



{ ATLANTIC }
GUIDED BY STARS
BY EMMANUEL AND MAXIMILIEN BERQUE

Before Columbus or the Vikings – about 3000 years ago – there were the Phoenicians and the Greeks in the Mediterranean and the Polynesians who'd been everywhere in the Pacific. How did they navigate without a compass?

We've been interested in astro-navigation for decades, and want to see how accurate a landfall we could make after a long crossing without instruments.

The distance of our intended voyage – crossing the Atlantic with no instruments or even a watch – is around 3000 miles (approximately 4,800 kms). By allowing for a modest average speed of 5 knots, and a 30° deviation from our course, it will take us about 29 days – the period of one moon, to reach La Désirade island, near Guadeloupe. This small island is a challenging target, only three by 10 km.

We decide to do this aboard a small proa we have designed – a reference to the Polynesians who sailed aboard enormous catamarans. We choose a schooner/lugger configuration.

We set about building in the loft of our old house in the Landes region of France, using basic woodworking tools. A year later, we knock part of a wall down to get it out into the garden.

It weighs 300 kg. The main hull measures 6.5m, with a beam of 80cm, 90cm deep and a draught of 30cm. The 5.5m x 35cm outrigger is attached to the canoe by two flat cross-members in Finnish fir and the craft is 3.6m wide. The two hulls are built in red cedar for lightness and the boat is varnished and completely covered with fibreglass. Inside

and out. It's a crazy amount of work. Although our outrigger canoe is small, it is a gem, and we are very proud of it.

We decide to leave at the new moon so as to arrive at the next new moon, and be able to observe the stars well in the black sky.

On 31st March, we set off from Arrecife in light weather, confident of success.

For 30 days and two people, we have 90 litres of water, 16 kg of 'gofio', 8 kg of sugar, 8 kg of powdered milk, 30 bottles of Tabasco, 90 tins of sardines, 1.5 litres of vinegar, and some salt and pepper. 'Gofio' is a cheap kind of flour, found in the Canaries, made from pre-toasted maize, which is then ground and can be mixed with anything... We have no cooker aboard – it would take up too much space.

The first day, we are becalmed and spend the

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first night hove-to off Fuerteventura. Fortunately, the north-easterly gets up, and we begin the second night under a clear sky, heading south west with the wind dead aft and the sails goose-winged at 15 knots. Not for long. The night sky clouds over and we can only pick out the odd star. We reduce sail to look after our little boat.

The next day, the islands are well below the horizon and we are out at sea with an immense desert ahead of us and no compass, watch, log, sextant or GPS, no radio, charts or books, not even

a guide to the stars! Just like 3000 years ago.

We plan to head south west for 10 days to reach the warmth further south. On the third day, we're already exhausted. The wind is blowing at a constant force 5- 6 and the sea has quickly become rougher. Short, steep swells, from different directions are horribly uncomfortable aboard our ridiculous little boat. It's impossible to stand up on the netting. Sleeping is almost impossible. We don't have a way to tell the time so it's hard to manage our watch and rest periods. We're forced to sail slowly, as otherwise the boat takes lots of water.

During the days, we steer south west by keeping the sun at 45° on the port quarter in the morning and 45° on the starboard bow in the afternoon. At night the Pole star helps us a lot, when we can see it. As it's always true north, it gives us the azimuth

of all the other stars in the sky. In fact, only the stars low on the horizon are useful. Those that are too high give us too imprecise a direction.

Before leaving, we learned by heart all the stars on the celestial equator, as they rise exactly in the east and set exactly in the west. At the beginning of the night, the west is indicated by setting of Orion's belt, then Betelgeuse in Orion, then it's the turn of Procyon in Canis Minor, followed by Alpheratz in Hydra, then Regulus and Denebola in Leo, then, at the end of the night, Spica in Virgo and Arcturus

in the Ploughman at daybreak.

Nights always start badly, we only manage to find the right stars a long time after sunset, and at daybreak it's the same thing, but in reverse: all the stars disappear for a long time – how long we never know – before we can see the sun.

So we try to steer by following the direction of the wind or the waves. To indicate the wind direction accurately, we fit a wind vane on each mast. On the fifth day, the helm becomes very stiff and we realise that the rudder blade has swung up, the pin is broken. We heave-to in a force 6/7 and a very rough sea. I tie myself on and get into the water to repair it; the boat is moving dangerously and could easily crush my hand. To my surprise, the water is beautifully warm.

From that day onwards, we decide to heave-to every day for about an hour, around the solar

midday, when the sun is too high in its zenith for steering, to relax a little, dry out and swim. We're not in a race and it's important for us to arrive in good health.

On 7th April we catch sight of the Southern Cross. When it's vertical, as it is for approximately an hour per night, the Cross measures approximately 6°. This gives us an idea of the angles we're observing. As its lower star Accrux is approximately 4°, we deduce that we're at about 22° latitude. We have passed the Tropic!





After the first week, the weather worsens and the sky becomes more cloudy. The wind blows constantly at force 5 - 6, which is a lot for our small, 300 kg boat. On 9th April, two butterflies fly past, way out at sea! We have to stop every night, now, as we can't see the stars, and rarely see the sun during the day. We try hard to stay at the helm, but as morale isn't high, we often end up crammed into the tiny, damp locker in our heavy weather gear, feeling like we're going to suffocate.

There is only one 'berth', a trapezium of plywood, 1.7m long, 40cm wide at the shoulders and 20cm at the feet. So for two people - even twin brothers - it's claustrophobic.

At dawn, we'd get underway again as fast we can, undercanvassed and furious at not being able to sail faster. We argue with each other and with the sea, which is ugly and foams horribly. It's so bad that it's hard to believe we're not in shallow waters with a lot of current.

From time to time we catch a big dolphin fish, which improves morale and gives us hope we can survive this hell. We eat as much as we can raw, then keep the rest in salted vinegar. The wind now heads us, and backs further to the north west.

A very long 3 to 5m swell, with occasional bigger sets, arrives from America; this worries us and we wonder what's happening on the other side of the Atlantic, as we have no radio to listen to the weather forecast on. We take the opportunity to sail further south, hoping that the next day will bring an improvement. On deck, we shout 'Accept your concept' as one, to encourage ourselves and sing songs from 'The Threepenny Opera' at the top of our voices.



Soon we find ourselves in yet another cloudy period where we hardly see the sun. Fortunately, in the mornings, we can make out a vague glow, which shows us where east is; when we catch sight of it, we note the direction of the wind and the waves and for the rest of the day and try not to zigzag too much, while hoping that the wind doesn't change direction. We have more confidence in the swell, as it changes direction more slowly than the wind.

Finally, toward the tenth day, we start to steer more west. The water is deliciously warm now and swimming cheers us up, however we're very careful, as we are being followed by enormous swordfish. The sky remains covered, and we become doubtful about our chances of successful navigation.

On the 16th day, at about the half-way point,

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it's time to throw the bottle entrusted to us by the children in our village into the sea. Then we carry on, sitting still and cross-legged constantly, at the helm on this impossible little boat... In addition we are more and more under-canvassed so as not get too wet. We crack up, miserably. We are under no illusions; it's going to take more than 30 days at this rate.

On the 19th day, the sky clears a little. That night we catch sight of the Southern Cross, but not for long enough. We think that we must be on about the same latitude as Guadeloupe. In the afternoon, the weather worsens. We're so disgusted with the cloud-covered sky that we ran before the wind all

night and try desperately to sleep in our horrible little hell-hole. The squalls and strong winds persist all night. We keep repeating "Next week, things will be better. The sky has to clear!"

On the 21st night, we glimpse the Cross again, with - just below - the two stars of the Fly. They seem to be in right position, and we celebrate during our daily stop. We open the only bottle of wine on board. The weather is improving now, the sea is finally calming down, and there is a light south-easterly breeze. The downside is that as we are constantly sitting in the water while steering, the skin on our arses is becoming inflamed.

The nights are very difficult, there are still a lot of clouds and more often than not, we stop so as to avoid errors in our course.

On the 23rd day, we tell ourselves there's only a week left. The sea is very smooth and Max

succeeds in finding a sail magic trim we don't understand, but which works with this very light almost southerly breeze. The Micromegas 3 sails at 2 - 3 knots with the helm lashed; it's wonderful. We can at last sleep a little, and we are dry.

We take the advantage of this opportunity to treat our arses with sardine oil. At daybreak, we set the sails goose winged and sail at around 5 knots. Then wind seems to turn more northerly.

We've had enough. Our solitude is unending. With no compass, steering in a straight line demands enormous care. We're fed up, and now completely obsessed with these three questions: "When are we to arrive?"

"Where are we going to arrive?"
"Will we see the Cross tonight?"

The wind dies down again and we succeed in rigging our 'automatic pilot' again: helm lashed, mainsail trimmed perpendicular and the foresail almost aback.

During the night of the 25 April - the 25th day - the sky clears just at the right moment and we observe the Cross and the Fly. Fantastic! The two upper stars of the Fly seem to be halfway between Accrux and the horizon. We appear to be on the same latitude as La Désirade! We must arrive soon, but when?

On the 26th April, we have fine weather all day with an easterly wind; we're sailing goosewinged at 5 to 8 knots. But in the evening, the sky covers over again, as it's done nearly every evening, and we go berserk again because we've lost our

precise course during the long twilight.

Sunday, 27th April is a promising day. The sea is calmer. We continue under foresail and storm jib, sheeted flat, just in case. Towards midday we lie to the sea anchor and relax and swim.

We've not been back underway an hour when suddenly Max at the helm says: "There's something on the horizon. It's not a cloud, it's an island!" I quickly find the binoculars.

It really is an island. LAND! But which island? We set course directly and hoist full sails.

We recognise La Désirade.

We've arrived. We've succeeded.

We are right.

