

time; always kept my ship in good order and appearance; dodged coral reefs, or managed to get off them unaided for quite a number of years, and am still alive!"

The auxiliary cutter *Arethusa* was built in Northcote, Auckland, by the late Mr. R. B. Brown, and launched in 1917. She measures 33.4 feet overall, 31.4 feet on the waterline, 11.7 feet beam, and 4.6 feet draught of water. She is a single-skin vessel, constructed on the carvel principle, having kauri pine planking one inch thick, fastened to pohutukawa sawn frames. The yacht has a plumb stem, and a slightly raked elliptical American tuck stern, 9 feet broad, and carries a long bowsprit in conjunction with her big gaff cutter rig. Her power plant is a 15 H.P. Kelvin sleeve engine, giving a speed of 6 knots in calm water.

The *Arethusa* was built in memory of a young man who lost his life during the Great War on board the naval vessel whose name she bears. On her stern an inscription was carved, which read as follows: "Built to commemorate H.M.S. *Arethusa*, at Heligoland, 1916."

Of this inscription, which has now been effaced, the owner says: "I understand a brother of the builder was killed in action on board the Flotilla leader *Arethusa* at Heligoland in 1916."

The following extracts have been taken from the log of the *A.Y. Arethusa* on her passage from Auckland to Suva:—

September 17, 1931: 2 p.m. departed from Queen's Wharf. Wind S.S.W. force 4-5; full sail, 1,000 square feet. 6 p.m. off Kawanu Island, wind increased to force 6; lowered away, and changed to second mainsail; 480 square feet, jib-headed; the first mainsail being a gaff sail of 685 square feet.

September 18: 2 a.m. wind S.W. stormy, force 7. Mainsail off, leading under big jib and staysail; speed 6 knots. At noon, course N.E., hoisted double-reefed mainsail. 1 p.m. light, shook out to 820 square feet again. Note: If you have any loose ventilator cowls aboard it is advisable to tie them down; two of mine are somewhere at the bottom of the Pacific. 8 p.m., flat calm, motor running for next 24 hours.

September 19: Noon position, 34.07 S. lat. 177.31 E. long. 2 p.m. set all sail in light south breeze. Day's run approximately 112 miles.

## CHAPTER XIII.

THE VOYAGE OF THE *ARETHUSA*

## PART I.—OUTWARD TO SUVA IN 1931

The main details in the following account of the *Arethusa's* voyage from Auckland to Suva, and her return to New Zealand some years later, were very kindly supplied by the yacht's owner, Mr. A. H. Pickmere. For a number of years Mr. Pickmere was on government survey work in Suva and neighbouring islands and so that he might use his yacht in conjunction with his work, he sailed the vessel to the Islands and lived on board until he returned to Auckland four years later. He covered many thousands of sea miles during those four years, and acquired much valuable knowledge. His remarks on practical seamanship, and his methods of navigation, should be of great interest to yachtsmen who have already cruised over blue water, as well as giving a valuable insight on this particular sphere of yachting to those who may some day participate in an ocean voyage on board a small craft. Some of his ideas regarding an ocean cruiser may not meet with the wholehearted support of deep-water yachtsmen, for straight away many will condemn *Arethusa's* great open cockpit, her working sail area of 1,000 square feet on a 31-foot waterline, and the 10 feet of overhang in her main boom would make some yachtsmen positively nervous. However, notwithstanding these apparent drawbacks to safe cruising off the land, the *Arethusa* has always managed to "come back."

Perhaps the best summing-up of the situation is to be found in Mr. Pickmere's own words, when he says: "My ideas are, in many cases, unorthodox, and quite a number of yachtsmen will heartily disagree with a number of them. However, I usually managed to get where I was going to in a reasonably short



## LITTLE SHIPS

September 20: Mainly light variable winds, with a few rain-squalls. Uneventful day's run of 112 miles.

September 21: Another unexciting day. Trouble with tail-shaft. Uncoupled shaft, removed thrust housing and repaired damaged main thrust bearing. Note: Accessibility of motor and shaft, and proper tools and spare parts for ordinary repairs, very important. Do not build machinery in where one cannot get at it comfortably and safely during an emergency. More calms and light variables; motor saves a lot of time under these conditions. Day's run 121 miles.

September 22: Many sharks, whales and porpoise about. Kermadecs estimated to be just below eastern horizon. Calms and light variables until mid-afternoon, when fresh north-wester sprang up. Steering north, close-hauled on port tack. Rough, short seas, stormy night. Started sheets, and eased off on N.E. course to ease the motion, and relieve strain on the gear. Day's run 113 miles.

September 23: Wind N.W., increased to gale force, heavy head sea. Close-hauled on port tack, under full cruising canvas; 820 square feet. Sea rising fast and motion of yacht easier. Note: Mountainous seas preferable to short chop, and faster time made in biggest seas, especially when sheets eased. *Arethusa* does not like a short choppy head sea, on account of her bluff bow, but manages very well in really big seas. High freeboard and broad beam gives plenty of reserve buoyancy. Broad tuck stern, 9 feet wide, found to be decided advantage in heavy following seas. Have never known a sea come over aft, even when running through breakers or crossing a reef or bar. 11 a.m. stowed the big 200 square foot working jib. 5 p.m. heavy rainsquall, when wind shifted suddenly to S.W. Day's run 124 miles.

September 24: Wind continued S.W. fresh until 8 p.m. Position, 25.36.30 south lat., 179.34.15 west long., speed  $5\frac{1}{2}$  knots. 9 p.m. wind shifted to S.E. light; this later proved to be the first of the trades.

September 25: Wind S.E. fresh. Noon position 23.35 south lat., 179.16 west long. 3 p.m. changed course to N.W. for Tuvana Reef, intended landfall. Day's run 122 miles.

September 26: Fresh S.E. breeze, speed 6 knots, log reading

THE VOYAGE OF THE *ARETHUSA*

1,060 miles. 4.15 p.m. sighted Tuvana Reef from rigging, distant about 4 miles. Changed course to N.W. for Matuku Island, mostly E.N.E., light to fresh, showing the advisability of making good easting before reaching trade wind zone. Day's run 134 miles.

September 27: 6 p.m. anchored off Matuku Island reef. Two canoes, with five natives aboard, came out to visit us. 8 p.m. away again, under full sail. Day's run 135 miles.

September 28: 6 a.m. fresh E.N.E. wind; changed to first mainsail; now under 1,000 square feet. Broad lead on starboard tack. 10 a.m. passed Naselai lighthouse; gybed over and altered course to S.W. 12 p.m. off Makuluva Island log taken in. Note: When in proximity of reefs in the tropics there is considerable risk of losing the log rotor, owing to barracouta, sharks, and fish of the tuna species. For this reason I never used log if it could be avoided. Did lose one rotor at night near Vomo Island. 1.20 p.m. After saluting H.M.S. *Camberra*, flagship of the Royal Australian Navy, brought up and anchored in the harbour of Suva.

Total distance run, from Queen's Wharf, Auckland, to Suva, 1,352 miles. Log read 1,330, but was streamed outside Rangitoto Island in the Hauraki Gulf, and taken in off Makuluva Island. Total time taken on passage, 10 days 23 hours; sailing time, 10 days 21 hours. Average speed 5.2 knots.

The foregoing is a brief account of the *Arethusa's* passage. Uninteresting data such as the barometric and thermometric recordings have been omitted. It is always wise to record these, as well as the sea temperatures, as they may be useful for reference in unusual or unexpected weather changes.

*Remarks on hull design and construction:*—Buoyancy gained by high freeboard and broad beam most useful at sea. Overhangs are useless and detrimental in open-sea work. I consider *Arethusa's* tuck stern and under water hull form aft to be the most seaworthy type yet designed. Bow not too high, but may be better in head sea if lengthened a few feet, and rather finer above the waterline. Bluff bow is disadvantage in short head sea, although not wet, and is a distinct advantage off the wind owing to its buoyancy. *Arethusa* has a deadwood hull, keel being 20

inches deep amidships, below garboards. I consider this unpopular method of construction to be much superior to the moulded down garboards, as it is very much stronger; affords good protection to hull proper when grounding; does not leak; permits greater depth of outside ballast without excessive draught. Moulded garboards result in a deep inaccessible well inside where leaks are most likely to occur, and are most difficult to find and stop. *Arethusa's* windward sailing is impaired by having to drag a 20-in. by 15-in. propellor in large deadwood aperture, which is more detrimental than propellor drag, as it interferes with the slipstream past the rudder. *Arethusa's* draught is 4.6 feet. This was found to be quite enough. Yacht on long commission in tropics, where patent slips are not available, except in Suva, must occasionally go up for inspection on a beach. As rise and fall in tide is rarely more than 4 feet 6 inches and, in many places, only 3 feet or less, it is obvious that a shoal draught vessel of less than 6 feet draught is desirable. *Arethusa* was slipped in Suva only once a year, usually at the end of March, when she received one coat of topside paint, and two coats of anti-fouling. I usually beached her about September for another coat of anti-fouling paint, and that was all the protection she ever had against the teredo worms. I never had the slightest trouble with teredo, excepting in the hardwood false keel. A new hardwood keel was riddled after only one year, and was replaced by kauri pine, which was not attacked.

*Ballast*.—Two tons on keel. I prefer iron keel to lead, as it is so much stronger and more rigid, and does not get chewed about on coral. *Arethusa's* keel ballast is cast iron, 11 feet long, 15 inches deep, and 8 inches wide, and is set amidships, immediately below the keel, the spaces at the ends being filled with kauri pine deadwood, rising well up at the forefoot, and slightly aft to the heel of the rudder stock. The iron is protected by a mixture of red and white leads and zinc, and then copper painted. I have no use for copper sheathing on a yacht's bottom.

*Planking and Construction*.—*Arethusa* is lightly planked with one-inch kauri pine, but the floors below the cabin sole are very heavy and strong, being 12-in. by 3-in. kauri, spaced on 22-in. centres, with 6-in. by 4-in. sawn pohutukawa frames, full width, between. False keelson, 10-in. by 5-in. hardwood, is laid

over the tops of the frames, and checked through the floors. The ballast bolts come through the iron keel, wooden keel, and keelson, and are nutted on top of the upper false keelson, binding the main structural parts strongly together. Inside floorboards are securely screwed down, giving additional strength equal to a vessel's deck. Inside ballast at present is about  $\frac{1}{2}$ -ton, and motor  $\frac{1}{2}$ -ton. Water ballast tanks 8 cwt.—rarely used. Before leaving on first ocean trip I dumped over a ton of inside ballast, and found this was exceeded in weight by fresh water, fuel, stores, and spare gear. Since then I have never bothered to replace it. Yacht sails better deeply laden, but inside ballast not really necessary. Ocean cruising is very different from longshore racing, and I am convinced that many make the mistake of providing excessive draught and too much ballast low down, equivalent to loading a full shipment of iron rails, for instance, in the bottom of a square-rigged ship, which in reality carry a large proportion of their cargo high up, and not in the bottom as many would imagine.

*Sails*.—First mainsail is of American duck, 12 oz., with an area of 685 square feet; for general use except in a heavy sea. Second mainsail, American duck, 12 oz., 480 square feet; used in most seagoing work; found to be best on a lead, with very large headsails. Third mainsail—storm sail—heavy hemp, 300 square feet, and reefs down to 150 square feet. *Arethusa* handles very well in a seaway under this sail, close-reefed, and large staysail. First staysail is of American duck, 14 oz., 140 square feet, leather-bound on the huff; is the most useful sail carried, and used with all suits. I rarely use either of the small staysails. Second staysail, American duck, 10 oz., 110 square feet. Third staysail, American duck, 10 oz., 70 square feet, never used, excepting as a water sail.

First jib, American duck, 10 oz., 200 square feet; very useful when leading, or close-hauled in a moderate breeze, but dangerous to handle in high winds, and also causes rather heavy strain on mast head when on a wind in a heavy sea. Second jib, American duck, 12 oz., 120 square feet, is ordinary working jib used on the wind. No storm jib is carried on a wind at sea in a fresh breeze, working jib only; or, in worse conditions, large staysail, it being an advantage to keep sails inboard during bad weather.



Total area of working suit in fair weather, 1,025 square feet. With second jib, on the wind, 945 square feet. Total area when leading at sea, second mainsail, first jib, and first staysail, 820 square feet. Total area in worst sailing conditions I have ever known—on the wind in severe gale—third mainsail, close-reefed, and first staysail, full, giving a total area of 290 square feet. I am of the opinion that I could handle *Arethusa* very satisfactorily under the latter rig in almost any conditions of severe weather and sea.

It will be observed that the *Arethusa* appears to be grossly overcanvassed compared with other seagoing vessels, but I consider it to be a great advantage to be able to carry sufficient sail to take advantage of fair feather, especially in the tropics. Most seagoing yachts appear to become helpless in light weather owing to lack of sail, and a great many vessels, both large and small, have been wrecked in the tropics in broad daylight in flat calm weather through their inability to stem a "set."

*Arethusa's* long boom—31 feet—10 feet of which is outboard, seems to worry many people, but I have not yet experienced the difficulties which are said to arise at sea owing to excessive overhang in the mainboom. Changing sails at sea is simplified by having a steel wire outhaul rove off through a sheave at the end of the boom and bowsed taut by means of a double purchase tackle.

It is most important to have sufficient lift in the foot of the mainsail, and it is sometimes necessary to top the boom when running in a high sea. *Arethusa's* spars and rigging are considered by some to be far too light. It is sufficient when I say that she has weathered a good many storms, but as yet has not lost any spars. I have carried away backstays, bowsprit shrouds, preventers, and topmast shrouds, but only through "cracking on" in heavy seas.

*Dinghy*:—I always carry the dinghy across the tuck, on short bumpkins; I was informed about eight years ago that this was a dangerous practice; that it was sure to get smashed up in a heavy following sea. I still prefer to carry it in this position, especially in a heavy following sea, and have never had any worry from doing so. It is usually loaded with dunnage and spare gear when I am at sea. This method of carrying the dinghy

would not be practicable on a vessel with a narrow or overhanging stern, lacking the reserve buoyancy of the *Arethusa*.

*Accommodation*:—*Arethusa* originally had seven berths, four in the saloon, and three in the forecabin. One forward is now converted into a sail locker, and one in the saloon, aft, on the starboard side, is used to stow bo'sun's stores. Between the forecabin and main saloon is fitted a galley on one side, and toilet on the other.

*Navigating Instruments*:—The yacht is equipped with a steering compass, having a 6-in. card in oil; a standard compass, having a 4½-in. card in oil; two azimuth compasses—not really necessary—and a luminous boat compass. Yacht log, taffrail pattern, found to be very accurate at any speeds above three knots, and fairly good at slower speeds. Sextant is an ordinary mariner's pattern. Chronometer is a two-day ship's chronometer, found to change its rate slightly in tropics, but very accurate over long periods.

Radio receiver invaluable for time signals. Transmitter carried, but am inclined to think that this would not be of much help during an emergency. If wrecked, dismantled, or otherwise disabled, it is probable that one could not rig a suitable aerial, or that the batteries would be damaged.

*Navigation Methods*:—Latitude very simple, and no comment necessary. I have used various methods in obtaining longitude, but prefer altitude of sun, about 8 a.m., calculation by means of Martelli's Longitude Tables. Method is to observe sun's altitude, about 8 a.m. or later, also meridian altitude about noon—apparent time—then calculate back from noon latitude, to approximate latitude at morning sight, knowing course and distance run. Then calculate longitude at time of morning sight, and work forward by plain sailing method, to latitude and longitude at noon, for mid-day position. Under good conditions, I have found the astronomical "fix" to agree within one mile of the D.R. "fix." The most important point in taking altitudes with an ordinary sextant is to see that you do not mistake the top of a near wave for the horizon.

*Choosing an Ocean Cruiser*:—Given a choice of vessels, I should choose a craft of *Arethusa's* type; straight stem, a little finer perhaps, but not much, American tuck stern, identical with

*Arethusa's*; cutter rig, capable of carrying large sail areas; long bowsprit and boom, with provision for jib-headed sails, besides the gaff rig. Not more than 5 feet draught of water, nor less than 30 feet on the waterline, high freeboard, and broad beam.

Open cockpit very safe for the watch on deck, and has not yet shipped any dangerously heavy water. It also permits of considerable protection from the weather for the crew, and is very handy for breaking out or stowing sails and other gear without having to do it all on deck.

A light lifeline, even a foot high, above the sheer rails, is most useful. I should much prefer to undertake an ocean voyage in the *Arethusa* than any of the small cruising yachts I have yet seen, and prefer her rig to that of the Bermudian, yawl or ketch.

## PART II.—HOMEWARD TO AUCKLAND IN 1935

After spending four years aboard his yacht, during which time he was engaged in government survey work in Suva and outlying groups, Mr. Pickmere terminated his duties on the station, and sailed the *Arethusa* back to her home port, Auckland.

The following extracts are taken from the yacht's log:—

Sunday, November 3, 1935: Weighed anchor and sailed out of Suva harbour, accompanied by yachts of the Suva Yacht Club. 12.45 p.m. fixed position by resection, streamed log, set at 20 miles outside harbour entrance. Under full sail and motor. 2 p.m. shut motor off and changed course to south by west, for Cape Washington. Midnight; wind S.E., course S. Log read 73 miles.

November 4: At 3.45 a.m., double-reefed mainsail in fresh S.E. breeze and rough sea. Midnight wind and sea moderated, started motor. Day's run 107 miles.

November 5: Moderate S.E. breeze, which died away at 1.15 p.m. Started motor. Stormy sky at sunset. Radioed VR2FF, but got no reply. Midnight, fresh wind from the south, and heavy head sea. Day's run 99 miles.

November 6: 7.30 a.m. Heavy wind and sea from S.S.E. Port preventer and backstay carried away. Furled sails, and laid to drogue and two oil-bags, while mending broken gear. 6.30

p.m., completed repairs and got under way again, under staysail only. Day's run, 72 miles.

November 7: Still under staysail. 5 a.m., set double-reefed mainsail. No sights taken since leaving Suva. 10.30 p.m. peak halyard carried away, so continued under staysail. Day's run 39 miles.

November 8: Sailing west, under staysail in heavy south wind. Replaced peak halyard, and unshipped broken aerial. 4.20 p.m., weather overcast and stormy. Unshipped mainsail and gaff, and bent on storm trysail, close-reefed. 4 p.m., wind S.E., gale force, with high breaking seas. Day's run 93 miles.

November 9: S.E. gale all day, ship under close-reefed trysail. Wind easing at midnight. Day's run 107 miles.

November 10: Calm. Furled sails and started motor. Rigged new aerial for radio. Noon position, 25.25 south lat., 172.02 east long. Day's run 100 miles.

November 11: Motor still running in calm for most of the day. Noon position, 27.10.24 south lat., 172.04 east long. Day's run 108 miles.

November 12: Uneventful day, light south by west wind; day's run 109 miles.

November 13: Running motor slowly in light breeze, with yacht on close lead. In calm at midnight so furled sails. Noon position 30.10.36 south lat., 172.24 east long. Day's run 117 miles.

November 14 and 15 passed uneventfully with light breezes and periods of calm, necessitating use of motor. At 8 a.m. on Friday, November 15, the North Cape of New Zealand was visible, distant about 30 miles. At 2.15 p.m. the Cape was abeam, and in a light easterly wind the *Arethusa* was leading down the coast under her big mainsail, staysail and jib. Day's run at noon on Friday, 119 miles.

November 16: At 1.22 a.m. Cape Brett lighthouse abeam. 3 p.m. wind N.E., strong, sky overcast and stormy, sea rising fast off Breame Island, Whangarei Heads. 4 p.m. off Sail Rock, heavy rain squalls, poor visibility, wind increasing to almost gale force. Radio report forecasting N.E. gale received. At 7.15 p.m. furled mainsail and ran into Little Omaha Cove under staysail. Anchored in good shelter, battened down for night



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during which wind increased to severe gale. Day's run 105 miles.

November 17: At anchor all morning. Heavy gale raging, gloomy sky and passing rain squalls. 12.10 p.m., having checked motor and battened everything down, weighed and stood out of Onaha Cove under close-reefed mainsail and power. Sea very high and breaking heavily. 12.40 p.m., stopped motor when well clear to seaward of rocks, when suddenly green sea broke full length over the ship, striking her on the beam. Yacht labouring under excessive sail, but unable to work crew forward to shorten down. Canoe Rock abeam at 2 p.m., wind increasing during the squalls. Kawanu Island dimly visible to leeward. Ship now fast becoming unmanageable. Eventually we managed to furl mainsail, and continued under staystail off the wind for Tiri Tiri light-house, on the starboard beam. Stood in close and signalled to be reported. The *Arcthuwa* logging 6 knots against tide, under stay-sail only. No land now in sight. At 6 p.m. picked up Rangitoto light abeam, and got into calmer water under the lee of the Island. 6.45 p.m. off Devonport, weather clearing, so signalled Mt. Victoria by Morse lamp. We were instructed to proceed to Queen's Wharf, but as further heavy rain obscured both sides of the harbour, brought up and anchored in Mechanic's Bay boat harbour at 7.10 p.m. Both anchors dragging, so moved out again and made fast to heavy moorings for the night. Day's run from noon of the 16th to 7.10 p.m. of the 17th, 89 miles. Log reading for the passage 1,411 miles. Pratique and customs clearance granted early the next morning.

### COMMENTS CONCERNING THIS PASSAGE.

*Sails:*—We would have progressed better had we carried the jib-headed trysail all the way, as the time saved by using the large mainsail was lost through breaking of rigging and gear. Had the preventer and backstay not carried away we should not have been obliged to heave-to for repairs. Neither these nor the peak halyard would have parted with the trysail set, whereas the gaff sail with its 23-foot gaff places undue strain on the rigging, even when close-reefed, unless the sea is calm.

*Radio:*—Coded messages were transmitted on the third, fourth and fifth days, the first two being answered by VR2FF; after that our aerial carried away, and it was not until the tenth day that a new one was rigged. During the next five days our

A bow and stern view of the memorable pilot cutter, *Teddy*, winner of the first Trans-Tasman Ocean Race. Not long after these pictures were taken she met her end.

(Photo by R. Carter.)



## THE VOYAGE OF THE ARETHUSA

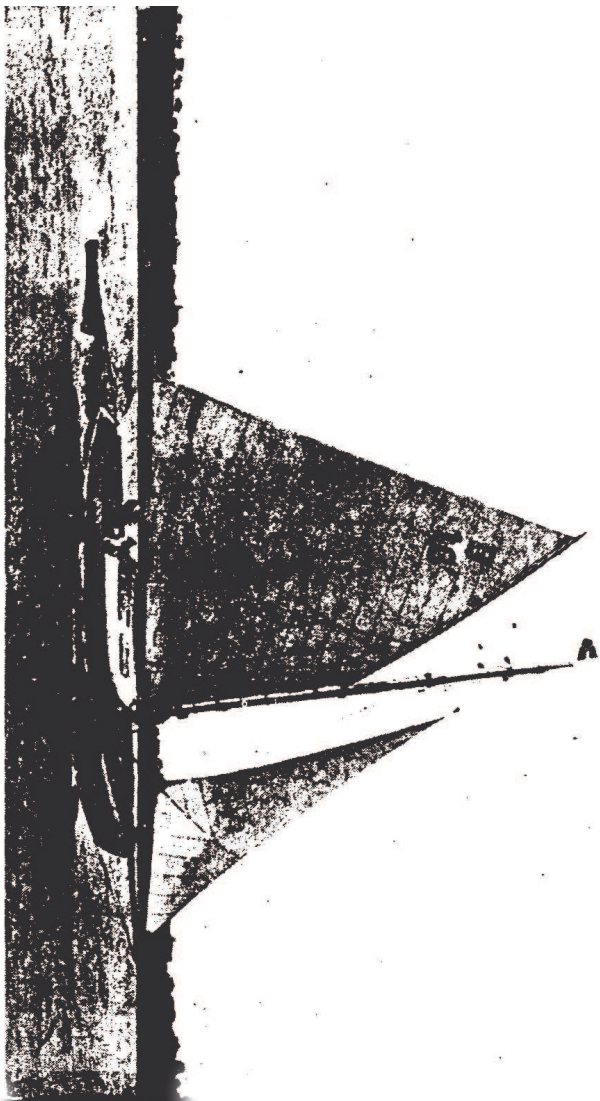
transmissions were received and decoded by an amateur station at Whakapara, North Auckland, and ZL1HJ at Whangarei.

*Landfall:*—The reasons we made for the North Cape, instead of following the shortest route were: (a) In the event of foul winds, to anchor inshore and await a favourable slant; (b) to take advantage of calmer water in the event of severe westerlies; (c) to run for shelter, or make a harbour in the event of running short of fuel or provisions, due to calms; also to report our arrival should the radio fail, or we become overdue.

*Motor:*—Sufficient fuel for 500 miles, half the direct distance from Suva to the North Cape of New Zealand, was carried. The motor was run for approximately 100 hours, and we reached Auckland with two gallons of petrol to spare. Without the help of the motor during the long calms, we should have been caught out in the open sea during the second gale. This would not have mattered excepting that the passage would have occupied at least three days more, and there may have been some anxiety as to our safety in view of the bad weather. From my observations on this passage, with two gales, separated by a considerable period of calms and light variable winds, I consider that a sea-going yacht should be equipped with a suitable motor and sufficient fuel, and that only jib-headed sails, or very short gaff mainsails be used; also that a small vessel is just as safe, and infinitely more comfortable hove-to, under close-reefed storm sails, or reaching, rather than lying to a drögue or sea anchor, with or without oil streamed.

*Fresh Water:*—On the passage north, in September, 1931, we carried 120 gallons of water, and with great care, used only nine gallons in 11 days. On the return passage in November, 1935, we carried 45 gallons, and without any rationing, used less than half this in 14 days.

*Speed at Sea:*—On the northbound passage in 1931, we logged 1,352 miles in 10 days 20 hours, the average speed being 5.2 knots. The homeward passage occupied 13 days 6 hours sailing time, the distance logged being 1,411 miles, at an average speed of 4.5 knots. The *Arethusa* was heavily laden on both passages, but on the return trip had the disadvantage of heavy cargo stowed high up and throughout her entire length, instead of amidships, which is more suitable.



Under her shortened canvas the cutter *Raini* heads for the Hauraki Gulf. This 38-foot vessel made yachting history when she competed in the first Trans-Tasman Ocean Race to Sydney in 1931.