored about 18 miles north-northeastward of Ra's al 'Arq.

Waqrāh Light Buoy is moored about 9 miles north-northeastward of Ra's al 'Arq.

Hul Light Buoy, with the letter "H" in white on two sides of its superstructure, is moored about $4\frac{1}{4}$ miles east-northeastward of Ra's al 'Arq; a 33-foot patch lies about 400 yards eastward of the buoy.

Ra's al 'Arq ($25^{\circ}01'N.$, $51^{\circ}38'E.$) is marked by a 50-foot steel framework tower having a black triangular topmark.

Fasht al Arrif (sec. 6B-8) is marked on its eastern, southern, and southwestern sides by beacons as follows: Jessoura Beacon, a steel framework tower, 50 feet high and having a black triangular topmark, stands on the eastern side of the reef nearly $3\frac{1}{2}$ miles southeastward of Ra's al 'Arq. Shahin Beacon, about $5\frac{1}{4}$ miles southeastward of Ra's al 'Arq, consists of a steel pole with a black triangular topmark; a beacon, consisting of a steel pole with a black square topmark on a rock foundation, stands about $1\frac{1}{4}$ mile southward of Shahin Beacon. Nasr Beacon, a steel pole with a black diamond topmark, stands near the southeastern end of the reef about $2\frac{1}{2}$ miles southward of Shahin Beacon. Ghazal Beacon, a steel pole with a black triangular topmark, stands on the southwestern side of the reef about $2\frac{1}{4}$ miles northwestward of Nasr Beacon.

A beacon, consisting of a 50-foot steel framework tower with a black square topmark, stands on Mishiryāt (sec. 6B-8).

Outer Channel (sec. 6B-10) is marked by light buoys numbered from northward. The buoys on the western side of the channel are black conical and numbered 1, 3, 5, 7, and 9. The eastern side is marked by red can buoys numbered 2, 4, 6, 8, and 10.

Inner Channel (sec. 6B-10) is marked by buoys as follows: S.E. Arrif Light Buoy is moored about $1\frac{5}{6}$ miles southeastward of Nasr Beacon (see above). S. Arrif Light Buoy is moored about $3\frac{1}{2}$ miles southward of Nasr Beacon. That part of Inner Channel leading north-northwestward and northward from S. Arrif Light Buoy is marked on its eastern side by black conical buoys numbered 1 and 3; the

Light Buoy; close to No. 1 Inner Channel Light Buoy there is a depth of 47 feet.

From Inner Channel to the anchorage, the depths vary from 43 feet between the channel and Turning Light Buoy to 11 fathoms north of E. Anchorage Light Buoy and about 7 to 9 fathoms at the anchorage.

Fasht al Arrif, which dries in patches and shows up well under most conditions, extends about 7 miles southeastward from the coast in the vicinity of Ra's al 'Arq. A bank, with a depth of 21 feet at its southern end and depths of 14 and 18 feet about $\frac{1}{2}$ mile farther northward, extends about 1½ miles south-southwestward from the southern end of Fasht al Arrif. A bank, on which are sunken rocks and depths of less than 3 fathoms, lies within about 1 mile northeastward of the southern extremity of Fasht al Arrif; from this bank, depths of less than 30 feet extend southward for about 3 miles. Mishiryāt, a low islet, lies on the northwestern side of the reef about 1½ miles offshore.

Southwestward of Fasht al Arrif, there is an extensive off-lying bank with depths of 20 to 30 feet; a passage, about $\frac{1}{2}$ mile wide, lies between the northeastern end of this bank and Fasht al Arrif but is obstructed by a 26-foot shoal near its center. The buoied channel is westward of the shoal.

Between Fasht al Arrif and the entrance of Khawr al 'Udayd, many dangers lie in the offing. A 4-foot shoal patch is located about 4½ miles north-northeastward of the 190-foot hill of Jabal al 'Udayd (sec. 6B-6) and about 1½ miles offshore. An area with depths of 1 fathom to 3 fathoms lies about 2 miles northeastward of this shoal; in the middle of this area is a large coral head with depths of less than 1 fathom.

Las Hāt is a group of 3 flat-topped islets, 25 feet high, and 2 detached rocks lying about 12 miles northeastward of Jabal al 'Udayd; the islets are bordered by light-colored cliffs. A shoal with a depth of 10 feet lies about $\frac{1}{2}$ mile southeastward of the southwesternmost islet;

an extensive area with a depth of 9 feet lies about 3½ miles southward of the same islet. A shoal, on which there is a large coral head with a depth of less than 6 feet, lies about 4 miles east-southeastward of Las Hāt, and a large area, with a depth of 8 feet, lies about 2½ miles farther southeastward. About 1½ miles northeastward of Las Hāt there is a small 15-foot patch, and 1¼ miles farther northeastward is a large drying sandbank. An 18-foot patch is situated about 5 miles eastward of Las Hāt.

A shoal with a depth of 3 feet and easily distinguishable by the color of the water, lies about 3 miles northward of Las Hāt. An 18-foot shoal, having a coral head with a depth of less than 6 feet on its northern end, lies about 1¼ miles offshore 6½ miles northwestward of Las Hāt; between them is an isolated patch with a depth of 20 feet. Westward of Las Hāt there is a large area of deep water, but eastward as far as the southern end of Fasht al 'Udayd the depths are irregular and range from 4 to 14 fathoms.

Fasht al 'Udayd, an extensive reef which partly dries, extends about 8 miles northward from a position about 5 miles northward of Makhāsib (sec. 6A-28). The reef can be clearly distinguished by the light blue-green color of the water on it. A channel, about 2 miles wide, lies between the reef off the northern side of Makhāsib and Fasht al 'Udayd; it leads northward and northeastward separating Fasht al 'Udayd from Hālat Dalma.

Hālat Dalma, about 10 miles northeastward of Makhāsib, is an extensive shoal on which lies a large drying coral reef covered with patches of sand. The above-mentioned channel divides southwestward of Hālat Dalma, one branch leading southward of that shoal. The northeastern branch of the channel leads around the western and northern edges of the reef into a large open area between Hālat Dalma and Shurā'awah (sec. 6A-25). There are general depths of 26 to 51 feet in the channel, but two shoals, with depths of less than 18 feet,

western side is marked by red can light buoys numbered 2 and 4. Turning Light Buoy, moored about 2 miles westward of Nasr Beacon, is painted in red and white checkers.

The anchorage areas off the oil terminal berths are marked by three light buoys. E. Anchorage Light Buoy, painted red, is moored about 3 1/3 miles southwestward of Ghazal Beacon. N. Anchorage Light Buoy, painted black, and S. Anchorage Light Buoy, painted red, are moored about 5/6 mile eastward and 1 mile southeastward, respectively, from the coast adjacent to the offshore pipeline berths.

A light is shown on a white beacon with horizontal bands about 800 yards eastward of Umm Said. A light buoy is moored about 1/2 mile south-southeastward of the light; two yellow spherical buoys are sometimes moored in the vicinity of the light buoy and are used for yacht-racing purposes but have no navigational significance.

6B-10 CHANNELS.—Outer Channel, about 6 miles in length and having its northern end about 4 1/4 miles eastward of Ra's al 'Arq, runs in a north-south direction through the coastal bank extending offshore in this area. General depths in the fairway are from 37 to 42 feet; detached patches of 31 to 35 feet lie in the vicinity of the channel.

The channel between Fasht al Arrif and Fasht al 'Udayd is about 4 miles wide, but this is reduced to about 2 1/4 miles between the 5-fathom curves.

Inner Channel comprises the channel southeastward of Fasht al Arrif and the channel leading northward and westward to the anchorages off the oil terminal berths.

ANCHORAGE.—Good anchorage, in 7 to 9 fathoms, can be taken about 1/2 mile offshore for a distance of about 3 miles southwestward of the oil terminal berths. Anchorage off the town, about 3 1/2 miles northward, can be obtained in 2, 5, or 3 fathoms about 1/2 and 1 mile and 1 1/2 miles, respectively, southeastward of the boat harbor. Small craft can shelter from the shamal in Dawhat Umm Said, care being taken to avoid the reef, and the rocks which dry 6 feet, that lie within 800 yards of the town.

PILOTS.—By arrangement with the oil company, pilotage services are provided for ves-

sels proceeding to the oil terminal berths at Umm Said. Pilots board in the vicinity of Waqra Light Buoy (sec. 6B-9).

Vessels should give 48 hours notice of their expected time of arrival, indicating whether using local time or G.M.T.; they should state whether there is sickness on board and give their last port of call, excluding Al Bahrayn and Ra's at Tannurah.

DIRECTIONS.—The approach from northward and eastward is described in section 6B-7. From Mishut Light Float a vessel steers 215° for about 9 miles to a position westward of Waqrah Light Buoy, then alter course to 180° for about 6 1/2 miles to a position westward of Hul Light Buoy. Then steer 164° for about 2 miles to Outer Channel Light Buoys Nos. 1 and 2.

Having passed between Outer Channel Light Buoys Nos. 1 and 2, a vessel should steer 158 1/2°, passing between light buoy Nos. 3 and 4. Thence a course of 178° to pass between light buoys Nos. 5 and 6. From there steer 173° to light buoys Nos. 7 and 8; then 193° to light buoys Nos. 9 and 10; then 176° to light buoys Nos. 11 and 12.

From a position about midway between Nos. 11 and 12 light buoys, the vessel should steer about 157° to leave S.E. Arrif Light Buoy to starboard, thence 217° to leave S. Arrif Light Buoy also to starboard.

After rounding S. Arrif Light Buoy, the vessel should steer 335° to pass close westward of Inner Channel Light Buoy No. 1, thence 003° to pass close eastward of Inner Channel Light Buoy No. 2. From here the vessel should steer 348° to pass between Inner Channel Light Buoys Nos. 3 and 4. Then steer to pass close northeastward and northward of red and white checkered Turning Light Buoy. From this latter buoy, steer 264° passing northward of E. Anchorage Light Buoy. Then steer 250° for the anchorage.

Vessels drawing 34 feet can usually sail at any stage of the tide. The draft of vessels leaving Umm Said is controlled by the depth of water over the 37-foot patch at the northern end of Outer Channel.

Vessels passing through Outer Channel are advised to proceed at moderate speed when in the vicinity of shoal patches to avoid taking a sheer; proceeding outward from Umm Said, speed should be reduced before rounding

Turning Light Buoy, and the passage of Inner Channel should be made at slow speed for this reason.

Draft limitations are as follows:

Vessels drawing 34 feet can sail at any time on any day.

Vessels drawing 35 feet will rarely have to use tides.

Vessels drawing 36 feet will usually have to use tides.

Vessels drawing 37 feet will always have to use tides.

Vessels drawing 38 feet will occasionally have to wait for spring tides.

Vessels drawing 39 feet will be limited by the tides for about 160 days a year. The best months are May to August and November to January.

Vessels drawing 40 feet can sail occasionally. The best months are June and July.

6B-11 UMM SAID is the crude oil loading port for the Qatar oil fields of the Qatar Petroleum Company. There are 2 submarine loading berths off an open beach; the terminal camp is located on rising ground about 4 miles north-northwestward of the loading berths.

Berth No. 1, with a depth of 43 feet has two 16-inch pipelines terminating in two 12-inch flexible hoses; the loading rate is 4,100 tons per hour.

Berth No. 2, with a depth of 44 feet, has one 24-inch pipeline terminating in two 12-inch flexible hoses; the loading rate is 4,300 tons per hour. Tankers moor at two stern buoys with two anchors out ahead. The maximum safe draft is 39 feet but vessels drawing up to 40 feet will be accepted on "spot", approvals at certain times of the year. The largest vessel to utilize the pipeline berths was 890 feet long with a draft of 39 feet. Berth No. 1 is the northernmost berth. One 1,100 hp. twin-screw tug is available. There is an airstrip and L.C.T. landing at the oil loading terminal.

The town of Umm Said, 4 miles northward of the loading terminal, has a pier forming

a boat harbor and where cargo can be landed from barges. A barge fleet with a total capacity of about 1,500 tons is maintained as are 3 refrigerated barges of 225 tons total capacity.

The pier is about 450 feet long and dries along its inner half; there is a depth of 7 feet at its head. It is served by one 25-ton, one 10-ton, and two 3 1/2-ton mobile cranes; another pier extends southeastward from the vicinity of the town.

Fresh water and other supplies are not available. A supply of diesel oil is maintained near the boat harbor of the town.

Only minor repairs can be accomplished. A marine railway at the town can accommodate small craft.

The oil company maintains a hospital; there is a resident doctor. A radio station is located at Umm Said.

COASTAL FEATURES-LANDMARKS (Continued)

6B-12 From Ra's al 'Arq, the coast trends northward about 7 1/2 miles to Jabal al Waqrab, a brown level-topped rocky hill, 74 feet high, and consists of low sandy shore or stony desert; it is fringed by a coastal reef which extends from 1/2 mile to 1 3/4 miles offshore, the 3-fathom curve nearly paralleling the coast from 1 3/4 to 2 3/4 miles off.

UMM AL HUL, a ruined and deserted village about 3 3/4 miles northward of Ra's al 'Arq, stands on the western side of a narrow and almost landlocked inlet which dries at about half tide. Numerous rubble fish traps lie close inshore between Umm al Hul and Jabal al Waqrab. A 50-foot steel framework tower with a black diamond topmark, is located at Umm al Hul; a pole beacon with a black square topmark stands near the summit of Jabal al Waqrab.

Abreast this part of the coast, at a distance of 6 to 8 miles offshore, an extensive shoal area with depths of less than 6 fathoms lies westward of Ruqq Kareinein; depths of 24 to 30

feet are found in the northern part of the area and of 12 to 18 feet in the southern part.

From **Jabal al Waqrah**, the low coast trends northward about 7½ miles to low rocky Ra's Abū al Mūshūt, (25°16' N., 51°37' E.), which is not easily identified from seaward. Behind the coast, the desert rises gradually to heights of 30 to 50 feet about 3 to 4 miles inland. A clump of trees in a garden, about 3½ miles westward of Ra's Abū al Mūshūt, and a water tower, about 3¼ miles west-northwestward, are conspicuous. A 50-foot steel framework tower, with a black triangular topmark, stands less than ½ mile southwestward of Ra's Abū al Mūshūt.

Al Waqrah, an extensive but mostly ruined and deserted town, is located on the shore of a slight coastal indentation about 1 mile north-northwestward of Jabal al Waqrah. A fort with a square tower and flagstaff stands near the shore in the northern part of the town, with a minaret a short distance southwestward. There is a small stone wharf in front of the fort at which small dhows can berth at high water. Off the northern end of the town, a well sheltered boat harbor which dries but can be entered near high water, is formed between the coast and a high, narrow, off-lying ridge of sand; the northern end of the ridge is joined to the coast about 1¼ miles northward of the fort. A motor road runs from Al Waqrah through Ad Dawhah to the western side of the Qatar peninsula.

Between **Jabal al Waqrah** and **Ra's Abū al Mūshūt**, the coast is fronted by a bank with depths of less than 18 feet extending from 2 to 3 miles offshore; numerous rubble fishtraps lie close inshore. Northeastward of Al Waqrah, an area of thick weed extends about ½ mile from shore. Two detached shoal patches with depths of 22 and 23 feet lie about 800 yards apart 3 miles east-northeastward of Jabal al Waqrah.

Several detached patches with depths of 30 to 33 feet lie from 5 to 7 miles eastward of Ra's Abū al Mūshūt. Three shoals with depths of 35 feet lie about 4 miles farther eastward, and two

others with respective depths of 33 and 35 feet lie about 14 and 14½ miles east-northeastward of the point.

A bank with a depth of 33 feet lies about 16 miles east-northeastward of Jazirat 'Ulya (25°25' N., 51°34' E.); a detached 6-fathom patch lies about 4 miles north-northeastward of this bank.

A 33-foot patch lies on a detached bank, with depths of less than 10 fathoms on it, about 28 miles east-northeastward of Jazirat 'Ulya.

Ruqq Kareinein, an extensive shoal, extends about 20 miles northward from a position close northward of Fasht al 'Udayd. A light beacon, 12 feet high, stands near the eastern side of Ruqq Kareinein in a position about 19 miles eastward of Jabal al Waqrah.

Hālat Bul Khaifān, a patch of rocks lying awash or which dry, lie within a radius of ½ to ¾ mile of this beacon. There may be other patches on Ruqq Kareinein which dry but have not been surveyed. A narrow channel between Ruqq Kareinein and Fasht al 'Udayd has depths of 7 to 9 fathoms. Except on its western side, the limits of Ruqq Kareinein are not accurately known and vessels should give it a wide berth. In 1955, a depth of 4 feet was reported about 12 miles south-southwestward of the light beacon. The 6-fathom curve appears to mark the northern extensions of Ruqq Kareinein. Vessels passing north and east of Ruqq Kareinein should keep in depths greater than 6 fathoms.

6B-13 Anchorage for large vessels can be obtained in 7 to 8 fathoms about 3 miles eastward of Jabal al Waqrah. Care should be taken to avoid the 22- and 23-foot shoal patches about 3 miles east-northeastward of that summit. Smaller vessels can anchor in suitable depths closer inshore. There is little shelter from the prevailing winds off this coast.

Tidal currents in the offing set north-northeastward and south-southwestward and attain a maximum rate of about 1½ knots; they are diurnal in character.

In the approach to Ad Dawhah, the coast from Ra's Abū al Mūshūt trends about $4\frac{1}{2}$ miles northwestward and westward and thence about $6\frac{1}{2}$ miles northward to abreast Jazīrat 'Ulya and forms a bay with the town of Ad Dawhah at its southern end. The land areas on the southern and western sides of the bay consist of undulating desert rising to elevations of 40 to 50 feet a few miles inland.

There is no cultivation nearby except for two small gardens near the town, the most easterly of which, on rising ground, contains the conspicuous clump of trees referred to previously. The trees and buildings of the village of Markhiyah, on high ground about 3 miles northwestward of Ad Dawhah, are distinguishable from seaward.

Jazīrat 'Ulya, about 8 miles north-northwestward of Ra's Abū al Mūshūt, is a barren sandy islet with a small hillock, 25 feet high, at its southeastern end; it is separated from the coast by a boat channel in which the depths, westward of the islet As Sifliya, are 1 to 4 feet. This channel is used by dhows and small craft with local knowledge.

Reefs and shoals extend 4 miles eastward and $2\frac{1}{2}$ miles northward from Ra's Abū al Mūshūt; northward of Ad Dawhah they extend up to 10 miles offshore and the bottom can sometimes be seen before land is sighted.

Navigational aids.—A light is shown on Doha Beacon which stands on the edge of the reef in a position about $2\frac{1}{4}$ miles northward of Ra's Abū al Mūshūt. A conspicuous minaret in Ad Dawhah, and which is located about 4 miles west-southwestward of Doha Light Beacon, is illuminated at night and is reported to be the first light raised from seaward.

A light buoy is moored about 5 miles eastward of Ra's Abū al Mūshūt.

A light buoy is moored about $3\frac{1}{2}$ miles east-northeastward of Ra's Abū al Mūshūt.

A light buoy is moored about $1\frac{3}{4}$ miles eastward of Doha Light Beacon.

A light buoy is moored about $1\frac{1}{3}$ mile northward of Doha Light Beacon.

A light buoy is moored about $6\frac{1}{4}$ miles northward of Ra's Abū al Mūshūt.

Lights are occasionally shown from the corners of the Ruler's palace.

Tidal currents.—In the vicinity of Doha Light Beacon sometimes set in a direction opposite to those experienced in the offing.

6B-14 Directions.—Vessels approaching Ad Dawhah from northward should steer parallel to the coast, keeping in depths of 5 to 6 fathoms. For a distance of about 20 miles northward of Ad Dawhah, the shoal coastal bank extends so far offshore that the mainland may not be sighted until a vessel is in the vicinity of the harbor. Jazīrat 'Ulya may, however, be sighted from a distance of 10 miles.

When the Ruler's palace at Ad Dawhah bears 255° , steer for it on that heading which leads over the bank eastward of the harbor; in 1953, this approach had a least depth of 12 feet. When Doha Light Beacon bears 270° , course should be changed to 279° to pass about 450 yards northward of it; when the beacon is abeam, steer 250° for the harbor anchorage.

Vessels heading for Ad Dawhah from north-eastward or eastward should approach Jazīrat Hālūl (sec. 6B-16) and bring it to bear $055\frac{1}{2}^{\circ}$ astern; steer on a heading of $235\frac{1}{2}^{\circ}$, keeping the island bearing $055\frac{1}{2}^{\circ}$.

Directions for the approach to Mishut Light Float are given in section 6B-7. When that light float bears 083° , distant about $3\frac{1}{5}$ mile, vessels should steer 263° , keeping the light float bearing 083° astern, and pass southward of the light buoy moored about 5 miles eastward of Ra's Abū al Mūshūt. Steer to pass close westward of this buoy and the other two outer buoys (sec. 6B-13) until Doha Light Beacon bears 270° , and from thereon proceed as directed above. The least depth in this approach is 12 feet.

A dangerous **wreck** lies sunk about $\frac{1}{4}$ mile southward of the light buoy moored $3\frac{1}{2}$ miles east-northeastward of Ra's Abū al Mūshūt.

(3868) PERSIAN GULF—Ad Dawhah approaches—Hydrographic information.—1. A dredged channel with a least depth of 27 feet, 350 feet wide, will be charted with its center line joining the following points; distances and bearings from the beacon (25°16'04" N., 51°36'13" E. approx.):

- (a) 5,933 yards 357°.
- (b) 6,866 yards 056°30'.

2. Steel pile beacons have been established 100 feet outside the limit of the dredged channel in (1) in the following approximate positions; distances and bearings from the beacon in (1) as indicated:

- (a) No. 1; 6,933 yards 056°.
- (b) No. 2; 6,800 yards 057°15'.
- (c) No. 3; 5,900 yards 039°.
- (d) No. 4; 5,717 yards 040°.
- (e) No. 5; 5,533 yards 018°.
- (f) No. 6; 5,366 yards 018°.
- (g) No. 7; 5,986 yards 357°30'.
- (h) No. 8; 5,850 yards 356°45'.

3. Buoys have been established as follows; distances and bearings from the beacon in (1):

- (a) No. 1, a conical buoy painted black and showing a *Fl. 6 sec. light*; 7,206 yards 059°.
- (b) No. 2, a can buoy painted red and showing a *Gp. Fl. (2) 10 sec. light*; 7,050 yards 060°45'.
- (c) No. 3, a conical buoy painted black and showing a *Fl. 6 sec. light*; 6,266 yards 348°30'.
- (d) No. 4, a can buoy painted red and showing a *Gp. Fl. (2) 10 sec. light*; 5,866 yards 351°.
- (e) A conical buoy painted black and showing a *Qk. Fl. light*; 7,070 yards 306°15'.

Note.—The buoys in (3a) through (3d) mark the bell shaped inner and outer entrances to the dredged channel in (1).

4. The beacons in (2) will be equipped with lights at a later date as follows:

- (a) No. 1; *Qk. Fl.*
- (b) No. 2; *Qk. Fl. R.*
- (c) No. 3; *Gp. Fl. (3) 12 sec.*
- (d) No. 4; *Gp. Fl. R. (2) 12 sec.*
- (e) No. 5; *Fl. 10 sec.*
- (f) No. 6; *Fl. R. 6 sec.*
- (g) No. 7; *Qk. Fl.*
- (h) No. 8; *Qk. Fl. R.*

5. The following aids will be discontinued at a later date:

- (a) Doha Lighted Beacon (25°18.7' N., 51°35.8' E. approx.).
- (b) Lighted buoy (25°17.9' N., 51°40.0' E. approx.).
- (c) Lighted buoy (25°18.5' N., 51°37.7' E. approx.).
- (d) Lighted buoy (25°19.0' N., 51°35.7' E. approx.).

(N.M. 24/66.)

(N.N. 74, Bahrain, 1966.)

H.O. Charts 3684(1-3), 3660(1-3), 3661(1-3).

H.O. Pub. 112, No. 35630.

H.O. Pub. 62, 1960, pages 206, 207.

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(4974) PERSIAN GULF—Ad Dawhah approaches—Aids information.—1. The following beacons have been equipped with lights as indicated:

- (a) No. 1; *Qk. Fl.*
- (b) No. 2; *Qk. Fl. R.*
- (c) No. 3; *Gp. Fl. (3) 12 sec.*
- (d) No. 4; *Gp. Fl. R. (2) 12 sec.*
- (e) No. 5; *Fl. 10 sec.*
- (f) No. 6; *Fl. R. 6 sec.*
- (g) No. 7; *Qk. Fl.*
- (h) No. 8; *Qk. Fl. R.*

Approx. position; Beacon No. 1: 25°18.1' N., 51°39.4' E.

2. The following aids have been discontinued:

- (a) Doha Lighted Beacon (25°18.7' N., 51°35.8' E. approx.).
- (b) Lighted buoy (25°17.9' N., 51°40.0' E. approx.).
- (c) Lighted buoy (25°18.5' N., 51°37.7' E. approx.).
- (d) Lighted buoy (25°19.0' N., 51°35.7' E. approx.).

(See N.M. 24(3868) 1966.)

(N.M. 31/66.)

(N.M. 93, Bahrain, 1966.)

H.O. Charts 3684, 3660, 3661.

H.O. Pub. 112, No. 35630.

H.O. Pub. 62, 1960, page 206.

★ (7470) PERSIAN GULF—Ad Dawhah—Breakwater under construction—

Landmarks.—1. A breakwater is under construction commencing at a point about 6,350 yards $304^{\circ}45'$ from Ra's Abu al Mushut Beacon ($25^{\circ}16.1' N.$, $51^{\circ}36.2' E.$ approx.) thence as follows:

- (a) about 800 yards 239° .
- (b) about 880 yards 239° .
- (c) about 360 yards $212^{\circ}45'$.

Note.—The portion of the breakwater in (1a) will be charted as double dashed lines and that portion in (1b) and (1c) as double solid lines.

2. The pier in $25^{\circ}17.3' N.$, $51^{\circ}33.8' E.$ (approx.) will be recharted as a "T" head pier about 220 yards in length.

3. Landmarks exist as follows; distances and bearings from the beacon in (1) :

- (a) Pylon ; 3,900 yards $309^{\circ}45'$.
- (b) Power plant chimney ; 4,600 yards $306^{\circ}30'$.
- (c) Radio mast ; 4,950 yards $292^{\circ}30'$.
- (d) Hotel chimney ; 5,200 yards $289^{\circ}30'$.
- (e) Water tower ; 5,770 yards $279^{\circ}30'$.

(N.M. 48/66.)

(NAVOCEANOREP NYK : RS 14140/66.)

H.O. Chart 3684.

H.O. Pub. 62, 1960, pages 206, 207.

ANCHORAGE can be taken in 7 to 8 fathoms about 6 miles eastward of Ra's Abu al Mushut by vessels which are unable to enter the harbor at Ad Dawhah. This anchorage is exposed, but the holding ground is good.

THE HARBOR of Ad Dawhah is entered between the reefs which extend northward from Ra's Abu al Mushut and southeastward from the islet As Sifliya. A channel, dredged to 27 feet, runs in a west-northwestward direction across the bank to the harbor.

AS SIFLIYA is low, sandy, and covered with scrub; from its respective eastern and western ends, sandspits extend southeastward and southwestward. Between the extremity of the latter spit and an extensive area of reef and very shoal water which extends off the western side of the bay, there are depths of 2 fathoms and over. A circular masonry BEACON, 6 feet high, marking the southwestern side of the reefs and the fishtraps extending from them, stands about 1/2 mile northwestward of As Sifliya.

RA'S ABU 'ABBUD, about 2 1/2 miles northwestward of Ra's Abu al Mushut, is low, and along the intervening coast a shallow reef extends about 2 miles northeastward with numerous rubble fishtraps close inshore.

A reef with drying patches and depths of less than 6 feet, rock and sand, extends about 1 1/2 miles southward and eastward from the eastern end of As Sifliya.

RA'S AN NISA'A, about 1 1/2 miles westward of Ra's Abu 'Abbud, is a low rocky projection with numerous buildings in its vicinity; a shallow spit extends about 600 yards northward from it. Several shoal patches are in the bay westward of Ra's an Nisa'a.

ANCHORAGE can be obtained in 18 to 21 feet, sand and mud, good holding ground, in the harbor at Ad Dawhah with the Ruler's palace bearing 235°, distant about 1 1/3 miles, or in the central part of the harbor in 3 1/2 to 4 fathoms about 1 1/2 miles northward of Ra's Abu 'Abbud. The anchorage is well sheltered except from northeasterly winds. A mooring buoy is anchored about 3/4 mile west-northwestward of Ra's Abu 'Abbud.

Four light buoys indicate a shallow channel leading from the harbor anchorage to the vicinity of the lighter jetties (sec. 6B-15).

6B-15 AD DAWHAH, the capital of Qatar and the abode of the Ruler, is a small lighter port with a population of about 16,000 in 1955.

The Ruler's palace, about 1 mile westward of Ra's an Nisa'a, is a large square courtyard-type of building with towers at its corners resembling square houses with colonnades and verandas. A flagstaff stands on rising ground close northward, and a white mosque with a minaret, which is conspicuous from the harbor, stands a short distance southeastward of the palace. Two water towers, one located about 3/4 mile southward and the other about 3/4 mile westward of the flagstaff, are conspicuous. A fort, about 1 mile northwestward of the flagstaff, is also conspicuous. The average tidal rise at MHHW is 5.1 feet. The prevailing wind is the northwesterly shamal; strong easterly winds occur at times. Shell Jetty, Customs Jetty, and Ruler's Jetty can accommodate lighters only alongside, cargo being discharged into them at the anchorage. Three 400 hp. tugs are operated by the oil company. No fuel or other stores are available. A state hospital is located near the Customs Jetty. An airfield is southward of the town.

6B-16 JAZIRAT HALUL (25° 41' N., 52° 25' E.), situated just within the edge of Great Pearl Bank (sec. 6A-15) in a position about 50 miles east-northeastward of Ra's Abu al Mushut, is 202 feet high and hilly. It has been reported that Jazirat Halul is a good RADAR TARGET at 13 miles under normal conditions.

A LIGHT is shown on the summit of Jazirat Halul. An aviation light is shown about 600 yards west-northwestward of the above light.

The barren island is fringed by reef which extends up to 600 yards offshore in places; shoals extend about 800 yards northeastward and northwestward from it. Depths up to 6

(8027) PERSIAN GULF—Jazirat Halul—Obstruction north-northeastward.—
A vertical pipe, 2 feet in diameter extending 20 feet above sea level, exists in
25°52' N., 52°53.6' E. (approx.).

Note.—The pipe is fitted with a *Fl. R.* light (unreliable).

(N.M. 52/66.)

(N.M. 138, Bahrain, 1966.)

H.O. Charts 3660, 3647.

H.O. Pub. 62, 1960, page 208.

(7622) PERSIAN GULF—Jazirat Halul—Drilling platform north-northeast-
ward.—A drilling platform (lighted and equipped with a hand fog signal) for a
tender type operation exists in 25°57'52" N., 52°54'05" E. (approx.).

(N.M. 49/66.)

(N.M. 21, Iran, 1966.)

H.O. Charts 3660, 3647.

H.O. Pub. 62, 1960, page 208.

fathoms are found within 3/5 mile of its southernmost end.

Depths in the vicinity of Jazirat Halul give little warning of its proximity, and there are tide rips around it, particularly off the southern side. A 36-foot patch lies about 14 miles northwestward of the island, and detached banks, with depths of 43 feet, lie about 13 1/2 miles southwestward and 8 1/2 miles westward of it. A 33-foot patch lies about 20 miles west-southwestward of Jazirat Halul.

Two shoals, with depths of 42 feet, lie about 13 miles eastward and 19 1/2 miles south-southeastward of Jazirat Halul.

Two shoals, with respective depths of 22 and 27 feet, lie about 11 1/4 and 17 miles south-southeastward of the island.

Numerous lighted drilling platforms and several large mooring buoys, are centered in an area about 10 1/2 miles southward of Jazirat Halul. Most of the platforms sound fog signals. The tanker "Zenatia" has been permanently moored to a lighted yellow MOORING BUOY about 9 miles southward of Jazirat Halul. Deck lights and a fixed red light are shown from the tanker.

CAUTION.—Vessels are warned to keep outside of an area about 14 1/2 miles offshore from eastward to south-southwestward of Jazirat Halul, due to the existence of drilling rigs, oil well structures, mooring buoys, and numerous submarine pipelines.

A bank with a least depth of 34 feet lies about 17 miles southward of Jazirat Halul. An obstruction and a dangerous WRECK, which is marked by a black BUOY, missing in 1960, are located on this bank. An abandoned oil rig is charted close northward of the wreck.

A shoal with 4 fathoms over it has been reported about 24 miles east-southeastward of Jazirat Halul.

A LIGHT is shown and a FOG SIGNAL sounded from a black framework structure about 3 3/4 miles southward of the oil rig.

A 10-fathom shoal patch lies about 13 miles northeastward of Jazirat Halul; the depths in the vicinity are uneven. A similar patch lies about 13 1/2 miles north-northwestward of the island.

A black conical LIGHT BUOY is moored about 9 miles southeastward of Jazirat Halul. Four black buoys are moored in the vicinity

of this buoy. A lighted black buoy is positioned about 5 miles east-southeastward, and a similar buoy about 12 1/2 miles eastward, respectively, of Jazirat Halul.

A LIGHT BUOY is moored 9 miles northward of Jazirat Halul. Four mooring buoys are located around this buoy.

A shoal with a depth of 43 feet lies about 12 miles eastward of Jazirat Halul.

A LIGHT is shown from an oil structure about 8 miles east-southeastward of Jazirat Halul.

OBSTRUCTIONS, with depths of less than 30 feet, and 29 feet lie about 15 and 16 miles, respectively, east-southeastward of Jazirat Halul Light.

A circular anchorage area, with a radius of 1/2 mile, is centered about 1 1/2 miles west-southwestward of Jazirat Halul. Depths in the anchorage are 70 feet over fine sand and shell.

The berthing master will board incoming vessels in the vicinity of the anchorage.

Vessels should establish contact with the coastal radio station, operated by the Shell Co. of Qata Ltd., at Doha, 48 hours before arrival at Jazirat Halul giving ETA in local time and quantity of cargo required in long tons.

A submarine pipeline berth, with 94 feet alongside, lies about 1 1/2 miles southeastward of Jazirat Halul. A light buoy marks the berth.

CAUTION.—Caution is necessary when navigating between Jazirat Halul and Jazireh-ye Sirri (sec. 4D-13). This area has not been thoroughly surveyed, and uncharted shoals have been reported.

COAST.—Northward of Ad Dawhah the land is mostly stony desert with a few hillocks; farther northward it becomes very low. The bottom near the coast is of white sand and rock and usually shows up well in clear water.

DAWHAT LUSAIL, a slight coastal indentation about 13 miles northward of Ad Dawhah, is prominent from seaward because of a ruined fort, 45 feet high; the land in this vicinity is slightly higher than that of the adjacent coast. Dawhat Lusail is shallow and used mostly by local dhows and pearling craft sheltering from the shamal.

At Sakhama, about 3 miles westward of the aforementioned ruined fort, there is a prom-

inent ruined tower, 52 feet high. Ra's an Nauf, low and rocky, is about 11 miles north-north-eastward of the fort.

6B-17 Ra's al Matbakh ($25^{\circ}40' N.$, $51^{\circ}34' E.$) is about $1\frac{1}{2}$ miles northeastward of Ra's an Nauf and between them is the entrance of Khawr Shaqīq. This entrance is marked by a beacon which stands about $1\frac{1}{4}$ miles westward of Ra's al Matbakh; the channel leading in has a depth of 6 feet and is used by local craft. This passage should not be attempted at low water without local knowledge because the channel northwestward of the beacon is not marked and several dangerous shallow patches lie in that area. Khawr Shaqīq itself is shallow with general depths of 1 to 6 feet. A village having several towers, the highest rising to 40 feet, is located on rising ground at the western end of the inlet. Al Jubail, a hill 33 feet high, rises close to the coast about $1\frac{3}{4}$ mile northwestward of Ra's al Matbakh.

Anchorage.—Good anchorage for small craft, sheltered from the shamāl, can be obtained at the entrance of Khawr Shaqīq. In 1949, a British naval vessel drawing $15\frac{1}{2}$ feet anchored in 22 feet on a number of occasions, with Ra's an Nauf bearing 267° and Al Jubail bearing 345° . Approach to this anchorage was made at high water, crossing the 14-foot bar, in position $107^{\circ} 4$ miles from Ra's an Nauf, on a course of 281° ; this course was steered until Al Jubail bore 345° , thence course was altered toward the anchorage.

There is good shelter for large vessels in 4 to 6 fathoms with Ra's an Nauf bearing 289° , distant $7\frac{1}{2}$ to $11\frac{1}{2}$ miles.

Tides at Khawr Shaqīq are similar to those at Dawhāh, with a spring range of 5 to 6 feet.

Adh Dhakhira, an inlet about 4 miles northward of Ra's al Matbakh, is small, shallow, and offers little shelter; a village is on its southwestern side. **Ra's Umm Sa** is the southeastern extremity of a sandy island which forms the northern side of the entrance of Adh Dhakhira.

Ra's Lāffān ($25^{\circ}55' N.$, $51^{\circ}35' E.$), about 14 miles northward of Ra's al Matbakh, is very low and sandy; the coastal reef does not extend

much more than $\frac{1}{2}$ mile from it. A conspicuous cairn is located about $2\frac{1}{2}$ miles westward of Ra's Lāffān. A black can buoy, equipped with a radar reflector, is moored about 27 miles eastward of Ra's Lāffān.

A small bank with a least depth of 43 feet lies about 25 miles northeastward of Ra's Lāffān.

Ra's Qartas, about $4\frac{1}{4}$ miles northwestward of Ra's Lāffān, has a narrow sandspit extending about $1\frac{1}{4}$ miles southeastward from it; the coastal reef extends about $\frac{3}{5}$ mile from Ra's Qartas.

Off-lying dangers.—The coastal bank, with depths of less than 18 feet, extends from 2 to 12 miles offshore between Ad Dawhāh and Ra's Lāffān; on it are numerous drying patches.

Fasht el Hraabi, which dries, lies about 8 miles northeastward of Dawhat Lūsail; depths of 3 to 27 feet are within $2\frac{1}{4}$ miles westward of Fasht el Hraabi. The reef itself should be given a wide berth because it is not always plainly visible. Burnaat Maraqqat, lying about 3 miles northwestward of Fasht el Hraabi, dries at its western extremity. Between these two reefs is a shoal patch with a depth of 3 feet.

Ardh an Nauf, a drying reef, lies on the coastal bank about 3 miles eastward of Ra's al Matbakh; it is plainly visible within a distance of 1 mile. Heavy seas break on it during a shamāl.

Fasht al Yabis, which nearly dries, lies about $1\frac{1}{2}$ miles eastward of Ra's Umm Sa.

Vessels of more than 12-foot draft should not, under any circumstances, proceed inside the 6-fathom curve between Ad Dawhāh and Ra's Lāffān. The coast can rarely be seen until the 3-fathom curve is neared and is difficult to recognize without local knowledge. A number of vessels have been in trouble in shallow water along this part of the coast.

A bank with a depth of 29 feet lies just within the 10-fathom line about 9 miles northeastward of Ra's Umm Sa.

6B-18 Between Ra's Lāffān and Ra's Rakan, about 24 miles northwestward, there are no off-lying dangers except off the latter point.

Al Huwaylah, about $6\frac{1}{2}$ miles west-northwestward of Ra's Lāffān, is a ruined fort; only its four ruined towers are identifiable. Between Ra's Lāffān and Al Huwaylah, a drying reef extends about $\frac{1}{2}$ mile from shore.

Between Al Huwaylah and Ra's al Marūna, about 5 miles northwestward, a small bay, at the head of which is the ruined village of Jusasiyah, offers shelter to local craft from the shamāl. Jabal Jusasiyah, 79 feet high and about $\frac{3}{4}$ mile inland, is a good landmark. A barge lies stranded about 1 mile southward of Ra's al Marūna.

Fuwayrat, a ruined village about 2 miles northwestward of Ra's al Marūna, has a minaret visible from close inshore. Jabal Fuwayrat, about 1 mile northward, is a long limestone ridge, 64 feet high at its southern end, which is the only other well-defined hill between Ra's Lāffān and Ra's Rakan; a cairn stands on its summit.

At Ain Sinān, a village about $2\frac{1}{2}$ miles southwestward of Jabal Fuwayrat, there is a large clump of trees which, when not obscured by the latter hill, can be identified from a distance of 7 miles offshore.

Al Ghāriya, a small village behind which are some low sandhills, is located about 2 miles northward of Jabal Fuwayrat.

Ra's Umm Hasāh, about 6 miles north-northwestward of Ra's al Marūna, rises to a rocky hillock about 20 feet high. A bay, formed between these two points, offers shelter to small craft from the shamāl.

Al Mafier, a village about $3\frac{1}{2}$ miles northwestward of Ra's Umm Hasāh, and a hillock surmounted by a cairn about 1 mile farther northwestward, become visible before Ra's Rakan when approaching from northeastward. A dangerous wreck lies about $1\frac{1}{4}$ miles eastward of the village. A long narrow reef extends about 3 miles northwestward from Al Mafier.

Ra's Rakan, about $6\frac{1}{2}$ miles west-northwestward of Al Mafier, is the northwestern extremity of a low sandy islet which lies about $1\frac{3}{4}$ miles off the northern end of Qaṭar peninsula. Drying reef lies between the islet and the mainland.

ANCHORAGES

6B-19 Khawr al 'Udayd.—See section 6B-6.

Umm Said.—See section 6B-10.

Jabal al Waqrah.—See section 6B-13.

Ra's Abū al Mūshūt.—See section 6B-14.

Ad Dawhah.—See section 6B-14.

Jazīrat Ḥālūl.—See section 6B-16.

Khawr Shaqīq.—See section 6B-17.