



Cruising

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Fifty Atlantic islands
A guide to the Balearics
Fitzroy & forecasting
Boating blunders

Plus:
Covid-19 update



A difficult message to write

CA President **Julian Dussek** describes how the CA has offered both serious and light-hearted responses to the Covid-19 crisis

This is the most difficult report that I have had to write. There is so much uncertainty. The heading of my report in the March issue of *Cruising* was "Plenty to look forward to." No one had envisaged the Covid-19 pandemic with tens of thousands of deaths and the massive impact on normal life. RATS has produced a comprehensive guide to Covid-19 restrictions across the world which is proving invaluable as restrictions start to be lifted, and RATS has also assisted our members stranded in the Caribbean.

Normal life came to a halt and is slowly beginning to start again. We managed to stage the Open Weekend just in time; one week later and it would have been cancelled. It was a huge success. Not only did the exhibitors rate it highly but on both days we had continuous lectures from 10am until 6pm, all of a very high quality. I thank the speakers who gave up their complete weekend for this and congratulate all those involved in organising the event. We will be holding the next one on March 27/28, 2021.

We had just started on a campaign to persuade the UK government to agree a reciprocal arrangement with the EU that would offer UK citizens a 180-day stay within one year, which is what the UK offers to other foreign nationals, instead of the 90 in 180 days that the EU will allow us after December 31, 2020. It would however have been crass to petition MPs for longer "holidays" in the EU at such a tragic time. Representations have started again now the Covid-19 crisis appears to be abating.

The coronavirus crisis has presented a huge challenge to the CA and I want to thank all those who have risen to that challenge. We had to close the building at Limehouse and Adrian Lester, chief technical officer, arranged for all our staff to work from home, a major task. It has all worked very well but I know some miss the camaraderie at Limehouse.

Zoom!

Now everyone is Zooming, we are able to see and talk to family, particularly grandchildren, a new experience for us, but the CA was ahead of the game

because we had already been using Zoom for committee members who live a distance from CA House. Now Council, RATS, the finance committee and CIDG all continue to meet regularly. Lucy Gray, general manager, holds regular meetings with her staff on Zoom.

I think it is highly likely that some of those committees will consider whether they need to meet physically in the future. I would miss the physical contact if everything went virtual, but at the last CIDG meeting we agreed how much easier it was to meet via Zoom. Many of us saved hours of travelling and our modified behaviour is probably typical of changes that will extend throughout society and the business world.

Inevitably all lectures at CA House had to be cancelled but Alison Hadley arranged a series of online talks which have been of exceptional quality and well received. We have enjoyed online quizzes and Trevor Taylor has produced a new and highly professional podcast.

Explosive antics

If you are ever feeling bored, just look at the forums. I'm an addict. In April Michael Prewett asked how to test whether liquid in his battery box was acid. Discussion drifted from the topic and we learnt about some members' misspent youths. During the Covid-19 crisis this afforded some light relief and I would like to thank the forum moderators for their tolerance of this breach of rules.

Two section secretaries have decided to step down. Mike Bell has retired as a Suffolk Section secretary after 15 years (see p76) and Gordon Knight has retired from Inland Waterways (p70). I thank them on behalf of all our members. The sections are an integral part of the success of the CA and it takes a lot of effort to keep them running.

A new version of *Captain's Mate* was released in April and the main feature is the introduction of a messaging system for Find My Friend.

Perhaps one benefit of having our movements restricted is that we should have the time to read *Cruising* from cover

to cover. It is excellent and has a new feature, "Boating blunders". You can read my blunder on p5, alongside Ken Munn's. We look forward to receiving more contributions... though in the April newsletter I suggested that now was the time to put in those cruising reports that you meant to do when you have the time. This resulted in five new reports, the lowest number ever!



Chemistry for beginners

Follow the discussion on the **Forums > Technical & Weather**

Off topic - things for grandchildren not to do in lockdown

My recollection is sulphur. Hugely excited when my 4-year-old brother came back from school with recipe to make "gunpowder", which we proceeded to do in the garden shed (goodness knows how an 11 year-old boy got the ingredients). Our father was not so thrilled when one of our explosions set fire to the shed.

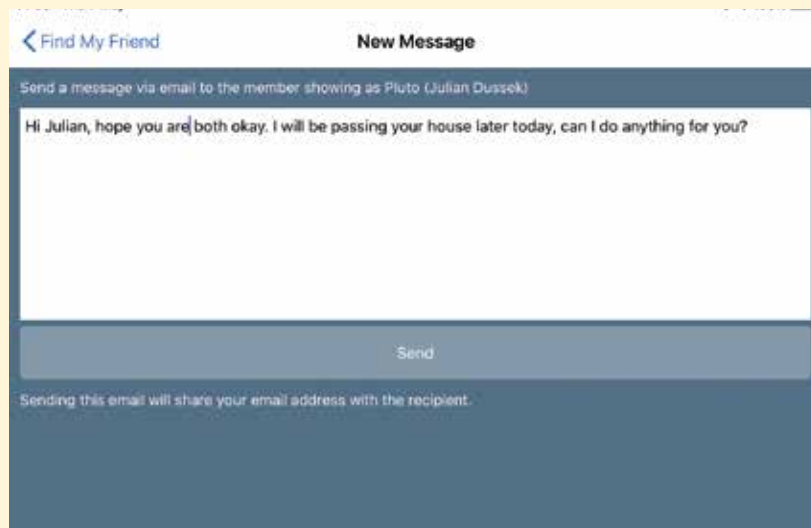
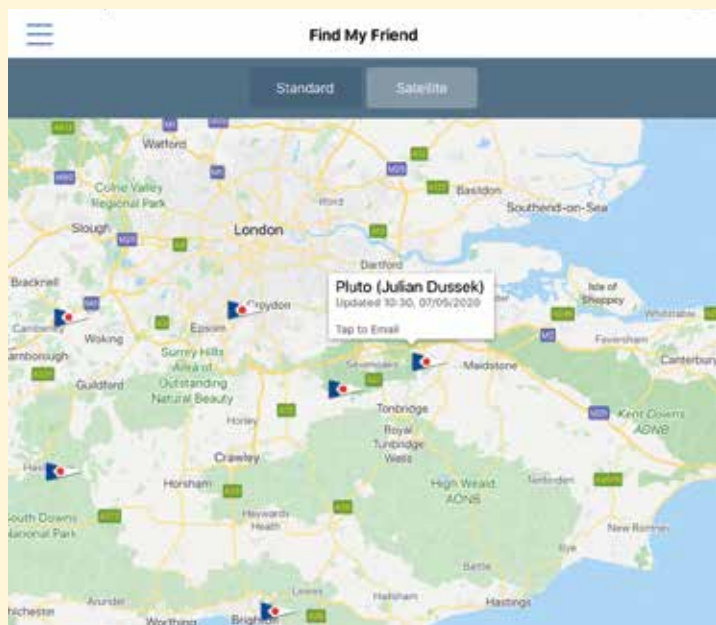
I remember as a schoolboy buying sulphur and saltpetre in the correct ratio for gunpowder from our local chemist without any questions being asked. But gunpowder was not nearly as good as sodium chlorate mixed with sugar which, when put into old 303 cartridges produced a good explosion. I used Jetex fuse. Also Sodium chlorate solution dried onto blotting paper could be used as a rocket propellant when put into an aluminium bicycle pump.

Weedkiller

The weedkiller was sodium chlorate. Made many an explosion using it, combined with charcoal and sulphur. We could also make fuses with it, dipping string into a solution of it and drying out on the hot water cylinder in the airing cupboard.

school, battery acid, etc.

And I made some out of nitrogen tri-iodide, which forms a powder. You scatter the granules on the floor and they crackle as people walk over them, e.g. the exit from the staff room. One winter term I made a batch and was drying it off in my school locker when they decided to test the heating one night, which was directly under my locker. The whole lot went off at once. There was little doubt as to the guilty party because although everyone else's lockers were damaged, mine had ceased to exist. I was lucky to escape expulsion....



You can add your name to Find my Friend and send a message to any member who permits it

Captain's Mate release supports new ways to stay in touch

A 'virtual community' of CA members

Captain's Mate has undergone a transition to enable members to make use of the "Find my Friend" feature during the pandemic. **Julian Dussek**, CA president and chair of the CAptain's Mate Development Group, provides a helpful Q&A:

Do we even need the CM app if we are not cruising?

Yes, it has a different role to play during this period of enforced onshore inactivity. The improvements in communication functions will create the opportunity for a virtual community.

Should we be using the Find My Friend (FMF) function when not on board our boats?

Normally, the answer to this question is "no". However, we are waiving that philosophy during the current Covid-19 situation for the reasons set out below.

What are the minimum system requirements?

Minimum requirements are Android 4.4 and iOS 9.

Why did we need a new version?

The new modifications help to enhance the functionality of FMF. They are:

- **A change to the default viewing radius when the feature is opened.**

Why was this necessary?

It had been set at four nautical miles. Many users were unaware of this and assumed there were no boats showing on FMF. It is now 50M, but users can increase or decrease it using the slider bar in Settings.

- **The position update can now be set to 'automatic' even when CM is not opened**

Why is that change needed?

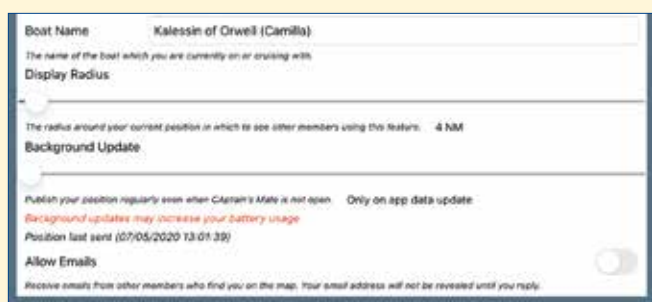
With the old version, a user's position would update only when the app was opened, stay in place for up to 48 hours, then it would be deleted. After that they would not be visible until they opened the app again.

What happens now?

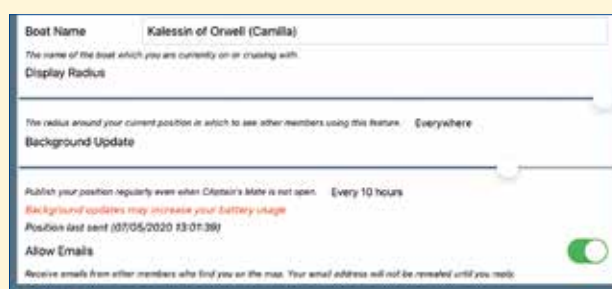
The app can update your position automatically at a frequency you choose even when it is not open (as long as the device is turned on).

Could this be an invasion of my privacy?

No, you have to actively opt in. In Settings you first activate FMF. Using the background-update slider bar you can choose to go from "only on app data update" (the old behaviour) to "every 12 hours" in various intervals starting at every 30 minutes. If you don't activate FMF, no-one will know where you are. ➤



The default settings show you members within 4M and only update your details when you open the app



You can extend the radius of displayed boats up to "Everywhere" and can get the app to update your position every few hours



Is there a downside to this?

Users of older devices might find that battery usage is higher than usual. This only applies if you have background updates set to something other than "only on app update". Your device will not transmit your position unless you move more than 200m from base.

■ We have added a messaging system

Why?

On the older version, users had to find out to whom the boat belongs and then their contact details. (Unless of course they are within walking/rowing distance!) Now, if a user enables "Allow emails" in Settings, their FMF flag as seen by other users will have *Tap to email* in it. Tap on that, type in your message and an email with your name and reply address will go to that person. It's so simple.

■ You can add to your boat's name

How does this help?

Hitherto only a boat name appeared on the "flag" on the FMF map. To find out whose boat it is, you had to go to the CA website or handbook. Now you can add extra information in the boat name field in Settings, so my entry reads *Pluto (Julian Dussek)*. You could put your full name or forename.

I can envisage conversations when restrictions begin to be eased, such as "Mike, my boat is in the marina a short walk from where you are, could you please see if the tarpaulin is still in place?"

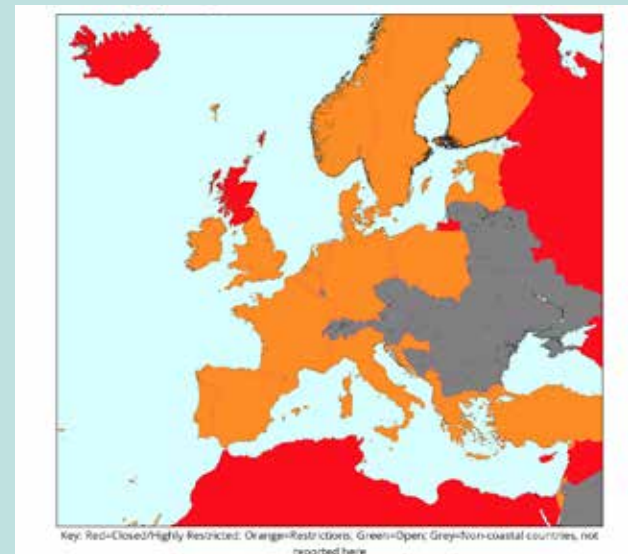
It is a way of maintaining the CA community while members cannot sail and eventually, when our members are actually on the water. I look forward to happier days when we return to normal life. Then FMF should revert to being used only for boat to boat communication.

Read more on the [CAptain's Mate Information page](http://www.theca.org.uk/captainsmate) at www.theca.org.uk/captainsmate.

Albania	Ireland	Poland
Algeria	Isle of Man	Portugal, Azores, Madeira
Belgium	Israel	Russia
Croatia	Italy	Slovenia
Cyprus	Jersey	Spain, Canary Islands
Denmark, Faroe Islands	Latvia	Sweden
Egypt	Lebanon	Syria
Estonia	Libya	Tunisia
Finland	Lithuania	Turkey
France	Malta	UK - England
Germany	Monaco	UK - Northern Ireland
Gibraltar	Montenegro	UK - Scotland
Greece	Restricted	UK - Wales
Guernsey	End of pandemic declared and marine and air traffic allowed from countries with low infection rates (UK does not yet meet this criteria), and through land borders except by rail.	Rest of the World
Iceland	<input type="button" value="MORE"/>	
	Morocco	

Boating status by country

Don't forget that you can check out the status of Europe and worldwide cruising grounds during the Covid-19 crisis via the map and country listing on the CA website. Information is available to both members and non-members.



CREW: "I have sailed since my 20s in many types of boat... and now have two boats, one in the UK and one in the Med. I want to do a long distance trip to get my Yachtmaster Ocean Practical done. I need a non-stop voyage of at least 600nm, at least 50 miles from shore for 200 of these, that takes 96h. I also have to act as mate and be involved in planning."

Join the Crewing Service

The CA's Crewing Service puts skippers in touch with crew and crew in touch with skippers. Even if you can't go sailing at the moment, why not take time to contact potential crew members? We also have monthly crewing meetings at CA House during the winter .

There's just a taste of what's on offer in our crew and skipper listings in the quotes here. To read more, go to www.theca.org.uk/crewing/welcome – or check the Crewing Service forum.



SKIPPER: "Route originally planned was to sail down the Croatian coast (possibly stopping in Venice), round the toe of Italy, through the Messina Straits, up the West coast of Italy to the French coast possibly wintering in 2020/21 near Nice. We may not get so far because of the Virus shutdown. No mad rush."

Tell us about your boating blunders

In the best traditions of the boating press, we're starting a new series to run in *Cruising* magazine. We want you to tell us about the silliest mistake you have ever made while sailing... or maybe the silliest you're willing to admit to. The best will be published in each issue of *Cruising*, alongside a cartoon by wonderful marine illustrator Claudia Myatt. The original artwork will be the prize for the winner each quarter.

Send your entries to editor@theca.org.uk before August 1 for the September issue with the subject line "Boating blunders". They should be no more than 300 words.

Our esteemed president, Julian Dussek, opens the series for *Cruising* with his recollection of a peaceful day with his Drascombe....



'Ah... the peace of the river!'

The boat was a Drascombe Longboat Cruiser, *Narcos*, a trailer sailer in which we had sailed across the Channel, along the coast of Suffolk and Essex as well as in the Solent. Nearer to home, we liked the upper reaches of the River Medway, a delightful, pretty river. On a glorious summer's day we decided to launch *Narcos* at Wateringbury.

As I reversed the trailer towards the slip it had to cross an electric cable going to a man working on his boat. "Is it safe to go across your cable?" I asked. "You'll soon find out, mate," said Medway Man. I crossed it uneventfully, lined up *Narcos* on her trailer at the top of the slip and took off the retaining straps and ropes. The sun shone, ducks paddled and canoeists canoed. I gently reversed onto the slope and suddenly the world

erupted. The winch handle whirled with a devilish noise and *Narcos* shot off the trailer and crashed down into the river. The ducks scattered noisily but the canoeists appeared nonplussed, seemingly unaware that they had just escaped being torpedoed by a twenty-foot out-of-control boat.

My heart stopped. I could have drowned them. *Narcos* bobbed quietly at the end of the painter. Obviously I had not put the pawl on the winch that held her on the trailer.

Medway Man looked up, having heard the commotion. "Was you in the Lifeboats, then?" he said.

Julian Dussek



Open weekend at CA House proves huge success

It's hard to recall now that the biggest concern over the CA's first ever open weekend, February 29 and March 1, was that it clashed with a half-marathon which restricted vehicle access on the Sunday morning. The event proved a big success with both visitors and exhibitors, and the expert seminars were especially appreciated.



Left, one of numerous packed seminars. Above, Tom Cunliffe's talk to an appreciative audience



We launched the series in the CA Newsletter with this recollection of crewing for the first race of the season in the Solent...

'It's fine, there's plenty of water....'

It was called the Hamble Scramble. First race of our season, Hamble to Yarmouth, via an assortment of buoys dotted around the Solent. Last year, we'd won it. The boat's Owner, fond of the handsome silver pot on his mantelpiece, wanted to keep it. He was keen, and ginged the rest of us up, to good effect.

We were first over the line towards Prince Consort cardinal off of Cowes, which meant crossing the Bramble Bank... or skirting around it. The keen option? Cross. But on a bad day, the Bramble dries enough for cricket to be played on it.

"Quick, can I cross the bank?" cried the Owner. I dived down to the chart table.

I'd already marked up tides for the day, with heights at hourly intervals.

I popped back up again. "Easy!"

Five minutes later we came to a sudden stop. Things fell over. So did the Owner's chance of hanging on to the pot. Fortunately, it was a rising tide. We crept away to join the convoy skirting the bank, and regained a few places; not enough to restore insouciance.

By mid-afternoon we were rafted up in Yarmouth Harbour for the post-mortem. The Owner went below, I followed. I checked my workings, he agreed – we should have crossed.

Then I noticed that he hadn't replaced last year's tide tables...

It was a boat tradition that the worst screw-up on a race bought a bottle at dinner. At the Royal Solent Yacht Club, after pudding, the Owner demanded cheese and a bottle of port. The cheese outlasted the bottle. As a major contributing factor, I bought the second bottle.

There was a race back to Hamble the following day. We didn't compete. Most of us could barely get out of our bunks.

Ken Munn



Some of the exhibitor stands at the Open Weekend. Above, Icom and Navionics, left, the CA and right, Gill. All commented on the great interaction with visitors and the CA stand welcomed many potential members





Fifty Atlantic islands

Nick Nottingham spent a year completing a circuit of the Atlantic in his Hallberg-Rassy 40, *Spellbinder* – and set foot on exactly 50 islands. These are extracts from his blog, which won the Lacey Trophy

The Atlantic circuit

I had long dreamt of taking my own yacht across oceans. In 2018, after a long career, and with children in their late teens, I took a year away, sailing south from the UK to Madeira then on via the Canaries and Cape Verde, before heading across to the Caribbean, and exploring from Grenada northwards to the BVIs. I then returned via Bermuda and the Azores. The voyage took 18 months to prepare and involved a substantial refit of my yacht *Spellbinder*, a 2006 Hallberg Rassy 40.

I left Portsmouth on July 16, 2018 and returned on July 12, 2019, having sailed more than 10,000 miles and set foot on 50 Atlantic Islands, with four ocean crossings of over 1000 nautical miles, 26 different crew members and more than 150 days at sea.

You can read more at travels Spellbinder.blog

After a delightful three months exploring Madeira, the western Canaries and the northern Cape Verde islands, *Spellbinder* had a fast and enjoyable Atlantic crossing from Mindelo to Martinique. I flew to the UK for Christmas, returning to Martinique in late January 2019, and found *Spellbinder* in good condition after her Christmas stay in Le Marin. My new crew were Peter and Janet, old friends and themselves owners and accomplished sailors of a Hallberg-Rassy 37, and they helped me prepare *Spellbinder* for her further travels.

In December I had set in train a number of post Atlantic crossing repairs – the mending of my bent spinnaker pole; fixing a leak on the high pressure side of the watermaker; repairs to our Parasailor downwind sail, and the replacement of the old Furuno radar with a new Raymarine Quantum model. I was delighted to find all had been done – *chapeau* Le Marin – and the first morning was spent gathering up bits and pieces (including transporting my newly repaired, and slightly shorter spinnaker pole by dinghy through a mangrove swamp) and paying bills. By the afternoon of the first day we were away.

Over the first few days around Martinique

we settled into a wonderfully relaxed rhythm of early morning tea, swims and short sails followed by more swimming or snorkelling, and sampling the various rum punches as we headed north.

We checked out of Martinique in Saint Pierre. The French have an excellent online self-declaration system and I was able to clear out *Spellbinder* and her crew at Alsace à Kay, a great Alsatian restaurant, with *apéritif* in hand. The next morning we set sail for Rodney Bay, Saint Lucia to join the Royal Yacht Squadron cruise, which was gathering at Rodney Bay marina.

The RYS cruise took us down Saint Lucia to Marigot Bay, a wonderful little inlet where we had our first party. There then followed a series of stops in Saint Vincent and the Grenadines and eventually in Grenada where the 10-day cruise ended. We came and went with the rally, sometimes doing our own thing but generally enjoying the organised events. Highlights were playing cricket in Bequia followed by a reception in Jack's Bar, and the next day another party up in the hills in an ex-Prime Minister's residence; a very privileged tour of Mustique, with a magnificent reception in a member's house followed by a

Lacey Trophy winner: Atlantic circuit



Thank you to Richard, owner of Titania of Cowes, for the photo of Spellbinder. Below, carnival in Martinique

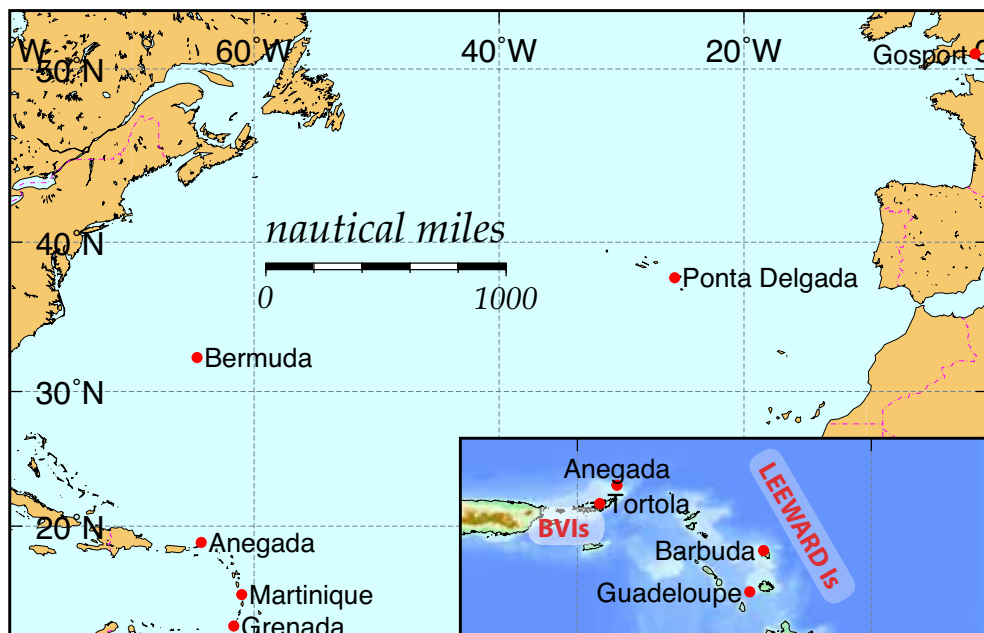


beach BBQ; lobster barbecued in Tobago Cays; a great long lunch in Petit Saint Vincent, and various other events, some impromptu and others organised, which together made for a very special 10 days. We spent most of our overnights at anchor. I had been encouraged to buy a barbecue for *Spellbinder*, and Peter put it to great use. I also had fun flying the drone, where allowed, and took some great footage.

We also enjoyed great sailing in addition

Which 50 islands?

Madeira – Porto Santo, Madeira and Ilas Desertas; **Canaries** – Tenerife, La Gomera, La Palma and Gran Canaria; **Cape Verde** – Sal, São Nicolau, Santa Luzia and São Vicente; **Windward Islands** – Dominica, Martinique, St Lucia, St Vincent, Bequia, Mustique, Mayreau, Union Island, Petit Rameau and Baradal (Tobago Cays), Petit St Vincent, Sandy Island, Carriacou and Grenada; **Leeward Islands** – Terre-de-Haut, Ilet à Cabrit, Basse-Terre (Guadeloupe), Antigua, Barbuda, Nevis, Basseterre (Saint Kitts), Saint Barts, Saint Martin, Anguilla (including Prickly Pear island); **BVIs** – Virgin Gorda, Tortola, Cooper Island, Salt Island, Peter Island, Norman Island, Jost Van Dyke, Anegada; **Bermuda**; **Azores** – Flores, Terceira, São Miguel; **UK** – Isle of Wight and mainland Great Britain.



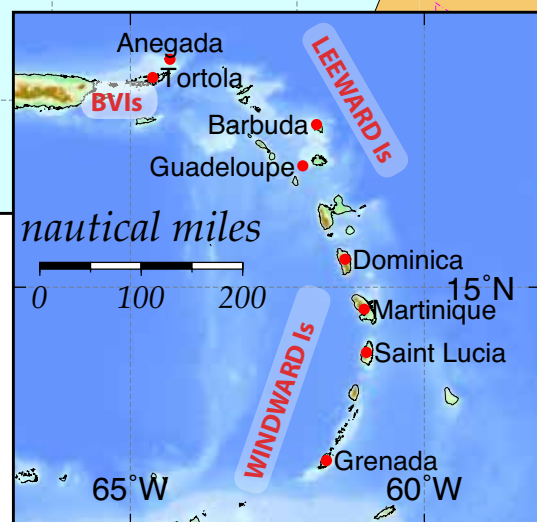
to the social agenda. The wind was very kind, and we raced downwind between the islands. We ended up in Port Louis, Grenada, which marks the southern extremity of this trip, and in effect the halfway point. So far, so good; the sabbatical was shaping up nicely, with much to look forward to.

Nick sailed back to St Lucia with family crew, and on to the Leeward Islands.

I sailed single-handed back from Saint Lucia in a blustery F6/7 to Martinique to await the arrival of my next crew. It was quite the roughest passage which *Spellbinder* has endured since leaving UK last July, but I managed it with just some minor repairs to make to the bimini. I then had a few days on my own getting *Spellbinder* ready, which gave me the opportunity to catch up with boat jobs, and re-visit a couple of nice anchorages.

David, Johnny and Lucy arrived as Martinique was in full carnival mode. It was quite windy and rainy – the rain inevitably followed by sun – but nothing could stop the people of Fort de France from dressing up Mardi Gras style and thronging the streets. Men dressed as women, women dressed as men – anything went in a riot of colour and loud music. It truly was party time and we enjoyed the atmosphere, although it made getting back to the yacht with the crew's bags all a bit of a challenge.

The aim of the next leg was to head gently north to explore the southern Leeward Islands. First stop on our cruise was Saint Pierre in NW Martinique, but the next morning – after replenishing our stocks of fruit and vegetables at the early morning market – we headed for Dominica. This part of the Caribbean Sea



is interesting in that in the days before longitude could be accurately obtained, ships sailed down the 16th degree of latitude, arriving between Dominica and Guadeloupe, and then turned either left to the Windwards, or right to the Leewards: it is a point of demarcation.

The passage across was boisterous and the crew "found their sea legs" to use an appropriate euphemism. The Trades had been quite strong for a few days and the swell therefore fairly big. However, once in the lee of the island, as is often the case, the sea flattened out completely, the wind dropped and we motored into the wide Prince Rupert's Bay. Portsmouth, like the rest of Dominica, was ravaged by Hurricane Maria in September 2017 and the damage wrought was plain to see, with forests flattened and many buildings still damaged.

The people of this poor Commonwealth island are resilient, though, and the Portsmouth residents had organised themselves to help visiting yachts. The PAYS (Portsmouth Association of Yacht Services) comprises a dozen or so men who help each other deliver various services including buoy moorings, trips into the interior and beach BBQs. We were met quite far out by one of them called Alexis, who showed us to a buoy and came on board to discuss



Above, hurricane damage is still very visible in Dominica. Right, the crew enjoy Barbuda's stunning 11-mile beach



what we might do. The next day, having checked in (and out) of Customs and Immigration we went by boat up Indian River, seeing iguana and a variety of tropical birds and crabs. At the end was a bar where we were introduced to coconut rum punch, which was lovely, even at 10.30am.

That evening virtually all the yacht crews in the bay came together for a beach BBQ, which turned into quite a party and got the crew dancing. The next day we opted to leave Dominica, although I am sure it has a great deal to offer. We sensed that the population was doing its best, but couldn't help wondering about the extent of UK DFID funding for this and the other hurricane-ravaged Commonwealth countries, which proudly use the East Caribbean Dollar with the Queen's head on it.

Next stop was France, specifically Guadeloupe. We had a good passage to Les Saintes, a group of small islands to the south of the mainland. Not having tacked *Spellbinder* since July, I saw an opportunity and did so to approach the anchorage. Writing this reminds me of a time I met an Ocean Cruising Club member and asked him whether his yacht tacked well; he replied "My dear chap, I'm not sure, as we only tend to tack on Tuesdays".



The islands of Les Saintes are incredibly beautiful, and well run by the French. Electric mountain bikes were on offer and

proved a revelation; all the pleasure of biking with none of the sweat and toil associated with grinding uphill in 30° of heat. I hadn't appreciated that if you want more exercise, you simply dial down the electrical assistance, so you have the best of both worlds. I sense another purchase coming back in the UK...

After our very pleasant stay in Les Saintes, we headed over to the Guadeloupe mainland at Plage de Malendure, a nice but windy anchorage opposite a marine national park founded by Jacques Cousteau. We had a lovely dinner overlooking the anchorage and in the morning swam around Pigeon Island, which proved to be the best snorkelling of all our trip. With large fish everywhere, it was like swimming in an aquarium.



Next stop for the night was Deshaies, on the north west coast of mainland Guadeloupe. I wanted to visit for two reasons: firstly, it is easy to check out, and secondly, it is the base for filming the BBC's *Death in Paradise* (DIP) which – despite its formulaic nature – is strangely compelling. Deshaies proved delightful – a small bay, quite sheltered, with everything a yachtsman needs in a compact place. We visited the DIP film set, had a memorable sun-downer in "Catherine's Bar", and David visited some remarkable botanic gardens.

We left Deshaies after a nice breakfast

in town. Antigua beckoned, and a few hours later after another memorable sail we entered English Harbour and the delightful Nelson's Dockyard marina. Berthed stern-to, we found ourselves at the heart of 18th and 19th century Britain exerting its influence in the Caribbean. Delightful architecture, excellent facilities, and a great base. We toured the harbour by dinghy, visited Galleon's Beach and the Dockyard museum (if only they had known about the role of mosquitoes in malaria and Yellow Fever) and generally sorted our lives out.

Barbuda was to prove a memorable two-day trip. Seven hours to the north of Antigua, it was devastated by Hurricane Irma, and the population was evacuated later when another hurricane beckoned. It is recovering very slowly, but is the most magical of semi-deserted places, with an incredible 11-mile beach, by which we anchored once we had navigated our way in through the reefs. It was a place of devastation, beauty and wildness.

It was a lovely stay overnight in a remarkable spot, seemingly at the end of the world. Real life did beckon though, and we sailed back to Antigua for the inevitable crew change-over. It was nice to have lighter winds behind the beam – the cruising chute helped propel us to Barbuda and back. I hadn't used it since Biscay

Spellbinder went on to explore the northern Leewards, and then the BVIs, ending up on Anegada to the north of the BVIs with Nick's son Tom on board.

Anegada proved to be a very special place. It is a coral atoll, no more than a few feet high. Only 250 or so permanent residents live there and there is little significant modern development. It was pretty much flattened by

Lacey Trophy winner: Atlantic circuit



Anegada, left, is only a few feet high – but it does boast great signs (above right) and delicious lobster (below left). Bottom, the skipper catches up on sleep between the BVIs and Bermuda

Hurricane Irma but has bounced back. We had a good close reach up there in 15 knots or so of wind. Since arriving in the Caribbean I have had just a working jib as a foresail, as the breeze is ever present and a genoa would often need reefing. It has worked well, and was new out of the bag as *Spellbinder's* previous owner had barely used it. The trip to and from Anegada was a great example of a perfectly balanced rig, making 6-7 knots without fuss.

The anchorage was at Setting Point, and we crossed the reefs with barely 20cm under our keel – I knew it would be tight, as we were at springs. It was too shallow to pick up a buoy, just so we anchored off in hard coral sand in 2.5m of water, digging in the anchor as best we could, then doing something definitely not taught in the RYA syllabus – diving down and piling rocks and stones over the anchor.



On arrival Tom and I hired a 4x4 and toured the island. Rental cars are easy on Anegada – cash, no deposit, few details required – you can't go far! That evening we ate lobster – which seems ubiquitous – at a restaurant called the Lobster Trap. It was delicious. The lady who runs the restaurant and the Anegada Beach Club told us she orders 700lb of lobster a day – it seems the seas can sustain this level

of fishing.

Before leaving back for Virgin Gorda and Tortola we had a couple of boat jobs to do. Nothing significant had broken on *Spellbinder* so far (except that which I have broken myself) but I spotted that the water pump had sprung a leak. Fortunately I had a spare on board and we swapped it over quickly. The calorifier had moved on its mounting as a nut had come undone – this required us both entering the engine bay, and despite the cramped surroundings, achieving the fix. Sweaty job though...

After lunch in Cooper Island, we headed back to Tortola to our berth. The final evening was spent preparing *Spellbinder* for long-distance cruising – jib down, genoa and furling gennaker bent on, and a trip up the mast to inspect the rigging and replace a block. Next stop, Bermuda.

The passage from the BVIs to Bermuda is about 850 nautical miles, and the pilot book advises that for the first few hundred miles, the south east Trades should help you along. As you near Bermuda, however, you are liable to meet calms. And so it transpired – four days of steady winds between 14 and 22 knots just behind the beam, followed by a brief gennaker run as the winds lightened, followed by 24 hours driven by Mr Yanmar. We arrived after a five-day, eight-hour passage averaging 6.5 knots.

Crew for this trip were Neil and François who suffered early bouts of seasickness, from which they thankfully recovered after a couple of days. This trip proved perfect for two bits of kit which had yet to come into their own. I had used the Hydrovane a little during the Atlantic crossing, but directly downwind the Raymarine autopilot proved more accurate and faster. Across the wind on this passage, the Hydrovane steered us

straight and fast for four whole days, keeping the wind just behind the beam and on track, without using a single amp. The other bit of kit which proved useful was the Aqua4Gen – a towed propeller generator which put in a steady 5 or 6 amps. I had used it when crossing the Atlantic but lost the propeller due to metal fatigue after the first day. Luckily I had a spare, and having repaired the generator in Martinique I found that in conjunction with the solar panels the two kept on top of the electrical demands, meaning that I only ran the engine every three days, mainly to get hot water.



After our 24 hours of motoring, we were called up by Bermuda Radio as we approached, and they guided us via the Town Cut into St George's Harbour. It's a great entrance and landfall. Once in we tied up at the Customs and Immigration dock, where we went through the formalities required and were dealt with very efficiently. We spent the night across the way tied to the quay, and with the 'Q' flag down (formalities complete) we were able to go into town and enjoy a couple of drinks. It was a fun passage, not without its challenges, but with a great sense of accomplishment.

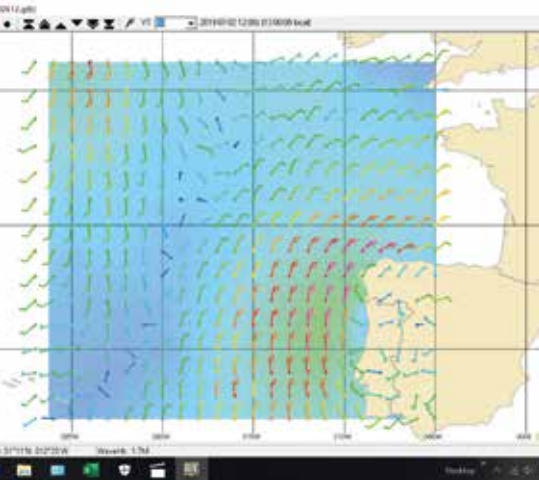
From Bermuda, Spellbinder headed for the Azores before the last leg back to the UK.

The final passage of *Spellbinder's* Atlantic circuit was from Ponta Delgada in the Azores to her home berth in Gosport, a trip of some 1400 nautical

Lacey Trophy winner: Atlantic circuit



miles. Normally I would expect to be in Falmouth after seven or eight days, but we were faced with an interesting routing challenge, with a large depression forming over northwest Spain.



We were therefore obliged to head north first, using some light southerly winds to get ourselves up to around 46 or 47 degrees north, before turning east and trying to find some fair winds and favourable currents to take us into the Western Approaches.

Crew for this leg were eldest son Tom and friend Crispin, who were each returning for their third time during this year's voyage. For the first few days out of Ponta Delgada we had fair winds, making good use of the Parasailor, motoring a fair bit and gradually gaining the required degrees north. Julian, my ever faithful weather adviser, kept us on the straight and narrow through nightly email exchanges and we had to make careful



note of the engine hours used, as fuel consumption would be critical. Eventually I made the call after seven days to head east at 46 degrees 30 minutes north, and we cut the corner of the low pressure, motorsailing through the swell until we reached the other side.

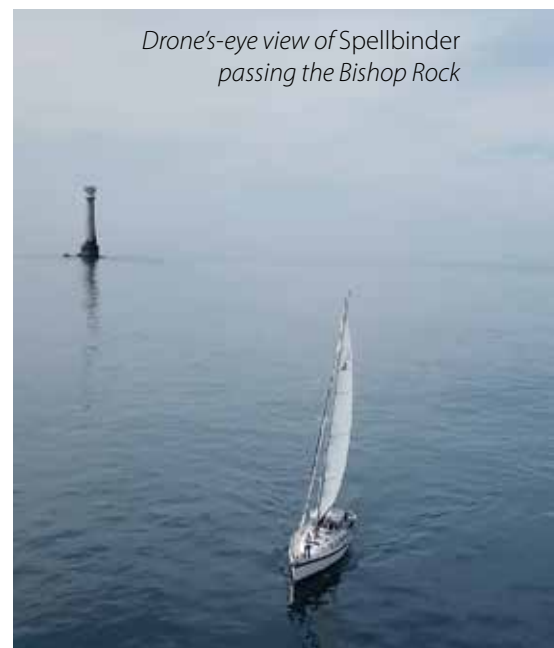
Once through the low pressure system we had light winds and fair currents, and gradually made progress towards Scilly, where we needed to refuel. I had been concerned about fuel consumption, but having emptied the contents of the reserve tank into the main one, I found we had been sipping fuel at just 2.2 litres an hour, which gave us plenty in hand.

We saw many dolphins, and many whales – particularly one evening, when all around us there appeared to be whale spouts, showing up white against the dark cloud which was in front of the setting sun. You will have to take my word for it, as they were too far away to photograph effectively. We reached Scilly after 10 days and refuelled and stocked up with fresh food at Hugh Town.

Our night entry into the Solent was uneventful, and we tied up in Cowes in the RYS Haven at 0330. We thought we would have some kudos for sailing in from the Azores, but the neighbouring yacht had just come in from a Transat race from Newport, Rhode Island, and was turning around overnight to race to Saint Malo! After a fine breakfast and an excellent lunch to celebrate our arrival, Tom and I took *Spellbinder* back to her berth in Gosport, completing our circuit of the North Atlantic



Far left, the parasailor came into its own on the eastward passages. Left, the Royal Bermuda YC offered the most expensive moorings on the whole trip. Above and below, life and wildlife in the Azores



Drone's-eye view of *Spellbinder* passing the Bishop Rock

Nick Nottingham started sailing in his twenties and bought his first yacht in 2007, a Moody 33 Mk II called *Kianga* which he sailed with his family in areas from Suffolk to southern Brittany. In 2017 Nick bought *Spellbinder*, a Hallberg-Rassy 40, from the author of the RCC *Atlantic Spain and Portugal* pilot book. Nick took a sabbatical after his career in the armed forces to complete his Atlantic circuit.



A GUIDE TO MEDITERRANEAN SAILING

The Balearic Islands

*Puerto de Addaya in Menorca,
and below, nets in Palma*

In the seventh part of our series on Mediterranean cruising destinations, HLRs **Jeff & Janine Kempton** describe the joys of the archipelago they know so well

Overview

In the late 1990s CA began the publication of a "Cruising Information Series" and *Cruising in the Western Mediterranean* was first published in 1998. This work became the template for many subsequent articles and cruising information material which have been published since. It has been fascinating to see the change which has taken place in Spain during this time, as it has come from a rather undeveloped area to a rich and well-organised country. Where marinas used to contain mainly local fishing boats and a few visiting foreigners, they now have many large shining motor yachts with Spanish flags!

It is strange to the north European eye that although the locals are very keen on racing, they don't appear to have any cruising tradition at all. In fact in all our 30-year travels around the Med, we have seen very few Spanish flags. (One that we met in Sardinia turned out to be based in the same Mallorcan marina as us!)

Bareboat charter is well established, but since the boats are mainly based in Palma they don't go far and are no bother to visitors. There is very little flotilla business.

Since the islands are far from Africa few immigrant boats are seen. Those that do make it are usually strong and seaworthy fishing boats, crewed by people who know what they are doing, and thus do not represent a problem for yachts. In any case they are normally picked up by coastal radar and get intercepted by the authorities.

All in all then, the Balearics are one of the best sailing grounds in the Western Mediterranean, and we were always pleased to return there after our voyages all over that sea. The weather in summer is generally good with mostly daily sea breezes, although the occasional storm can happen. It can get very hot in July/August, when big thunderstorms do occur. There are ample marinas and mooring buoy fields. Although there are many places to anchor, this is becoming more restricted, as described below. There are plenty of facilities for yacht repair and maintenance and Palma de Mallorca is one of the leading places in the Mediterranean in this respect.

The islands all have their own character and are quite different in some respects. More than one season would normally be needed to explore them thoroughly.

Getting there

These are holiday islands and many Spaniards from the mainland have second homes there. There are also many expatriate residents. Many transport connections exist, such as ferries from Barcelona, Valencia, Denia and Toulon and flights from all over Spain and the rest of Europe, including several British airports. Price wise, most of this is quite reasonable, especially if you are able to search for the best deals online. ➤



Pros

- Excellent transport links
- Generally good weather although even in summer the northerly Mistral/Tramontana wind can blow
- Rules and regulations straightforward and easy to handle
- Excellent facilities for yacht repair and maintenance, especially if you stick to, and trust, locals, who can fix, find or make anything
- Prices variable, but cheaper alternatives are there
- The main islands are only a few hours sailing apart and (at the closest point) only a few hours from the mainland

Cons

- Very hot and crowded mid-July to mid-August, with peak rates. Visit before or after if you can
- As elsewhere in the Med, winds over 15kt create short, steep seas which result in slow and uncomfortable progress to windward
- Winters are cold and damp, it even snows sometimes. The Mistral can be fierce and long lasting, especially in northern Menorca
- Winter has fewer flights than summer, but generally still sufficient



Right, local boats in Fornells, Menorca



Marinas and moorings

PortsIB, the Balearic Government nautical authority, manages all the marinas on the islands, either directly itself, or indirectly via marinas holding concessions. There are 28 private marinas scattered throughout the islands, all of which must be contacted directly to book berths. There are 14 harbours/marinas under direct PortsIB management. Two of these have no transit berths but the other 12, the "town quays", can be booked via the site www.portsib.es which also contains a great deal of useful information, including photographs of all the harbours/ marinas mentioned above.

The CA document *Town quays in the Balearics*, which is on the CA website at [Cruising Info > Mediterranean > Spain \(Med\) > Balearics](#), gives a list and details of these quays.

Marina costs vary from some unaffordable harbours, which specialise in superyachts, to those where the cost for a 12m yacht is around £65/70 per day in high season (June to September), £35 low season (November to February). Town quay prices are the same everywhere and are half or less than the private marinas.

Up-to-date marina info and prices can be found in Cruise Reports, on the CA Cruising Information site, or via the app CA Captain's Mate.

There are about 14 other marinas, not connected with PortsIB, located within and controlled by the various big commercial harbours, also bookable direct.

Mooring buoys

A useful alternative to marina berths are the mooring buoys, originally set up to protect the extensive fields of *Posidonia* sea grass which surround the islands and which are an important part of the marine ecological system. Many of these buoys are managed by the government on behalf of the *Posidonia* organisation, but the rest have been taken over by nominated marinas. Buoy prices are quite reasonable. See the CA document *Mooring buoys in the Balearics*, also at [Cruising Info > Mediterranean > Spain \(Med\) > Balearics](#). Most of these buoys are laid for the period (more or less) June 1 to the end of September, apart from those on the port hand in Andratx and those in Cabrera, which remain year round.

Anchoring

Although it might seem that the islands should have ample anchoring possibilities, the situation is a bit more complicated: Spanish law forbids anchoring within 200 metres of a swimming beach and such beaches are usually protected by a line of tethered little yellow buoys, or even just two solid yellow markers, beyond which limits one may not anchor or even go with a dinghy unless there is a marked channel. The position of these buoys is often a bit haphazard and they may be closer than or even further out than the 200 metre limit.

The local government has a plan to prevent swimming altogether in some calas, and then let the space on concession for laid mooring buoys. A list of these plans is included in the *Mooring buoys* publication mentioned above. When and where such changes will occur is not clear.

Anchoring within the big commercial harbours is mainly forbidden. In Mahon for example there are some good anchorages but in theory these may only be used if marina space is full (not always strongly enforced).



Yachts anchored in Cala Teulera, Mahon, in 2007. There are restrictions on how long a boat may anchor, and in some years boats are asked to move on after three days unless weather conditions are bad or no marina berths are available. Below, a boom awning is vital. Bottom left, Spanish fare



Equipment

Everything you would normally carry elsewhere plus :

- Ship's register, VAT receipt (if EU flag), VHF operator's certificate, insurance documents including a Spanish translation (your broker will know what you need), crew passports. **All** must be original documents.
- A bimini, preferably one which remains in place even when sailing.
- Plenty of light clothing – hats are vital, preferably with a chin strap; long sleeved shirts. You must protect yourself from the sun, which if overdone is an enemy! An oilskin jacket can be more handy than you might think.
- A big awning draped over the boom, fixed that it can easily be taken off if hit by a squall while at anchor. Vital equipment.
- As heavy an anchor as can conveniently be carried, whichever type suits you best. It must stow well on a bow roller ready for use and be easy to handle. On a 12m yacht we carried a 25kg



pivoted shank CQR copy which served us well in the Med for 30 years.

- Anchor chain rather than rope, which chafes on rocky bottoms and is impossible to pick up by hand in a blow. Length should relate to boat size, space in the locker, weight on the bow etc. Most anchorages in the Balearics are only 4 to 5 metres deep, sometimes a bit more if beyond the yellow beach marker buoys.
- An electric windlass, for ease of handling the chain (also in a blow). Hand windlasses are too slow, especially if you happen to be on a lee shore.
- Solar panels – very useful for keeping batteries charged, fridge working if anchored for long periods.
- An electric refrigerator, especially if spending long periods at anchor.
- A cockpit table is nice for meals outside under the awning.

Water

Fresh water in most marinas is claimed to be potable; if not, it can be a bit salty but ok for deck wash/cooking etc. Some marinas have a dedicated drinking water tap, at a small extra charge. We always carried a few of the 5 or 8 litre water bottles from supermarkets, for drinking (and giving younger crew members something to carry!)

Mosquitoes & other insects

Not usually much of a problem. The islands are so dry in summer that there is no standing stagnant water for them to breed in. Little sand flies can be more

tiresome, they don't bite but itch! Insect repellent spray to rub on exposed flesh is usually enough. At night the odd bug still seems to get in and we found that coils which one lights and then smoulder away all night keep them away. Nets are not really needed. Our hatches had two roller blinds, one for sun and the other perforated, which kept most bugs away.

Books/Charts

Indispensable is the RCC Pilot *Islas Baleares* (11th edition 2018). Expensive but well worth the price. Very well written with not only pilotage info but all kinds of useful information on weather etc.

Charts: Admiralty 1702 Ibiza, Formentera & S. Mallorca, 1703 Mallorca & Menorca, 2761 Menorca, 2834 Ibiza & Formentera. Imray M3. Maybe you don't need them all – that's a personal decision! Admittedly electronic charts are very handy and easy to use but cannot be depended upon to show some detail and a wise navigator usually has a good old paper chart as a backup (especially if there is a power failure).



The site of CA weather guru Frank Singleton, *Frank's weather* at weather.mailasail.com/Franks-Weather/Home contains everything one would like to know about weather and forecasts. ➤



Left, inside La Mola fortress outside Mahon, and right, the Drach caves at Porto Cristo. Below, the familiar shape of the cathedral in Palma



Regulations and fees

Spain is mercifully free from much of the arbitrary rules and taxes found elsewhere. State harbour charges and the Light dues & Life Saving tax are included in normal marina fees.

Details of these and the ISDMT 183-day tax are to be found in the CA publication *Sailing in Spanish Waters*. None of this is particularly onerous provided you pay attention to the rules. Spanish officials are in general polite and efficient and glad to have your trade in helping their economy.

A few words in Spanish can often oil the wheels, such as *Hola* –hi!, *Buenas dias* – Hello/good day, *Gracias* –thank you, and *Por favor* –please.

Where to go & what to see

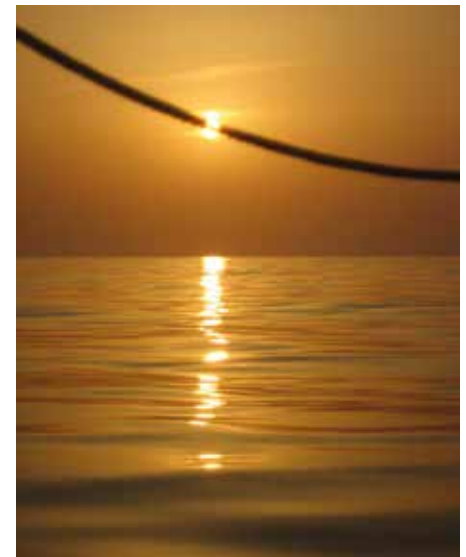
This is just a selection of favourites:

- Palma old town and the cathedral.
- The Bellver castle outside Palma.
- Monasteries – practically every hill top has a fortified monastery. Of particular note are the Carthusian monastery at Valdemossa (Chopin & Georges Sand stayed there), and Lluc.
- The Victorian electric railway from Palma to Soller via a tunnel through the mountains, and the Victorian electric tram from Soller station to the port (very

popular). Soller port, surrounded by mountains, is worth the visit.

- The Drach caves at Porto Cristo.
- The harbours of both Ciudadelada and Mahon on Menorca are impressive; the latter still has the massive fortifications built by the French and British during their wars for possession of Menorca!
- The central plain of Mallorca is very agricultural and has a lot of sleepy villages. Some interesting vineyards whose products are as good as anything on the mainland!
- Scenery in the Tramuntana mountains is magnificent and for the hardy there is superb hill walking in spring & autumn, especially the Pareis gorge, which is not for the faint hearted!
- Cabrera Island (ferries from Colonia San Jordi or your own boat, of course). You need to book and pay for a permit and mooring in advance
- Cala Portinatx, Ibiza, is a pretty (but always crowded) spot and the obvious jumping-off point to and from Mallorca.
- The bay of Espalmador is very attractive but is now a busy buoy area, requiring early booking. Very popular with the locals as a day anchorage.
- The harbour at San Antonio is very sheltered and used to be a favourite anchorage but is now a buoy area (see "Mooring buoys in the Balearics") and anchorage is mostly forbidden although

liveboards do sneak in. One of the last strongholds of the Ibiza club package tour trade, although noise levels are being reduced by the authorities and bars closing a bit earlier..



DISCLAIMER

Much of the above may become irrelevant or incorrect, depending upon the outcome of the Covid-19 crisis, and also the final terms of the UK's departure from Europe !!

Jeff Kempton, born in Essex, spent a career in the merchant navy and met Janine, who is French, in the mid-1960s when he rented her flat in Paris. In 1986 they sailed for the Med together, but settled in Mallorca and bought a Westerly Oceanlord, *Papajou II*. They have been the CA's HLRs in La Ràpita for the past 34 years.



The Newton of meteorology?

Frank Singleton considers whether any of the scientists who made today's marine forecasts possible have the stature of Isaac Newton – and concludes that **Robert FitzRoy** is the best candidate

If I have seen further it is by standing on the shoulders of giants – Isaac Newton

Science generally advances incrementally but some notable figures shape the future in a way not always imaginable at the time. Newton, Michelangelo and Galileo seemed capable of “thinking outside the box.” There are many examples of ground-breaking work in specific subjects: Darwin on evolution, Marie Curie on X-rays, Alexander Fleming on penicillin, Francis Crick on DNA, Robert Watson-Watt on radar, Einstein on space and time. Of these, Einstein might be in the Newton category and a retrospective view of Stephen Hawking may well include him.

What about meteorology? Who are the giants, and is there a Newton?

Aristotle might have been a candidate. He invented the word and his book, *Meteorologica*, was the standard work for nearly 2000 years. His descriptions of cloud, mist, fog and dew were not

too far off the mark, but he thought wind came from holes in the ground. As late as the 16th century, the constancy of the trade winds was attributed to “exhalation from weed in the Sargasso Sea.” Nobody would cite Aristotle nowadays.

Over the past few centuries there have been many individual contributions that come into the major breakthrough category. In the early 17th century, **Evangelista Torricelli** invented the barometer, the most fundamental of all meteorological

instruments. Surface pressure is the integrated effect of everything that happens in the atmosphere throughout its depth. It could be considered that all of meteorology has descended from Torricelli. **George Hadley** in the 18th century studied the trade wind circulation and laid the foundations for later studies of global weather patterns. A tribute to him is the naming of the world-renowned UK Hadley Centre for Climate Prediction and Research. **Gustave-Gaspard Coriolis**' work explained why the winds that we observe do not move directly from high to low pressure but are deflected to the right in our hemisphere – as Hadley had observed. The Coriolis effect is better known to sailors as Buys-Ballot's law, “Stand back to the wind in the northern hemisphere and pressure is lower to your left than to the right.” An RYA sailing instructor is supposed to have said that if you stand back to the wind and pressure is lower to your left, then you are in the northern hemisphere. Correct, of course, but not quite as Buys-Ballot put it.

A less obvious choice as a meteorological thinker was the art and social critic, **John Ruskin**, who, in 1839, said that “The meteorologist is impotent if alone; his observations are useless; for they are made upon a point, while the speculations to be derived from them must be on space. It is of no avail that he changes his position, ignorant of what is passing behind him or before; he desires to estimate the movement of space, and can only observe the dancing of atoms; he would calculate the currents of the atmosphere of the world, while he only knows the direction of a breeze.” Put into rather more terse English, “To know about weather anywhere, you have to know about weather everywhere.”

The means for doing this emerged with

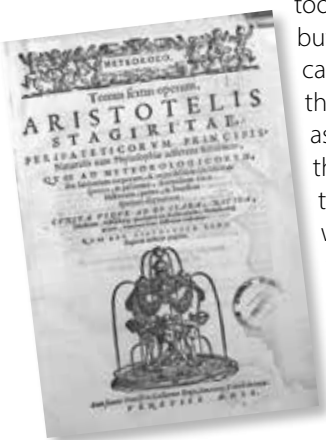


the first recording electric telegraph invented by Samuel Morse in 1837. Visitors to the Great Exhibition in London, in 1851, could buy a map showing weather reports collected from locations over the British Isles. These first “real time” weather maps cost one penny.

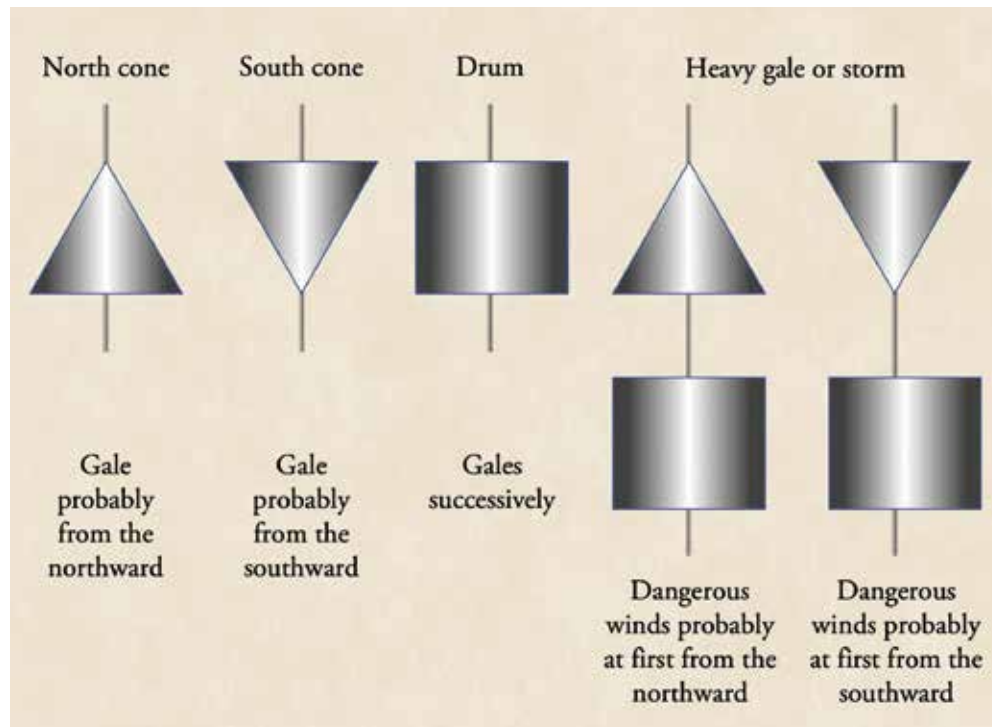
In the mid-19th century, there had been increasing concern about losses of ships and their cargoes (rather less about loss of life) at a time when maritime trading was increasing rapidly. In 1853, the first international meteorological conference was held in Brussels at the instigation of **Lieutenant Matthew Maury, USN** (a man of vision). This was the forerunner of the International, now World, Meteorological Organisation. Maury proposed the collection and international exchange of data from ships on passage in order to define oceanic climate.

Early in the next year, 1854, an auspicious year for meteorology, the first national weather service was formed by the Dutch followed quickly by the British and, then, by many other countries. Commander, later Vice-Admiral, **Robert FitzRoy** was appointed as the first Secretary of the Meteorological Department of the Board of Trade. There he was charged with the “Provision of meteorological advice to the Royal and Merchant navies.”

In the same year, during the war in the Crimea, a Black Sea storm



Previous page, a photograph of FitzRoy from around 1855. Below left, Aristotle's *Meteorologica*, still in print and in use in 1560. Right, FitzRoy's storm cones



sank several ships and many lives were lost. Emperor Napoleon III asked his Astronomer Royal to advise on what lessons could be learned. **Urbain Le Verrier** collected data from the area and was able to show that a well-defined low pressure area with winds circulating anti-clockwise had moved in a fairly steady manner while maintaining its identity. He came to the momentous conclusion that weather prediction was possible, at least in principle. Le Verrier was the father of synoptic meteorology – literally, looking at weather patterns overall.

Such disasters can be catalysts for developments. On the night of October 25/26, 1859, a major storm struck the British Isles. The Royal Charter storm, named after the most significant casualty, was the most severe storm to hit the Irish Sea in the 19th century. FitzRoy, as an experienced sailor, recognised the need for warnings and initiated a system of hoisting cones and cylinders around the coast to indicate strength and direction (northerly or southerly only) of gale or storm force winds. The use of cones by day and lights at night was only discontinued in the UK in the early 1970s and still continues in some countries.

Around 1895, a Norwegian professor, **Vilhelm Bjerknes**, wrote down a set of mathematical equations combining the physical laws of atmospheric hydrodynamics and thermodynamics. These are known as the "Primitive equations." Four years before the CA was formed, he postulated that it should be possible to use those laws and, knowing initial conditions, calculate how the atmosphere would evolve. This was another enormous leap of faith at a time when computing meant slide rules, logarithmic tables and hand-driven adding machines. I was still using these at university and when I joined the Met

Office. Younger CA members may never have seen these, let alone used them.

For the next 50 years, meteorology was to remain, effectively, an observational science based on physical reasoning rather than a true physical, numerically-based science.

During the First World War, working at the University of Bergen and effectively cut off from the rest of the world, Bjerknes led the group that developed the theory of weather fronts. This conceptual model was fundamental in understanding, in a qualitative manner, how the atmosphere works. The boundaries between different air masses were likened to those between opposing armies, hence the word front, much used during the war. Fronts are still shown on weather charts as meteorological shorthand to describe the weather, although meteorologists have a much better understanding of the complex processes involved. Bjerknes must be a candidate as the meteorological Newton.

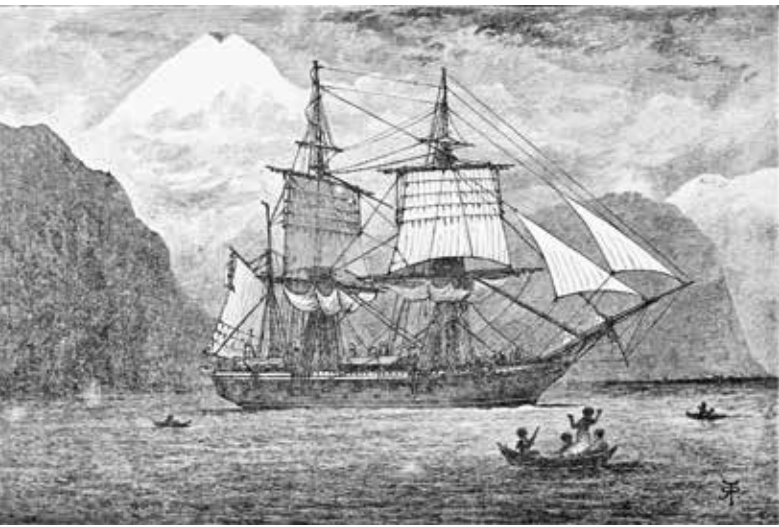
During that war, Quaker mathematician **Lewis Fry Richardson** was a stretcher bearer in France. He spent his off-duty hours trying to use Bjerknes' primitive equations to predict the pressure at a point over central Europe six hours ahead. He failed by a factor of 100, but had the moral courage and scientific integrity to write a book describing what he had done. In a postscript, he envisaged a forecast office, perhaps like a large concert hall, with many people representing a grid of locations over the surface of the globe. Each would

compute data at their position and pass their results to people adjacent to them. Computer buffs will recognise the concept as parallel processing. The supercomputers used by the Met Office and other major centres today are known as massively parallel computers.

Richardson was certainly another giant, far ahead of his time. After the war, Richardson left the Meteorological Office because of its association with the military – it had become part of the Air Ministry along with the RAF. His name was given to a parameter in fluid dynamics that relates to turbulence. Some will know his famous description of fluid dynamics: *Big whirls have little whirls that feed on their velocity, and little whirls have lesser whirls and so on to viscosity.*

Before Richardson died in 1955, the first, very crude computer model had been run by scientists in the US on ENIAC (Electronic Numerical Integrator and Computer) a computer running at some 2000 sums per second. That power was insufficient to calculate the primitive equations and a much simplified form had to be used. It was not until the 1970s that computers could handle the primitive equations and about 1980 when a parallel processor, the Cray 1, entered service. Standing as he did on Bjerknes' shoulders, Richardson could be considered as a Newton.

During the early period of numerical weather prediction, a number of scientists primarily in Sweden, the USA and the UK came to the fore. Few of the names will be known outside



Left, HMS Beagle in the Straits of Magellan. Right, Fitzroy fisheries barometer No 98, Stromness, Orkney. Photo: MichaelMaggs/Wikimedia



meteorology; perhaps an exception is **Edward Lorenz** who studied the effects of small variations in the initial conditions on the outcome of weather prediction models. This led to his famous, rhetorical question of whether a butterfly flapping its wings could lead to a storm. It is an interesting and much misunderstood question, but led to what we now call “ensemble forecasts.”

One name stands out

Out of all of these, one name does stand out as having made a massive wide-ranging, long-lasting contribution to meteorology: Admiral FitzRoy.

A great-grandson of Charles II, Robert FitzRoy entered the Royal Naval College, Portsmouth, aged 13. He joined the Royal Navy at the age of 16 and served on various ships including such famous names as *HMS Ganges* and *HMS Thetis*. He sailed to South America as a lieutenant on the sloop *HMS Beagle*, and made a reputation as a hydrographic surveyor, later becoming acting captain.

Having friends in high places and knowing Admiral Beaufort, Hydrographer to the Navy, he became captain of the *Beagle* at the age of 26, charged with more survey work and setting up mission stations. His voyage with Charles Darwin is well known and led to the then highly controversial theory of the evolution of species through natural selection. Being a devout Christian, he had many arguments with Darwin and the results troubled him greatly.

Following the 1853 conference, FitzRoy saw the merits and need for uniformity in weather reporting. He organised the making and collection of standardised observations of weather and sea state from ships; that system continues today. He did the same for data over land. He

recognised the need for accurate, strictly comparable measurement. He directed the design and distribution of the FitzRoy barometers to ports so that sailors could study them before going to sea. Some of these can still be seen; one is in the entrance lobby of the Royal Dart YC and another (*pictured above*) in Stromness, Orkney. Realising that meteorology would become international, he developed a system of numerical codes for the reporting and collection of weather information, a truly international language that has been used, with modifications, ever since.

As a sailor, he knew that prediction of storms was the holy grail, so he set about drawing up a set of forecasting rules based on long experience, and coined the word “forecast.” His rules related changes of pressure, wind, and cloud to expected weather. FitzRoy set up an operational system of collecting weather reports from all of the British Isles. On the basis of these observations and his rules, he began to issue forecasts of storms. From then, it was a short step to daily weather forecasts published in *The Times*.

Not surprisingly, he was heavily criticised by cargo ship and fishing boat owners who objected to their vessels remaining in port when they thought it unnecessary. In 1865 he committed suicide, partly because of his religious convictions and guilt associated with Darwin’s theory of evolution, but also because of the criticism of his attempts to forecast. In addition, he had increasing financial worries.

The Royal Society, as a major critic, was requested to oversee the work of the Meteorological Department and produce a working system of weather prediction. Of course, it failed, but, due to demand from seafarers and the public

alike, publication of forecasts was quickly re-introduced. They have continued ever since, except in time of war.

FitzRoy was a truly great man who, within the resources and knowledge of the time, did a great deal to put meteorology on to a firm footing. Somewhat ironically, he was elected as a Fellow of the Royal Society before Darwin. Many have stood on FitzRoy’s shoulders.

Since his time, many brilliant physicists, mathematicians and computer scientists have worked on the problem of forecasting. Technology has developed beyond the comprehension of many of us. The current Met Office computers, three Cray XC40s, can do about 14 thousand trillion (14×10^{15}) calculations per second, a trillion times faster than ENIAC – and an even faster computer is due in 2022.

Forecasts of general weather patterns for a week or more ahead often give good guidance; short term detail is more difficult. Seasonal forecasts are, like the end of the rainbow, apparently tantalisingly close but just out of reach. Climate prediction, vital for the future of mankind, is very much work in progress. I cannot even start to wonder what Bjerknes or Richardson would have thought, let alone FitzRoy.

After a career as a professional forecaster Frank set up his respected weather site at weather.mailasail.com/ **Franks-Weather**. He is also the author of *Reeds Weather Handbook*.

