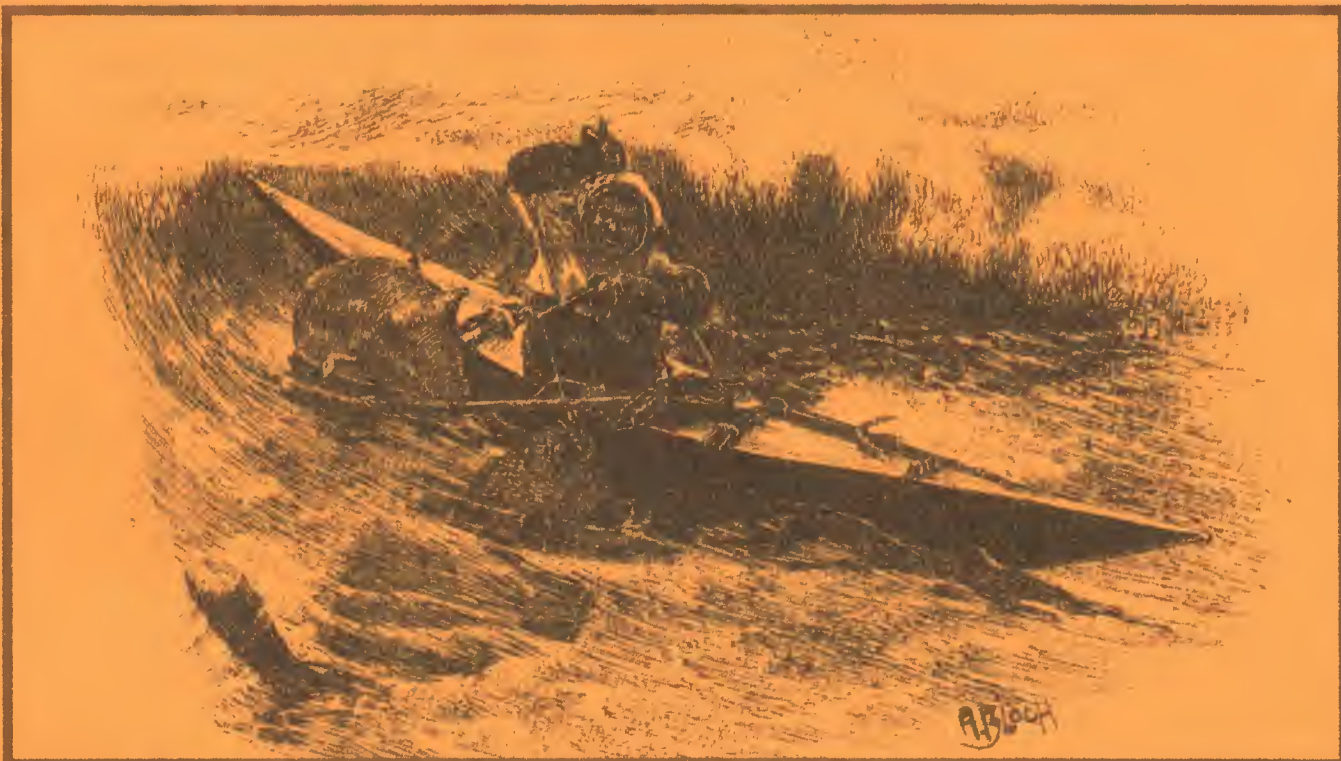


OCEAN KAYAKER



NEWSLETTER OF THE
INTERNATIONAL SEA KAYAKING ASSOCIATION

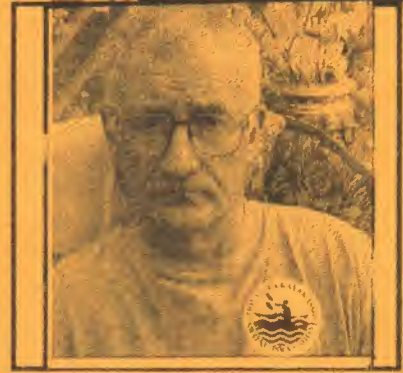


**An international & independant sea
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interested in this aspect of canoeing
with the objective of promoting safe
sea kayaking for everyone**

FEBRUARY 2004

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Ocean Kayaker



address for copy for this newsletter is:-
5, Osprey Ave.
Westhoughton,
Bolton
Lancs
BL5 2SL
email
<jramwell@provider.co.uk>

Whether you kayak regularly or hardly ever you must have something to say. Share your views, information, trip reports and opinions with us. Like what you read, - say so. Don't like what you read - then it is even more important to say so

EVENTS

Please note that we are not including a guide to events within the newsletter itself. As we only produce this letter once every two months we have decided that a current list of pending events is best kept on our web site
<www.seakayak.co.uk>

So keep Chris Bolton informed of all your events by emailing him at :-
seakayak@cjbolton.plus.com

Ensure you include WHAT, WHERE, WHEN and WHO (i.e. contact details). There is no charge for this service.

Editorial

The rate of renewals to ISKA has been really gratifying. Some of the comments I get with the renewal applications are very encouraging. **THERE WILL BE A RENEWAL APPLICATION FORM WITH THIS NEWSLETTER ONLY IF YOU HAVE NOT ALREADY RE-SUBSCRIBED.** So to the editorial proper. I try and write something with a little meaning and I have been racking my brains these last few days; then I read a Christmas letter from a mate of mine on the Isle of White and a particular paragraph made such resonance that I have reproduced it here. " *The riding school still runs but is truly a burden, no less than the fact that the associated costs of keeping it going spiral upwards without end. Insurance has risen by 150%, Health and Safety measures are not even sensible anymore. We are not surprised in the fact that 7 riding schools have closed in the last 18 months on the Island. Within 5 years I forecast that riding schools as we know it - will change forever, Riding for all will disappear, only the affluent will be able to participate, individuals with a plot of land will rely on travelling instructors, traditional village equestrian shows will disappear, the French will enjoy a sudden availability of horse meat and eventually good horses and ponies will be scarce and expensive. Already all ponies and horses must have passports. Of course it will only be equestrian centres as such that will be enforced.*"

I think it says enough for you all to draw your own conclusions about where we are going in society. For horse riding you can substitute a lot of other outdoor activities. Is this what we really want for ourselves and those coming along behind us? I don't think so.

Have just heard from Chris Lansdale, newly appointed PR man to the Scottish Canoe Ass. that the Paddles Sport Festival is going ahead next October in Perth.

ISKA SHOP

I still have a few T shirts, L and Extra L, grey with the ISKA logo, for sale @ £6.00 and now have some short sleeved polo yellow shirts, again with the ISKA logo for £8.00

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RIDING THE CRESTS OF THE WAVES

Clare Jones (2002) on the magic and terror of kayaking across one of the sea's riskiest routes "They are three magic words, 'The Inside Passage', one of the oldest ship-



ping routes in the world, a 1000 miles pass originally paddled by trading native Americans. It stretches between Canada and Alaska in a network of narrow channels and open crossings. In places it winds its way through protected inland waters where only the wind could beat you; in others it is exposed to the full weight of the ocean. It was the ultimate adventure and myself and my friend, Allison Inkster, were not only the first Scots to travel the route but the only women to have taken up the challenge.

Securing support from the Winston Churchill Memorial Trust was perhaps the singular most effective kick-start to the whole expedition. By March 2002 we had also got ourselves some kayaks and by April we had even been sponsored by The North Face. By June it was time to go. The final push-off from land in Vancouver, the first dip of the paddle in the sea, was not as I imagined. My kayak felt like an unyielding bucking bronco. Everything was uncomfortable. The early weeks were the hardest. The three stages of the journey were from Vancouver to the top end of Vancouver Island, onwards to Prince Rupert and the end of BC coastline, then the final push into Alaska and on to Juneau, the state capital.

Simple things took longer: cooking, washing, sleeping -all required an untold effort. But we carved a routine: check forecast and conditions; decide whether to paddle; if wind, weather and sea favourable, paddle; stop paddling after about three or four hours at suitable location and eat; resume paddling for another 15km or so; stop paddling at a landable camp spot; unpack boat, haul kit and assemble camp; eat more food; sleep; wake and resume process again!

Night was the worst, Armed with only a spray can deterrent, we were impossibly small against the full weight of a grown grizzle. However, our encounters with them were luckily brief! Our sea-borne view of juveniles scraping the shoreline for rich pickings was close enough to see just how powerful a daddy bear could be,

Some things did get close -very close, I knew almost instinctively before I saw the huge, dark, moving mass draw nearer, The mottled hulk belonged to a grey whale which was rising about two metres from my boat. As it surfaced it blew and the stale stench of whale breath filled the air. It was magical, marvellous and terrifying all in one instant. It was the best I could do to stay upright. The summer filled with this routine. Edging out towards the cape we were in open ocean, exposed to a jagged coastline of rocky cliffs and impossible landing spots. The sea grew bigger, into the peaks and troughs than can hide a small kayak. Our landscape looked different. Now, we looked out on either walls of water or a piercingly jagged coastline. Neither did much to calm a growing sense of unease. When the end came it was strange. On September 26, exactly three months to the day we left, we saw our goal - Juneau -and for three hours we stared at its cityscape as we paddled down the Gastineau Channel.

In a moment it would be over. We would get out of our boats for the last time. We would stop paddling. The prospect seemed so odd. After all that time in our boats, to not paddle didn't make sense. Our maiden voyage was over.

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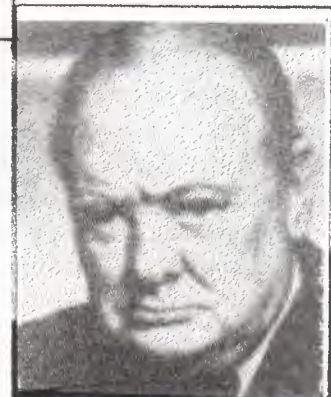
*British Nationality Act 1981

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The Marine Conservation Society (MCS) has a long history of promoting the concept of 'integrated coastal zone management' (ICZM), with the production of the first Coastal Directory in 1988. But, 13 years on, there is very little that can be described as 'integrated' or 'strategic' about the way we manage our coastal zone activities. By the time you read this, MCS will have recruited a Coastal and Marine Planning Officer to pursue the development of national strategies and policies to ensure that the use of our coastal and marine environment meets the objectives of sensitive use and biodiversity protection.

Our coastal and marine environments support a great diversity of habitats and species, as well as providing resources for consumption and economic development. Our coastal habitats are varied, with 21 habitat types recognised nationally as being important for UK biodiversity. The protection of these habitats and coastal processes is vital, and MCS acknowledges that this must be undertaken in the face of, and in tandem with, social and economic development.

The problems confronting the coastal environment are complex and increasing, partly exacerbated by effects of climate change. Across England and Wales about one third of the population lives in the coastal zone, and as much as 40 per cent of large-scale industry is situated in the coastal zone, creating significant impacts through development, pollution and conflicts of interest.

The concept of sustainable development seeks to address

the conflicts of interest between environmental, social and economic needs. However, integrated and sustainable management of our coastal and marine resources lags behind that on land.

RECENT DEVELOPMENTS

A UK strategy for management of the coastal zone has long been noted as being of primary importance -MCS and WWF produced a document 'A Future for the Coast?' back in 1990 which recommended the development of a UK Coastal Zone Strategy. However, the development of CZM in the UK has been dominated by a local approach as a result of 'local' enthusiasm, and as part of European initiatives. A plethora of plans and strategies have been prepared on a local, estuarine, coastal cell and sectoral level, but coastal zone planning at a regional, national and strategic level is largely undeveloped. In some areas plans overlap, while other large areas of coast have been neglected.

In September 2000, the European Commission, following three years of research and the culmination of the EU Demonstration Programme, published a Communication on ICZM, which recommends that Member States develop national coastal zone strategies. In the UK, the Local Government Association also published a document in October 2000.. calling for a National Coastal Strategy. In December 1st 2000, the English Coastal Forum questioned whether a Coastal fj Zone Strategy was actually needed, a meeting which ,7 highlighted the lack of common understanding about the ... fundamental principles and benefits of ICZM amongst the range of stakeholders (environment, commercial, regulators and the public).

Thankfully, the outcome of the meeting was resoundingly in favour of a UK coastal zone policy.

TIME FOR ACTION

So what is the Government doing? Some may recall Michael Meacher (the then Shadow Environment Minister) writing: *'Labour will draw up a coastal zone policy for the whole coastline, in consultation with local and regional government, conservation groups and the fishing industry. This will identify areas that require special protection, those which could be designated as marine nature reserves and those identified for pollution clean-up, leisure development or commercial fishing'*.

These fine words have yet to be put into action - MCS and members of Wildlife and Countryside link have encountered inertia among departments at Whitehall, and a lack of commitment towards providing a national integrated framework within which regional and local CZM plans can effectively operate. A recent meeting between MCS, other NGOs and the Coastal Policy Unit within DETR indicated that at last they may be listening.

A DEVOLVED ISSUE

Many coastal issues are now devolved to the respective administrations in England, Scotland, Wales and Northern Ireland, which will unavoidably make UK integration and co-ordination more problematic.

In Scotland, CZM is moving along at a healthier pace, with the Scottish Coastal Forum acting as a proactive focus for the development of a draft coastal strategy which will be submitted to the Scottish Executive. In Wales, there are plans to revive the Welsh Coastal Forum. The MCS Coastal and Marine Planning Officer will have his, or her, work cut out to follow developments in each devolved country.

MARINE PLANNING

Marine resources are an important part of our everyday life and overall economy, contributing an estimated £30 billion per year to the UK Gross Domestic Product.

Demand for marine resources such as fish, shellfish, aggregates and energy sources, including oil and gas and offshore wind, is increasing. As demand grows, exploited areas are coming under increasing pressure, while previously unexploited areas are now being explored for the extension of fishing grounds and for extraction development. The demand for marine aggregates is forecast to increase and, even at current extraction rates, reserves may only last for a further 50 years; fisheries are looking to deep water areas for new opportunities as inshore fish stocks decline, and the development of offshore wind farms is set to involve the construction of 2,000 wind turbines over the next 10 years.

The majority of these activities are being developed in the absence of any strategic planning to assess their long term and cumulative environmental impacts, or sensitivity of the areas in which development is planned to take place. Such an approach is at last being explored by the Department of Trade and Industry for the oil and gas industry. DTI is undertaking a Strategic Environmental Assessment of potential oil and gas grounds, but development will continue before the results of this exercise are available and the 19th Oil and Gas Licensing Round is underway. It is, however, disappointing that the Government continues to follow such a sectoral approach, and MCS is calling for a comprehensive assessment of our marine resources and the full range of activities in UK waters.

MCS is in a now rare, but vital, position of having a UK-wide perspective. Our aim is to ensure that the fundamental principles of ICZM and sensitive use are taken forward in each country, and that there is cross-border co-ordination. Pollution, ships and fishing boats are not bound by the political boundaries drawn on a map - our methods of protecting biodiversity from the impacts of pollution and human activities must not be constrained by those boundaries either.

SEALS AROUND THE FARNES

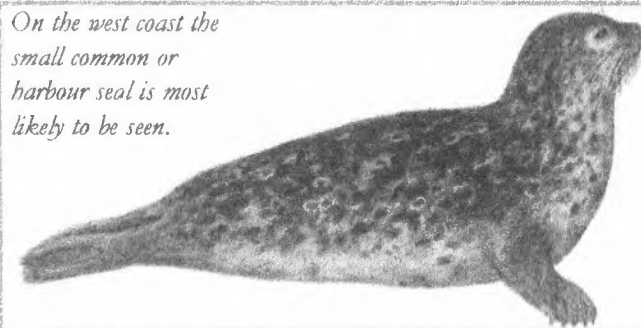
by George Thompson

One of the great delights of sea paddling is being so close to such a variety of wildlife. Around our coasts we can paddle along with dolphins, porpoises, several species of sharks and whales and, of course, seals. On the west coast the small common or harbour seal is most likely to be seen.

On the north east coast the larger grey or Atlantic seal is most common. The Farne Islands are home to a colony of

grey seals and this is one of the most important sites in Europe. Although plentiful here, this is, in fact, the world's rarest seal.

On the west coast the small common or harbour seal is most likely to be seen.



Pups are born between October and December and are a creamy yellow-brown for the first few weeks but by the age of six weeks they are grey and fully independent. During these first weeks they grow at an incredible rate while being suckled by their

mothers who produce the richest of milk. Females

grow to more than 200 kilos but the bulls can be twice this and more than 3 meters in length. Fights between older bulls over territory are frequent and many bear the scars of old contests. These are Britain's largest carnivores. Paddling around the islands of Megstone, Crumstone, Longstone and Staple Island, the ever curious seals, sometimes in groups of over a hundred will take to the water and surround a sea kayak. On land they lurch along with a clumsy caterpillar-like gait but once in the water move with an effortless grace and will follow a kayak for several miles.

Until 1932 these seals were hunted and killed for their oil until protected by the Grey Seals Protection Act. On several occasions since then the colony has been culled



particularly in 1972 and 1975 when they numbered over 5,500. More recently however they have fallen prey to a virus to which only about 5% have any immunity. The numbers have just recovered since the last outbreak but there are indications from the eastern side of the North Sea that another epidemic is to be expected.

As sea paddlers we are unlikely to be a threat to grey seals but be aware, particularly in the late autumn, that there will be pups around. Don't deliberately land among them as this could panic pups into damaging themselves. Derek

Hutchinson, in one of his books, recommends watching them swimming past by capsizing, hanging upside down and then rolling up again. Try it, but blame Derek Hutchinson, not me, if it goes wrong.

George Thompson

DON'T BE GREEDY - THERE ARE PLENTY OF WAVES TO GO ROUND

Taken from BCU Coaching Newsletter with grateful thanks to Andy Spink, SCA Surf Kayak Coach

Lying on my board or sitting in my surf boat paddling out into the sun is a wonderful place to be. Being faced with an on-coming, whooping play boater in body armour is not so wonderful. Being dropped in on is frustrating and bad manners, but being dropped on from above by a thirteen stone man in a full face polo helmet, in a lump of plastic wielding a scaffold pole is down right scary.

Watching young kids being ridden into and over in the soup the other week beggar's belief. It is unfair that the selfish, unthinking minority can ruin the image of those who are willing to make the effort to become 'surfers'.

It is not about elitism, it is about understanding and a willingness to learn. Surfing is about having fun, sharing waves with friends and the being there.

We as 'surf kayakers' have had enough reputation for ignorance, lack of control and lack of understanding of the medium. When will the penny drop that all wave users have rules and etiquette and that includes us. Surfing a wave properly on or in any surf craft is highly technical. Surfing amongst other wave riders is difficult and requires a high level of skill and judgement and is potentially lethal if misjudged.

As a surf kayak coach I spend a lot of time defending our sport and other kayakers against the ridicule, but recently I have understood where the reputation stems from. Paddling out on a surf board and talking to the boardies

gives a different perspective and quiet frankly our reputation on the whole is embarrassing. Forgive me if I am preaching to the converted but the gospel has to be preached again.

It is unfair that the selfish, unthinking minority can ruin the image of those who are willing to make the effort to become 'surfers'.

Many articles have been written on the rules and surf etiquette, most seem to be ignored or maybe we have been

too subtle. There are basic surf rules which can be found elsewhere, but some are unwritten by regular wave riders and just as valid. These are,

- *Don't flat spin, cartwheel etc amongst other surfers, and give others and yourself some space.
- *Don't whoop on a half foot wave, it's uncool and doesn't win respect.
- *If you want to practice moves where you may end up 'bongo sliding', move to a quiet part of the beach, it's safer for all concerned.
- *Learn the rules and especially don't drop in onto the steep after paddling from way out back, this will really annoy folk. Remember its not a wave until its peak has spilled.
- *Don't be greedy, there are plenty of waves to go around.
- *Consider what you surf in, wear lot of river gear is unnecessary and how you use it
- *Ask permission for access; don't spoil it for the future generations.
- *Come and get coached, it is so specific.
- *Have fun, but be considerate, please.

Yours hoping for change before someone gets hurt,

Andy Spink. SCA Surf kayak coach.

CROSSING THE IRISH SEA -- ANGLESEY TO DUN LAOGHAIRE

by Rob Cunliffe and George Arnison

THE IDEA

Several years ago a bloke said to me, 'forget mountaineering, for real adventure, go sea kayaking.' And so it was, on a balmy summer evening, and from a perfectly safe beach, we edged our sea kayaks out of Porth Dafarch, near Holyhead, Anglesey. Our destination, Dun Laoghaire near Dublin some 63 nautical miles (NM), and 20 hours of near continuous paddling away.

We first discussed undertaking a big open sea crossing about a year before at a North West Sea Kayakers weekend on Anglesey, and decided very quickly that the Dublin trip was 'the one'. Soon after we undertook a week long expedition in the Outer Hebrides, which included a committing 16 NM crossing of the Urtle Minch from the Isle of Skye to Lewis. Despite our preparations, it turned into a nightmare. Struggling into an unforecast force 4-5 wind and rolling in a choppy cross-sea, Rob was violently seasick and at times, thought he would never make it. It was a good lesson for us: - *expect the unexpected-it can only get better.*

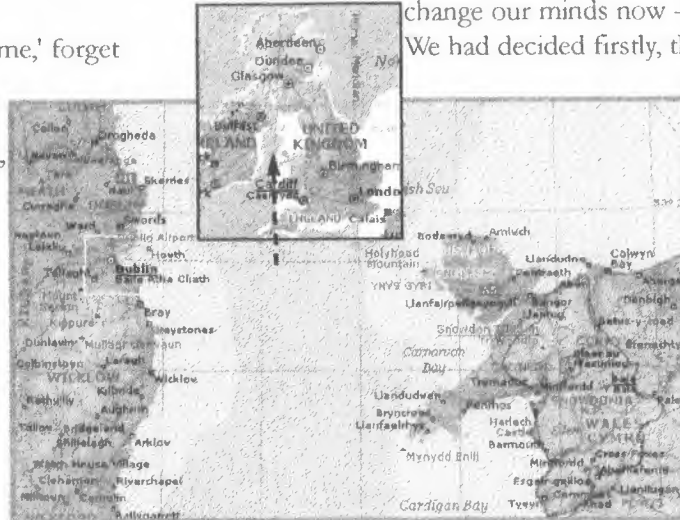
THE TRAINING

Our training continued sporadically throughout the winter, general fitness work supplemented by some light paddling up and down the canal or river. Planning continued at the same time with tides, weather, shipping, food, travel, equipment all having to be considered in detail. As our plans developed our main outstanding concerns were firstly, avoiding being run down by one of the ferries and secondly how would our bodies stand up to 20 hours sitting in a kayak -having never before done more than 5 hours without a break?

Gradually we built up our 'boat-hours' struggling against strong winds off Anglesey, dodging ferries off Uverpool and gaining experience of night paddling in the Dec Estuary. Our most interesting training run was from the centre of Chester, up the River Dee and along the Flintshire coast to the Point of Ayr and back, a distance of 44 NM miles. Assisted by the tides it took just 12 hours - deceptively quick, but we knew the Dublin crossing would be a lot harder and longer.

THE PLANNING

Using the trip to raise funds for the Fire Services Benevolent Fund and Border Collie Trust (GB), Rob was contacted by BBC Midlands TV who filmed us training on the River Severn for the local news. We really couldn't



change our minds now -not that we wanted to! We had decided firstly, that we should leave just before high water so the ebbing tide would carry us south -away from the busy ferry routes; secondly we wanted to leave just before darkness so that we would be at our most alert during the night. Finally if the forecast wind exceeded Force 3 -we wouldn't go.

The first window of opportunity was at the beginning of August. The tides were relatively weak and the weather outlook was fine, a 2 day gap in a complex system of fronts leaving stable N-NE winds (force 2-3) over the Irish Sea. Good enough.

Outdoor people can talk forever about kit, the pros and cons of each particular item. Amongst other things, the fitting of the navigation lights was proving a problem, eventually, after making a small mast for each boat we taped conical white lights to the top of them. After advice from the Coastguard, the masts were covered in kitchen foil to act as a deflector for radar.

We were to put in at Port Dafarch at 9pm. Adrenalin made getting some sleep during the day impossible. Instead we checked our boats and equipment over and over again, prepared food and made final navigational calculations.

THE CROSSING

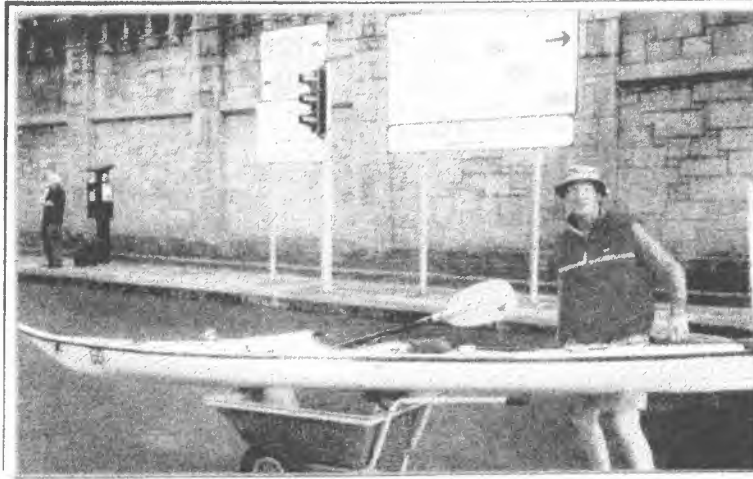
After confirming our passage details with HM Coastguard in Holyhead we left the beach, set our course of 2800 (Magnetic) and quietly paddled into an impressive sunset -a solitary seal escorting us out to sea.

We had a long way to go but our spirits were high, lifted by the good weather and the fact that after a year of preparing and talking about the trip we were actually doing it. The glow of the sunset disappeared, swallowed up by the darkness, and before long it was very, very dark. No moon tonight, and we felt that we were paddling closer to each other than usual -visible only by our rudimentary navigation lights and the bright green luminescence splashing from our bows and paddles.

Occasionally we would see the lights of a fishing boat crossing our path in the distance, or a ferry passing way to the north, but we were surprised how little shipping we encountered.

The darkness, particularly to the south was overbearing, it felt as if you could put your hand out and you would fall off the edge of the world. As the hours went by, we spoke less and less, just wanting to enjoy the atmosphere, the feeling of exposure and loneliness. Only sea kayaking an open crossing in the dark can give you this feeling.

We stopped for a strict 5 minutes every hour to grab a quick snack, swap water bottles over, have a pee and log our position on the GPS. Every couple of hours we reported in to the Coastguard on the hand held VHF:



The darkness was eventually broken by sunrise and the dawn was magical with a fiery sky appearing over a totally flat, calm sea. All around us porpoises lazily arched out of the mirror like surface. We couldn't help stopping for a while to enjoy it and take photographs.

Morale was still great, helped along by the warming sun on our backs, although at the back of our minds we knew we still had well over half way to go. We had also 'lost' an hour through longer than intended breaks, and were slightly further south than planned so we adjusted our course by + 10°. This would take us further north than planned but meant that we wouldn't have to paddle against the ebb tide on the final third of the trip, although we were aware that it would also take us across the main ferry route.

We paddled steadily on for a few more hours, and with the flood tide assisting us, made good progress. By 9am we had paddled about 38NM, were calling up the coastguard in Dublin rather than Holyhead, and were feeling good. Ahead of us however we could clearly see a dense fog bank rolling towards us. As the fog closed in we were in for an anxious time. Visibility could only be 100 metres and we were in the middle of the main shipping lane. A trawler passed close-by -only its foghorn could be heard. Then a much more menacing noise, the diesel engines of a large ship. The distinctive noise was suddenly very close and we both stopped paddling, and held our breath trying to pinpoint its location. Our eyes strained through the fog in every direction expecting to see the bows of a tanker come steaming towards us at any moment. Eventually the thump of the engines began to go away from us and in less than a minute we were glad to be riding the wash of the ship, knowing it had missed us. This had been a scary moment, and from this point on we were very careful.

Even with the fog slowly lifting, with nothing to look at it

was impossible to gauge visibility. A short time later we were discussing the effectiveness of our foil-covered masts, when there was a sudden -very loud -blast of a foghorn directly behind us. Looking around we saw the High Speed catamaran appearing out of the mist just 200m away and heading straight for us. All our energy was required to sprint to our right, and in no time it had cruised passed at 42 knots. Again, we rode the wash, this time whooping with exhilaration and relief.

With about 18 miles to go we emerged from the fog bank and started to scan the horizon for land.

There were several times when we thought we had seen the headlands off Dublin Bay, each time being fooled by the flat light, but eventually there was no mistaking the lighthouse of Kish Bank and the headland behind - brilliant!

Over the next couple of hours, however, we just didn't feel like , we were making any progress at all. We buckled down to some hard paddling, maintaining a sharp lookout for the ferries around us. but despite our aching muscles the land just didn't seem to get any closer and we both suffered from a noticeable drop in spirits. To boost our morale we took a tactical decision to alter course again by 020° so that we gained some advantage from the ebb tide flowing across us. We would" be carried south of Dun Laoghairie and would probably have to paddle into the tide for the last hour or so, -but maybe the current would be weaker close to shore or we would find an eddy flowing in our direction - and right now we needed to feel like we were making progress.

The tactic worked but the final leg was still a real 'grind'. We now paddled a little way apart, heads down and grim, silently focussing on keeping our technique, maximising distance for minimum energy expended -stroke after stroke after stroke.

The atmosphere of paddling though the night, the exhilaration of dawn and the euphoria of not being run down in the fog all seemed like a different trip. We just wanted to get in and stopped for just 15 minutes in the last five hours.

Gradually we approached Kish co Bank, crossed it and then left it behind us. The last obstruction was a line of super tankers going into Dublin Bay, before we finally entered the bay's sheltered water and followed the coast up to the ferry port of Dun Laoghairie.

We were nearly smiling when we realised that we had to paddle around the breakwater of the harbour wall!

At last the slipway of the Royal Irish Yacht Club (RIYC) - we had done it! Without the help of some members of the club we would still be sitting there and we were very grateful for the help given to us. Our legs were completely numb and George's' right knee had swollen to twice its normal size so that he could hardly walk. A small crowd of young dinghy sailors -suitably impressed by our achieve-

ment (where've you come from!) -carried our boats up the slipway, and later helped us push them on borrowed wheelbarrows to the ferry terminal. We had a hot shower and made our way to the bar for a ceremonial pint of Guinness... fantastic. Our achievement had still not really sunk in as we later boarded the fast catamaran (the one that we had met in the fog), taking our boats as 'hand-luggage'. We were instantly asleep and awoke back in Holyhead only 90 minutes later!

BEACHES AND SEWAGE - THE EVER IMPROVING STORY

by Juliette Camburn

Once again, Marine Conservation Society (MCS) is delighted to announce another fantastic year for our beaches. Over 420 beaches are recommended this year in the Good Beach Guide 2003, which is more than half of the total monitored -well done to the UK!

Water quality results for the 2002 bathing season were high enough for a grand total of 421 (51.85%) beaches to be awarded the MCS recommendation -80 more than last year. This represents the biggest annual increase since the Guide began sixteen years ago. The number of beaches failing the minimum EC standard has decreased too, with 53 (6.53%) of the 812 beaches monitored failing, a drop of eight from last year.



See www.goodbeachguide.co.uk or send an A5 SAE (57p stamp) to MCS for the new FREE booklet available now.

have the highest number of failing beaches, too.

The North West and Scotland, despite substantial investment by water companies into sewage treatment, continue to experience poor water quality. This is due in significant part to diffuse agricultural pollution. The future looks hopeful though, with measures being brought in to aid the agricultural sector in tackling this. Over this coming bathing season, the Scottish Executive are also piloting an early warning signage scheme at six beaches on the west coast of Scotland, to pre-empt high agricultural pollution loads (caused by extremely wet weather) and warn the public of when not to swim -part of the

'predict, manage and inform' route that the revision to the

On-going improvements to sewage treatment, and fine weather, have contributed to improvements in every region of the UK, except for Northern Ireland and the North West. It is a great year for Wales, which experienced the biggest regional increase in recommended beaches. Yet

again, record numbers were achieved in the South West and the North East. It is also excellent news for the South East -the region has the greatest improvement it has ever had. Scotland also shows a substantial rise in the number of beaches recommended, although it continues to

Region	No. Beaches Sampled		No. Beaches Recommended		No. Beaches Failed Mandatory Standard	
	2003	2002	2003	2002	2003	2002
England	432	438	269	230	7	10
South West	193	199	136	125	3	3
South East	139	139	92	65	1	3
North East	66	66	39	36	2	0
North West	34	34	2	4	1	4
Scotland	126	104	32	22	24	25
Wales	186	185	101	66	13	21
Channel Islands	25	25	15	13	2	0
Northern Ireland	27	27	4	9	2	3
Isle of Man	16	16	0	1	5	2
UK	812	795	421	341	53	61

Bathing Water Directive might bring in with its call for a move towards beach management rather than complete reliance on water monitoring.

Throughout this year's bathing season updated water quality information for England,

Wales, Scotland and Northern Ireland can be found at www.environment-agency.gov.uk, www.sepa.org.uk and www.ehsni.gov.uk.

A RISING TIDE OF LITTER

by Alison Conway

The Beachwatch 2002 Report launched in March reports on the results of last September's beach litter surveys and clean-ups. The results show a slight (2.1 %) increase in beach litter levels compared to 2001, the total representing one item of litter for every 60cm of beach surveyed. Although only a small increase, litter levels are still 50% higher than those recorded in 1994. MCS is grateful to everyone of the 2,500 people who took part over the survey weekend.

As usual, over one third of the litter was sourced to beach visitors. Fishing litter, such as fishing nets and line, floats, rope and buoys, was the second most common litter source at 14.6%. The encouraging news, backing up the MCS Good Beach Guide findings, is that levels of sewage related debris (SRD) were the lowest ever recorded at 3.9%. It appears that improvements in sewage treatment

are having noticeable benefits, as this is the fourth consecutive year that levels have fallen.

Laws relating to the control of litter on land are included within the Environmental Protection Act (1990) of which a government review is currently underway. MCS recommends better enforcement of existing litter laws by giving people such as beach wardens and park rangers powers to issue fixed penalty fines for littering. MCS is also recommending an extension of the 'duty' to remove litter to include aquatic environments - currently nobody has responsibility for litter dumped in waterways, such as rivers and canals, where litter can accumulate and be washed into the sea.

For further details or to register to take part in Beachwatch call Alison Conway, 01989 567807 or e-mail:

beachwatch@mcsuk.org

TIDES

An academic article for you. Maybe this could be information overload but it does provide a greater awareness of our environment and for many of you will add to your appreciation of the sea we paddle on. *Editor*

THE STUDY OF THE TIDES IS A LARGE AND COMPLICATED SUBJECT, most of which is beyond the scope of this article. The tides are an important form of long-period wave, and they play an important part in beach and coastal processes because they constantly change the depth of water in which waves approach the coast and the level at which waves strike the beach. Therefore I shall touch lightly on the main points and encourage the especially interested reader to dig for more detailed information and a fuller explanation.

On all seacoasts there is a rhythmic rise and fall of the water which is called the tide, and associated with this vertical movement of the water surface are horizontal motions of the water known as tidal currents. Together they are known as the tides.

Tides are the longest waves oceanographers commonly deal with, having a period of twelve hours and twenty-five minutes and a wave length of half the circumference of the earth. The crest and trough of the wave are known as high tide and low tide. The wave height is called the range of tide, but since it is measured only in places where it is influenced by the shape of the shore, it varies greatly from place to place.

The gravitational attraction of the moon and the sun on the earth and the waters cause tides. Long before a word for gravity existed, the ancients must have realized vaguely that there was some connection between the moon and the motion of the water. But our civilization developed on the shores of the Mediterranean, an essentially tideless sea.

Not until a number of explorers had ventured beyond the Gates of Hercules into the Atlantic and observed tides in England, where the range is large, was the relationship between the phases of the moon and the height of the tide established. Then some fifteen hundred years passed before Johannes Kepler wrote of some kind of magnetic attraction between the moon and the earth's waters and Galileo scoffed.

It remained for Isaac Newton to discover the law of gravity, which holds that the gravitational attraction between two objects is directly proportional to their masses and inversely proportional to the square of the distance between them. From this relationship it can be shown that the gravitational attraction of the sun for the earth is about one hundred and fifty times that of the moon. The tremendous mass of the sun more than makes up for its much greater distance. But the moon is the primary cause of tides. Why?

The answer is that the difference in attraction for water particles at various places on the earth is far more important than total attraction. That is, because of the moon's very nearness (average only 239,000 miles) there is a big difference in the gravitational attraction from one side of the earth to the other.

The water on the side of the earth nearest the moon is some four thousand miles closer to the moon than is the center of the earth; the water on the far side is four thousand miles farther away. The sun, however, is ninetythree million miles away, and a few thousand miles one way or the other make comparatively little difference. Thus, the

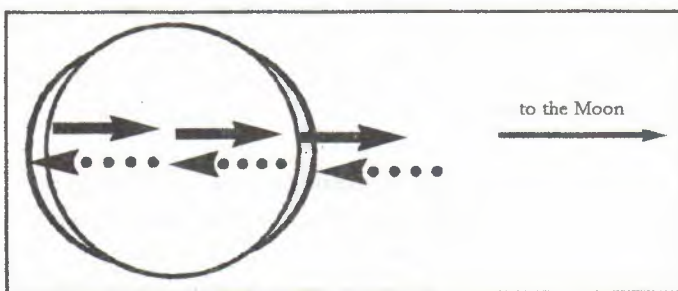
sun's gravitational force, although far larger, does not change very much from one side of the earth to the other. So the moon is more important in producing tides. For the sake of simplicity much of the following discussion speaks only of the effect of the moon, but the sun's effect is similar.

The result of these differences in gravitational attraction is that two bulges of water are formed on the earth's surface, one toward the moon, the other, as we shall see, away from it. The earth rotates on its axis once a day, and it is not difficult to imagine that it turns constantly inside a fluid envelope of ocean whose watery bulges are supported by the moon. This concept considers the tide wave to be standing still while the ocean basin turns beneath it. Thus, most points on earth experience two high tides and two low tides a day.

It is easy to see why the gravitational attraction of the moon should raise a bulge of water on the side of the earth toward the moon, but it is not quite so easy to understand why there should be a similar bulge on the opposite side, away from the moon. Let me try to clarify that point.

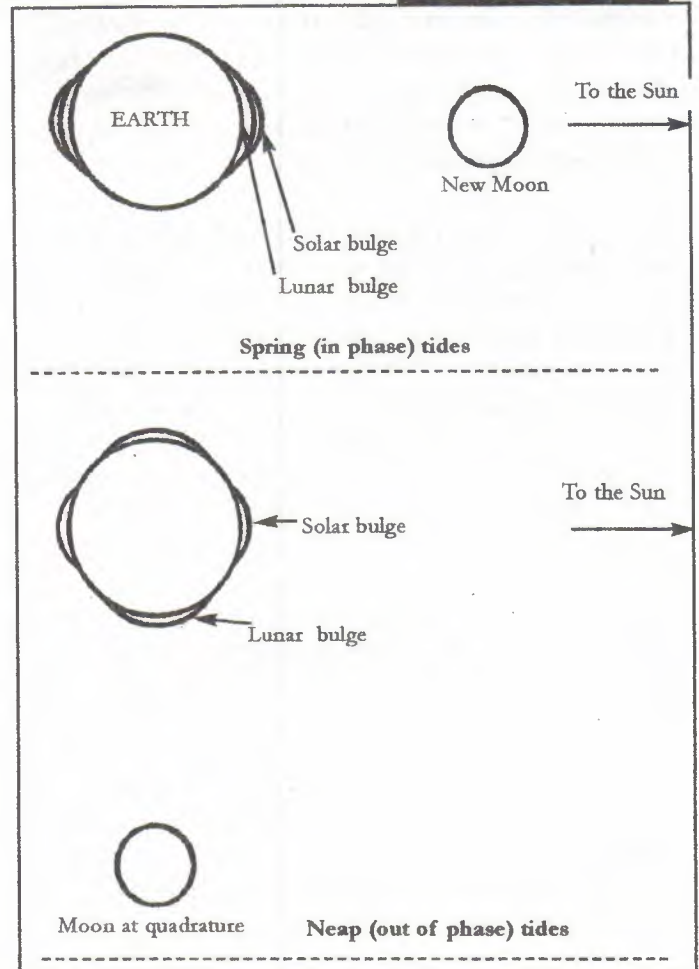
If the earth vanished, leaving three particles in space at distances corresponding to the center and opposite sides of the earth, the moon's gravity would act on them just the same. If we draw vector arrows from each point toward the moon, with lengths representing the intensities of gravitational attraction, the one nearest the moon is longest and the one farthest away is shortest.

But the three points are in fact part of the earth, which remains at a fixed distance from the moon because of the centrifugal effect of the rotating earth-moon system. If



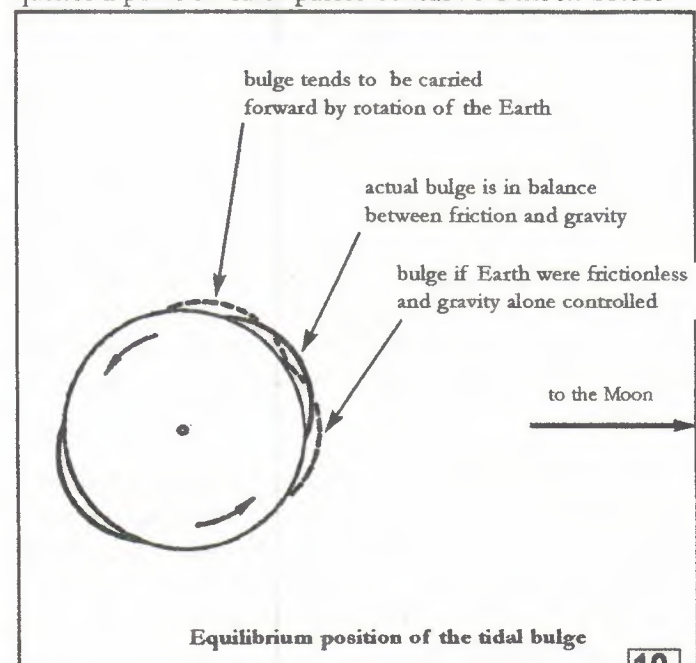
this force is represented at each point by an arrow equal in length but opposite in direction to that at the center of the earth, the remaining force and direction will be equivalent to the tide-producing force. The differences in length between each of the pairs of arrows shown above correspond in magnitude and direction to the forces producing the tidal bulges on opposite sides of the earth.

The moon rotates about the earth (in the same direction as the earth's rotation) completing an orbit once a month. This motion of the moon requires any point on earth to go slightly farther than one revolution to come beneath the moon again; thus, the tidal day is twenty-four hours and



fifty minutes long.

One further complexity is that the bulge does not come directly beneath the moon but is slightly ahead of it, as shown in the figure above. This positioning is the result of the friction of the earth as it rotates beneath the water. The rough-bottomed ocean basins tend to drag the bulges along; the gravitational effect of the moon tends to hold the bulge beneath it. The result is a compromise position at which these two forces are in equilibrium. In consequence a point on earth passes beneath the moon before



The sun tides, though much smaller, are important because of the way they increase and reduce the lunar tides. The two most important situations are when the earth, sun, and moon are aligned (in phase) and when the three make a right angle (out of phase).

In the in-phase case the solar bulge rides on top of the lunar bulge to make spring tides. During spring tides, which have nothing to do with the spring season but occur about every two weeks, the water level rises higher and falls lower than usual. This large range of tide lasts two or three days; then the two bulges get progressively further out of phase until, a week later, the high and low tides are about 20 percent less than average. These are neap tides; in effect, the sun's gravitational force reduces the moon's bulges.

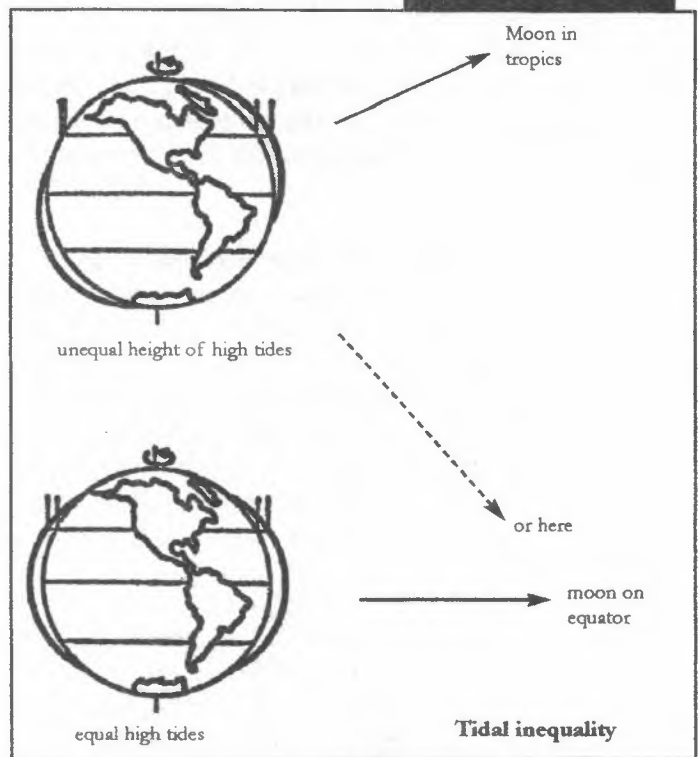
Between these two extremes the solar bulge adds in a way that warps the shape of the main bulge, and the high and low tides come a little earlier or later, slightly varying the length of the tidal day.

Armed with this information, we are much better equipped than ancient man to look at the moon and forecast the height of the tide. At new moon and full moon; there are spring tides; neaps come when the moon is in the first or last quarter.

Another important variation in the height of the tide is the result of the moon's elliptical orbit about the earth. At perigee, the nearest point in its orbit, the moon is fifteen thousand miles closer; at apogee it is that much farther away. This change in distance (and therefore in the attractive force) causes tides that are, respectively, 20 percent higher and lower than average. Perigee is reached once an orbit (once a month) and only rarely does this coincide with the in-phase alignment of sun, earth, and moon. But at least twice a year both effects exist at the same time--that is, a full moon or a new moon exists at perigee. Then perigee tides add to the spring tides to produce the highest tides of the year.

Having considered the main forces that produce tides, we now can think about how these curious waves behave. Many shores, including the U.S. Atlantic Coast and the UK Coast, experience two tides a day of about equal heights; these are called semidiurnal (semidaily). A few places in the world have only one high and one low day. And most of the Pacific and Indian oceans have mixed tides; that is, the heights of high and low waters are unequal, as at Seattle or Ketchikan.

The cause of this changing inequality is shown in Figure above right. When the moon is opposite the equator the highs and lows are about equal. But when the moon is "in the tropics"--that is, above the tropics of Cancer or Capricorn--different thicknesses of bulge move past points away from the equator.



One of the most important influences on the height and character of the tide is the shape of the basin where it is observed. No good measurements have yet been made of the height of the tide in the deep ocean. There the range is believed to be small, perhaps a foot, as it is on small mid-ocean islands.

But as the solid earth turns beneath the tidal bulge, the shallow continental shell acts as though it were a wedge driven under the wave front. The result is that the deep water tidal range is much exaggerated at the shore. Estuaries with wide funnel-like openings into the ocean tend to amplify the tide range further. The width of the tide wave that enters the opening is restricted as the channel narrows; this constriction concentrates the wave energy and increases its height. Of course, if the estuary is very long, the frictional effects of sides and bottoms gradually reduce the height of the tide wave until it vanishes.

The importance of coastal configuration is illustrated by the difference in tidal height between Nantucket Island (about a foot) and the Bay of Fundy (over forty feet), which are only a few hundred miles apart. The opposite ends of the Panama Canal are only about fifty air-line miles apart, but there is a great difference in the tides at the two terminals. At Colon, on the Caribbean side, the tide is generally diurnal and the range is about a foot; at Balboa, on the Pacific side, the tides are semidiurnal with an average height of fourteen feet and the locks are built to withstand spring tides of as much as twenty-one feet. This difference will create some interesting problems when a sea-level canal finally is built.

Although the tide doubtless advances across the ocean like a sine wave, there are only a few places on earth where this pattern can be observed directly. One such location

is Chesapeake Bay. There the troughs and crest (the high and low tides) move up the bay as a series of 'progressive' waves traveling slowly at "square root of gd " velocity. Usually there are two high-tide zones within its 150-mile length at the same time, with 50 miles of low-tide water in between.

It is interesting to speculate on the tide waves that must forever circle about Antarctica. From such speculation the "progressive wave" or "southern ocean" tide theory originated. The idea is simply that the Antarctic Ocean is a continuous belt of water extending completely around the earth, six hundred miles wide at its narrowest point. The tidal bulges must act as a forced wave into which energy is constantly being added by the tide-producing forces. As each high tide passes the openings into the Indian, South Atlantic, and South Pacific, waves are initiated that travel freely northward and modify the local tides as they go.

Accompanying the rise and fall of the tide are substantial horizontal motions of water known as tidal currents. Like the vertical changes they have little significance in the open sea, but in harbors and narrow estuaries they are of considerable importance. On a rising tide the currents are said to be flooding; on a falling tide, they ebb. The direction of flow is the set of the current.

When there is no flow, the current is slack; thus the time of slack water is usually within an hour of high or low water. The maximum current velocity comes about at the same time as the maximum change in the height of the water. Since these relationships depend largely on the local conditions, no general rule applies.

Tidal currents of ten knots in Seymour Narrows, Alaska, and four knots in the Golden Gate to San Francisco Bay are normal. Such currents have little influence on open beaches, but they may have considerable effect on sand movements in and near harbour mouths. For example, the combined effect of these currents and of ocean wave forces often causes a sandy bar (harbour bar) to form just outside the harbour entrance. This barrier will cause large waves to break and endanger small craft entering or leaving the harbour, thus explaining the many allusions in literature to sailors' fears of a breaking or moaning bar.

Tidal or other currents will cause waves to break or shorten their wave length. It is this change in the texture of the sea surface that permits the Gulf Stream and other great currents to be recognized from the air.

Sea level is the height that the sea surface would assume if it were undisturbed by waves, tides, or winds. But because these disturbances do exist, the technique of averaging all possible sea levels has been adopted. The result is mean sea level (MSL), a convenient datum plane from which heights of tide or depths of water on a chart are measured. Charts and tide tables for the U.S. Pacific Coast

refer to another datum: mean of lower low waters (MLLW) -the average height of the lowest of two low tides a day.

TIDAL BORES

There are a number of places in the world where rivers enter the ocean via long funnel-shaped bays. In such estuaries, especially during high spring tides, the broad front of the incoming tide wave is restricted by the narrowing channel and the shoaling water so that it abruptly increases in height and a visible wave front or bore exists. Most bores are dull (except to the ardent wave researcher) and are regarded merely as a local curiosity, but in a few places they are respected or even feared.

Sir George Airy, one of the founders of wave theory, observed the bore in the Severn River in England and wrote that he was thrilled by "the visible advancing front of that great solitary wave, the tide."

Actually, on entering shallow water the solitary wave front often breaks down into a series of small waves. Photos of the Severn bore show a series of about six or eight short steep waves about a foot high and ten feet long moving up a small glassy-surfaced river. In other places the entry of the tidal water causes the river surface to heave upward with an almost imperceptible front; in the space of two minutes the water level rises by three feet or more.

A few famous bores have steep breaking fronts that connect the original water surface with a new surface at a substantially higher level. That of the Chien tang River in northern China has been described by Commander W. U. Moore, R.S.: "At Haining, where there is a sudden contraction of the channel, the bore is eight to eleven feet high, extending in a nearly straight line across the river; which is rather more than one statute mile in width, traveling between twelve and thirteen knots, its front a cascade of bubbling foam falling forward and pounding on itself. The slope of this traveling cascade is uniform at any particular part of the front, but varies in different places from 40° to 70°, being highest and steepest over the deep parts of the river."

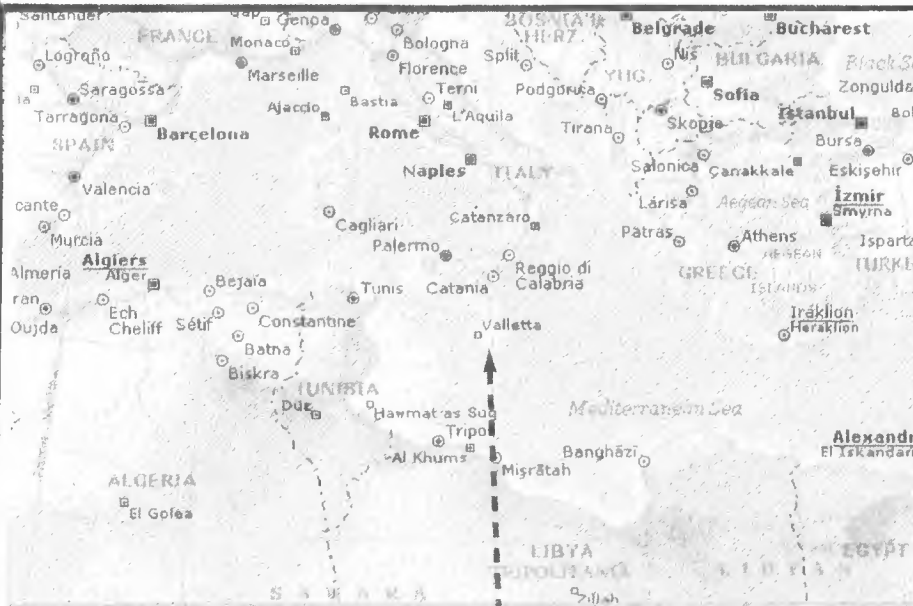
Visitors to the Hankow waterfront have been amazed to see the local boatmen suddenly paddle frantically for the riverbank and apparently without cause pull their boats out of a placid stream. In a few minutes the breaking bore passes, the boats are returned to the river at its new, higher level, and work resumes.

The bore of the Amazon is even more spectacular and is said to attain a height of twenty-five feet. Seen from the high dikes near the river mouth it has the appearance of a several-miles-long waterfall traveling upstream at a speed of twelve knots for three hundred miles. The roar can be heard for fifteen miles.

AROUND GOZO

we had been paddling for two hours after leaving our campsite near a creek at Xlendi, and now, bracing our legs firmly against the cockpit and clenching our torso muscles, we summoned the energy to paddle more furiously and resolutely than ever, the waves throwing water into our faces. The stability of our double kayak, so easily disturbed by the waves, threw our paddling cadence into disarray. With Bernard barking instructions, it took us a frantic 15 minutes before we developed a knack for riding the waves. As we moved along in a seesaw gallop, there was no margin for slacking-at every loss of composure or break in our rhythm, we felt the receding waves and whirlpools sucking us toward the cliff.

We were on the second day of our five-day kayak tour around the coasts of Gozo and Comino, the two smallest of the Maltese Islands, set in the center of the Mediterranean. The idea for the trip had come to me when I discovered a story written in the 1950s in *The Times* of Malta about a group of British adventurers who used to canoe around Gozo in an annual event. I had grown up in Gozo and knew the place intimately, and paddling around the island would give me the opportunity to see the coast from the sea. I put the proposition to Bernard Bonnici, a friend and outdoor fiend who has extensive experience in the outdoors—scuba diving, rock climbing, trekking, mountain biking and kayaking—but who hadn't yet kayaked around Gozo. Using a two-person kayak, our supplies packed in waterproof plastic tanks, we planned to complete the trip in five days, moving counterclockwise. We'd decided to start and finish at Mgarr Harbor, on the southeast side of Gozo. At a daily average of 15 kilometers, depending on the mistral, our pace would allow plenty of time to go ashore and explore along the way.



By Victor Paul Borg



even more grim.

The first day, skirting the protected south coast, had been untroubled. We had left Mgarr Harbor early, slipping past clay bluffs and gently sloping wheat fields, and paused for an early lunch at Mgarr ix-Xini, a mini-fjord winding half a kilometer to its inner mouth. This was once an ancient river. Ahead of us, the ribbon of water gave way to the dry valley bottom, where the 50-meter-deep meandering gorge disappeared into the interior. The water in the fjord was so clear that we could see the sharp shadow of our kayak on the pebbly bottom eight meters down. The plants growing on the limestone sides of the fjord, tree spurges and Mediterranean heaths, hardly stirred; the splashes of our paddles were the only disturbance. It was a serene spot, the crumbling fort at the mouth of the fjord the only testimony to existence of the medieval corsairs (the state-sanctioned and regulated pirates of the Middle Ages) who regularly made surprise raids on the villagers. Mgarr ix-Xini translates into The Harbor of the Galleys, the inlet where the marauders found unhindered, surreptitious anchorage—until the fort was built in the 1650s to repel them.

IN FIVE DAYS

A mistral is a strong, northerly wind that often blows in squalls toward the Mediterranean coast and is fearfully respected by Mediterranean fishermen. In Gozo, it blows on seven out of 10 days, battering the island so incessantly that trees and reeds stoop

permanently toward the southeast. According to the weather forecast, the mistral that day was blowing at a feeble 25 kilometers per hour, but even at this strength, the wind threw up quite an insidiously choppy sea on Gozo's exposed northwestern coast. The confusion created by crosscurrents and swell receding from the cliff made our predicament

After Mgarr ix-Xini, it was a straight run to the seaside resort of Xlendi, past the limestone cliff that girdles much of the south coast. The cliff's sheer drop, like the cross-section of a glass that has been cracked clean, was possibly formed during an earthquake triggered by land-crunching at the active Pantelleria Rift south of here, a major fault-line along the collision course of the European and African land masses. At Ta' Cenc, the highest point in the south coast at around 150 meters, the beige rock face is studded with stunted Maltese salt-trees rooting in cracks, and gulls wheel silently on the uplift of the air current. I had admired this drop countless times from the top, which is reached via a farmer's road. It is a scene that has been immortalized by Edward Lear, the eccentric and romantic British artist who roamed the world documenting nature in his paintings and poems. Lear had chosen his painting of Ta' Cenc (out of a lifetime collection of 10,000 paintings) in a short list of his 200 favorite places on Earth. (Lear, who liked to make up words to express precise feelings,

wrote in 1866: "The coast of Gozo is pomskizilious and

gromphiberrous, there being no other words to describe its magnificence.") As we floated at the base of the cliff, the towering wall seemed massive and forbidding. For a moment, listening to the gentle swell hissing into the eroded caves along the water's surface, I felt utterly insignificant and fragile.

Now, on the morning of the second day, it took us 40 minutes to cross the three kilometers of open water between the headland at Ras il-Wardiya and Dwejra, on Gozo's west coast. This was the moment we had been dreading, and I was feeling momentary bouts of panic. The cliff to our right reared its rugged mass of limestone 150 meters into the air. There was nowhere to go but forward, and for brief moments on the crests of the waves, we could see the tantalizing notches in the coastline that marked the inlets at Dwejra, where we would stop for lunch. There were only about three kilometers of water between the headland and Dwejra, but we were crawling ahead at a frustratingly slow pace, and our problems weren't over yet. Where was the tunnel that led to shore? There were large, black caves at the water level, and the tunnel was one of them, but which one? We couldn't risk getting ourselves trapped in the surging water inside a cave. I was tetchy with anxiety by the time we finally spotted the small patch of light that alerted us to the tunnel. Piercing 50 meters of limestone cliff, the tunnelled us into a small lake of calm, greenish water, its pebbly shore fringed by boathouses where fishermen were painting their boats and mending nets before the main summer fishing season, three or four weeks from now.

We checked our gear, relieved to see that water hadn't

leaked into the two new waterproof plastic tanks. After a quick lunch, we went for a short walk to see the Azure Window, a natural arch whose opening is 22 meters tall, and the horseshoe-shaped bay beyond, whose water is inky black from the dead seaweed that the mistral constantly washes into it. These and other features are the result of the criss-crossing of geologic faults in the region, producing the land subsidence and upheavals that have created a bleak and alien landscape of gorges, bowls, and bluffs. Although Dwejra has been the setting for countless fantasy films, including an epic Italian film about Homer's Odyssey, the area was in an advanced state of degradation: Bird-trapping sites and 4WD tracks were causing soil erosion, and a couple of stone quarries were shredding the hillsides in the hinterland.

In less than an hour, our long johns and T-shirts had dried in the strong midday sun. As we pushed out of the inland sea, I tried to ignore my apprehension. Between us and the

next creek were seven kilometers of cliffs that wouldn't allow shore access in case of trouble, and paddling along them

would be worse than on the open sea. In fact, the prime difficulty caused by these cliffs is the crosscurrents, so we decided that the paddling might be easier if we kept away from shore by a kilometer or so.

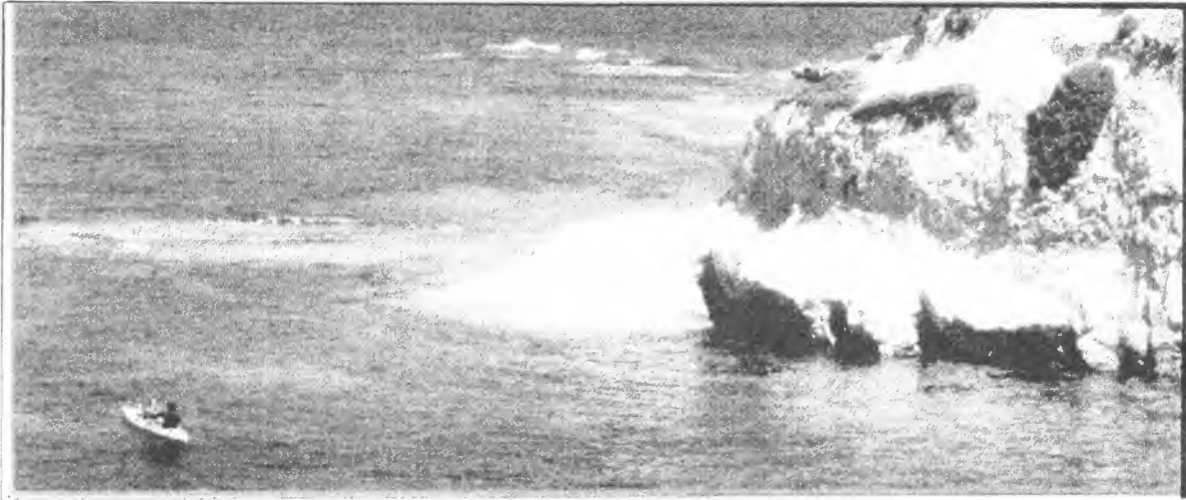
We reached open sea in a burst of paddling, the cliffs receding behind us to an unthreatening distance. The restless sea was huge and deep, but our decision was vindicated: It was easier here, if only because the waves were predictable. After a while, my feet were cold and my head hot. I was paddling mindlessly, trying my best to pull my weight despite the muscle spasms in my lower back and upper arms. We didn't speak for what seemed to be hours.

"You heard of the submerged town hereabouts?" Bernard asked, breaking the silence as we approached the mouth of the mini-fjord at Wied il-Ghasri, along Gozo's northern shore. The waves breaking off the cliffs were behind us now.

"Yes. What do you make of it?" I had come across the writings of fourth-century geographer Paolo Diacono, who had written: "There was a generalized earthquake on earth, and the waters rushed out of their normal limits, and many islands around Sicily, and many cities and people were inundated by the waves; and it was at this time that at Cape San Dimitri, in the island of Gozo, close to Malta, several places were swallowed up, so that today, when the waters are calm, one can still see several houses, and the vestiges of places lying under the water."

Bernard shrugged. "It is the same story mentioned in the legend of Saint Dimitri, and all these old legends

This was the moment we had been dreading and I was feeling momentary bouts of panic. The cliff to our right reared its rugged mass of limestone 150 meters into the air. There was nowhere to go but forward.....



must have a basis of truth."

In the legend of Saint Dimitri—which was told to us in history class as fact, —the Saint had morphed out of his fresco in a nearby chapel and galloped across the sea to rescue a boy who had been snatched by Muslim corsairs. The boy's mother thereafter expressed her gratitude by keeping an oil lamp alight 24 hours a day, and after an earthquake had plunged the chapel into the sea, the flame could be seen burning underwater by divine intervention. There was no point in looking now—the deep sea was blue-black and opaque.

"Can we go ashore?" I shouted over my shoulder. "I'm getting cramps. I need to stretch."

The cliffs had petered out to a lip of land 20 meters high, and we slipped into the mini-fjord that meandered inland for 200 meters, entering a sudden respite of crystal clear water where we could make out large boulders at the bottom. We beached at a small pebbly shore at the creek's interior and climbed to the top of some stairs that had been cut into the rocky side. We wanted to find the legendary Salt Pans of the Clockmaker, and spotted them on the plateau overhead near the outer mouth of the fjord. In 1773, a local clockmaker had invested his life's savings in building salt pans on top of an underwater cave that penetrated underneath the plateau to a depth of about 40 meters. His idea was to dig a pair of shafts through the roof of the cave so that water could be hauled up to fill the salt pans. (I counted 75 salt pans, and they were well measured and aligned, neatly set in three rows.) It was an ingenious idea, and the clockmaker got several crops of salt throughout the first summer. But when the wind awoke from its dormancy in autumn, the sea rushed into the cave as if through a funnel and exploded into a geyser that shot from the shafts. The spout of water, rising 20 meters, was blown inland on the wind in a fine mist of seawater, which scorched the vegetation, ravaging crops within a radius of three kilometers. The farmers banded together and angrily demanded compensation. Their claims bankrupted the clockmaker, and he died a few years later.

"The horrifying noise made by each of these explosions re-echoed both inside and outside the cave, and was altogether like cannons of different caliber being discharged in rapid succession," wrote Jean Houel, a French traveler who witnessed the plumes of water exploding from the shafts in 1777. "The echoes, being repeated by the surrounding landscape produce an effect similar to that of a peal of thunder or even of several peals of thunder, clashing together. It was terrifying and at every moment it seemed that the cliffs, where this storm was breaking continuously when the winds were extremely strong, were going to come crashing down."

The farmers attempted to block the shafts with stones and mud, but the tremendous waves exploded the shafts open again. Years later, the farmers' problem was solved when, in a fierce storm, the roof of the cave collapsed as far inland as the shafts reached. We stood on the edge of the broken shafts, peering toward the sea from inside the cave. The sea was breaking into what remained of the cave with a clap followed by a thunderous echo that made the ground shiver.

We covered the remaining two kilometers to X wejni in less than 30 minutes, and it was almost dark by the time we scrambled ashore and pitched our tent in a grove of tamarisk trees. My feet were numb from the cold—with the clear sky above, the warm day had been superseded by a biting chill within an hour of sunset. Bernard made some pasta, and I prepared some mulled wine (wine simmered with cinnamon, orange, sugar, apple and cloves). Warmed by the wine—a treat to celebrate the passage of the hardest day of our journey—we sat outside in the crisp and clear starlit night. The visibility was good, and peering toward the horizon, we could just make out the smudged pinpricks of light in Sicily, 80 kilometers north. By the time we got up the next morning, the sun had already warmed the grass, and we crawled out of our tent to find a world of light and openness. Set before us was a hundred-meter wide plateau of amber limestone riddled by hundreds of small water pools spreading in both directions. These man-made salt pans produced all the salt Gozo needed—pickaxed depressions on the surface mimicking the doomed

salt pans of the clock-maker. During mistral windstorms, the waves engulf the plateau, and seawater fills the pans that will eventually dry in the summer, when the salt is scraped and collected. The sea beyond was a deep blue, the band of sun glittering across its surface in a dazzling highway of light. The warm quality of the light - especially the crimson-and-purple sunsets - is one of the Mediterranean's unique delights.

Stiff from the previous day's exertion, we set off at a leisurely pace. Anticipating an easy paddle downwind over long and gentle swells, we skirted around the zigzagging north coast. In Marsalforn, the seaside resort of bland four-story apartment blocks that caters to most of Gozo's tourists, we stocked up on food and water. The town is backed by the Marsalforn Valley, a wide and undulating valley of terraced fields fringed by buttes. Towns sprouted on the two largest hills, flanked by the large baroque churches that tower head-and-shoulders over the two-story limestone houses - townscapes that are characteristically Gozitan, the extravagant churches testifying to the islanders' devout Catholicism.

It took us a lazy hour to reach the cove at Ghajn Barrani, which means "The Foreigners' Spring," after another legend. The half-submerged boulders were tricky to navigate around, and it would have been impossible to get to the small strip of sand if the sea had been even mildly rough. Beaching the kayak, we walked up-slope toward Dragut's Rock, a pyramidal boulder embedded in the clay halfway up the slope, where we ate a whole loaf of bread with cheese, onions and tomatoes. The small bay with its turquoise water and smattering of boulders was set before us like some outdoor abstract-art installation, the warm-amber of the rocks contrasting nicely with the greenish-blue hue of the sea. We could just make out the trickle of the spring that was supposedly discovered by corsairs plying the central Mediterranean. They landed here often, stocking up on fresh water and looting the fields up-slope for vegetables. One day, the legend goes, the master pirate Dragut Rais spotted a vineyard and sent one of his slaves to fetch him some grapes. The slave was ambushed by a farmer and, in his flight, managed to tear a few branches of vine. Dragut was so angered by this sacrilege - the Prophet Mohammed was said to have forbidden the destruction of vines - that he tied the slave to this rock and burned him alive.

Later, as I was thinking about the Gozitans' penchant for fantasy and folklore, we stumbled on a fisherman in his *luzzu*, a baroque wooden boat of indigenous design. His name was Paul, and he was eager to talk after a whole day spent at sea alone. Like most Gozitans, he had emigrated in his teens, spending four years in Australia and 10 years in Canada doing menial jobs. He returned to Gozo for a holiday in 1974 and ended up staying, taking over his father's fishing outfit.

"Fishing is in my blood," he said, scratching his stubble and playing with the folds of skin on his lined face. "I remember my grandfather fishing."

Paul had been unspooling trammel nets, putting out a three-kilometer wall in which fish-squid, barracuda, scorpion fish, angel fish, mackerel, bogue, red mullet, painted comber, little tunny and others - get caught by their gills at night. "I work every day. When it is stormy, I mend nets or build new ones, and I scrape just enough for my family. That is the life of a fisherman. Our problem is that there are too many fishermen these days. When I started, I used to catch three crates of fish from three nets. Now I need 17 nets to fill three crates."

I studied the *luzzu*, painted with bands of green, orange, red and beige, a baroque design flowering on its side, and the Eyes of Osiris carved on its hull. These eyes were symbolic throughout the Maltese Islands, supposedly protecting boats and leading fishermen to areas where fish are abundant.

"You want to buy it?" Paul's eyes were permanently squinted. "I'll sell it to you. I have another one. This one is as old as me: 60 years, and it was my father who bought it."

"I know someone who might be interested," I said.

He clucked his tongue. "There is a problem. Old age has turned my heart soft. A buyer turned up the other week, and I couldn't bring myself to sell her. I am kind of attached to her. I'll sell it to you when I retire."

I asked him whether he did anything to protect himself from curses and bad luck.

"Of course. You don't take me for a fool, do you? I always keep an olive branch near the engine. And -" he tilted his face toward the sky, "I have faith in Him. The man who strives honestly is rewarded. Sometimes I don't catch fish for some days, and I keep my faith, and then God gives me a large catch to make it up for me."

I was finding the northern coast more interesting. It has more nooks and crannies than the southern coast, and the landscape is more varied and colorful. We were passing green slopes covered with grasses and tamarisks and prickly pears and beards of bamboo, the land folding into a series of bluffs and valleys crowned by amber inland cliffs. Each corner revealed a new vista. The sandy beaches looked like splashes of orange paint, and the parts of the coast outside the bays were pearly by boulders that had cracked off the cliffs and tumbled to the water's edge. All day, the swell nudged us along in a shallow, azure, clear sea.

At San Blas, where we landed for the night, we got a close look at the orange-red sand that is unique to the

Maltese Islands. A small crescent sandy beach, San Blas is backed by a valley of citrus orchards. At the base of the inland cliff that crested the slope, we could make out a layer of sandy bedrock, red from the nonreactive aggregates of iron that are leached inertly into the alkaline Maltese soils.

The next morning, we woke up to the soothing sounds of the waves breaking on the shore and set off on foot to explore Mistra Rocks at the eastern flank of the bay. Bernard called this spot the Rock Garden, and I could see what he meant. In the heaps of boulders ranging up the slope, some as large as churches, hardy and herbaceous plants and trees (Mediterranean heath, carobs, olives, palms, thyme, honeysuckles, vines, capers, St. John's wort, tree spurges, bay laurels) had taken root in pockets of soil gathered in cracks. The tangled mass of boulders suggested that they were tossed here by some sort of geological upheaval, and I suddenly realized that I had been here once before when I was a child. I had come with my dad to pick capers, and I had almost fallen down a deep crack. For years afterward, that fall had been recreated in disturbing dreams, and now, discovering the location of my nightmares answered a long-standing puzzle. Now I knew that the place indeed existed, and it was as I had experienced it in my dreams: a forbidden place with sharp, jagged boulders and an eerie absence of sound.

When we paddled out of the bay into open water, the breeze was imperceptible. Mistra Rocks looked monumental and enigmatic from the water, but beyond this stretch, the land morphed into a monotonous scrubby slope. The boredom of the landscape, the strong sun, the predictable and easy paddling and the accumulation of four days of kayaking had all left me feeling numb and tired. The walk up the Rock Garden proved to be the highlight of the day. During a long lunch break, I fell asleep.

We reached Santa Marija Bay in Comino by mid-afternoon, and as we pulled our kayak onto the sandy beach, we were greeted by a police officer. After a moment of apprehension, it became clear that the police officer was interested in us only because he yearned for human contact. Policing Comino—an island inhabited by four aging farmers and a hotel only open in summer — was a lonesome job. He worked two 48-hour shifts a week, spending much of his time walking, fishing, cooking and watching TV. Only summers, when Comino was invaded by day-trippers, called for some mundane policing such as breaking up scuffles and booking motorized seacraft that anchored closer to shore than the legally permitted distance in beaches where people swim.

We pitched the tent in the bay and took up his invitation to cook our dinner at the police station. He had lived in New York for 12 years before returning to Gozo. He said, "As you can see, Comino is quite different from New York. Both teach you different things about life, but I pre-

fer Comino because there are no people. The fewer people there are, the less trouble there is. There is another thing: It is so natural to daydream here that you don't feel you're wasting your time."

He spoke at length about the tiny island. "People have the wrong idea about this place. They think this rock is barren, but if you look up you will notice bees flying overhead—they cross over from Gozo to graze the plants of the garigue. Try this: Stand on a spot and see how many different plants you could count in a quick gaze around. You will spot at least 15. If you come in June, the whole place reeks with wild thyme, and its flowers turn the island purple."

The next morning, we found the police officer fishing in his dinghy at the mouth of the bay. After a brief chat, we pressed on. Around the bend, along the cliff of the northern shore, we found a deep cave at the waterline the police officer had spoken about, once a hide-out for pirates waiting to ambush boats crossing to mainland Malta. We ventured into the cave, where the reflection of daylight on the water's surface threw a web of light dancing on the ceiling. The rise and ebb of the gentle surf tossed us playfully. We continued along the cliff, with its veins of brown soil, passing dark, submerged boulders at the cliff's base. The wind, which had changed to a southeasterly direction, was picking up. Clouds were ganging overhead, and rounding the East coast, we were suddenly yanked by three-foot surface waves. For an hour, we battled these waves and became drenched. Then, just as suddenly, we rounded the next corner to find ourselves in a calm sea at Taht Il-Mazz, a gulf enclosed by a 100-meter-high cliff, where a slight surface ripple was just perceptible, like the quivering scales of a submerged creature. We paddled slowly around the several half-submerged rocky islets that stood still in the water like sentries, their surfaces deeply braided by erosion, and beyond these rocks we came to a small beach. We had circumnavigated Comino's nine-kilometer circumference in three hours, and it wasn't yet lunchtime. We landed and reclined lazily on the sand until, fearing that the strengthening mistral would whip up into a windstorm, we decided to make the two-kilometer crossing to Mgarr Harbor, completing the loop.

When we arrived, Mgarr Harbor was bustling with people, and for a moment, I wondered what the occasion was. Then I remembered it was Sunday afternoon and that many Gozitans take their Sunday outing at the harbor. They go for a stroll on the pier, eat pastizzi (pea-stuffed puff pastry pockets) and ice-cream, read the Sunday newspaper, listen to the radio and chat with friends about common preoccupations, but mostly they watch the mainland ferries coming and going. The harbor is Gozo's only link to the outside world, and since the world has always come to Gozo, the natives come here faithfully and expectantly, waiting to see who might turn up. On that Sunday, it was two men in a strange seacraft that attracted a gathering of curious spectators. ...

Adventure Racing

Guidelines for the Sea Kayaking Event

I am not that keen myself on racing sea kayaks on the ocean. I used to take part in a few estuary races which included a little open sea and then river. On these occasions I used K1 or K2 racing kayaks and these could be particularly dodgy in a rough sea. But there are those who enjoy racing on the ocean in sea kayaks as well as racing craft and some buddies of mine are looking to put some safety rules together. Here they are and they and I would like any comments from yourselves. Ed

PREAMBLE

Adventure Racing inherently pushes people to their limits. It is a race. With such events comes an element of risk that the participants accept by their participation. Sea kayaking is frequently an event within Adventure Racing. It usually has a number of additional risks that are often not fully understood by race organizers and race participants.

The purpose of this document is to propose some guidelines for race organizers of Adventure Racing in which there is a sea kayak component. The ultimate goal is the safety of the race participants.

DEFINING THE BOUNDARY CONDITIONS

Where will the event be held? What are the physical characteristics of the locale? Is there any chance of unusual weather patterns that could create a risk to the racers? Are there tidal currents that could impact the safety of the participants? What's the expected water temperature? Is there a risk of any unusual wave conditions along the race-course?

* Will the racers be out of sight of land, and any support vessels, at any time? If so, how will the racers alert organizers of a need for help? Will the racers be informed about what to do if they get in trouble?

* Do the racers know how to operate a sea kayak? Can they swim? Do they know how to rescue themselves? Do they know what to do in an emergency? What safety equipment will be included with each boat? Who checks to make sure that it is there and in working order?

* If racers require assistance during the race, are they automatically disqualified?

* What happens if the conditions deteriorate while the race is underway? What are the parameters and process of canceling the sea kayak portion of the race, if necessary? Who makes this decision? Is there a fall-back plan, or alternate route, should the physical conditions on race day warrant a change?

SUGGESTED GUIDELINES

WEATHER AND WAVE CONDITIONS

Sea kayaking should not be considered if the winds are anticipated to be in excess of 20 knots, and wave heights more than 1 metre.

WATER TEMPERATURE

Racers should dress for the temperature of the water, not the air. Below are some suggested guidelines that should be considered mandatory for all racers.

Less than 20 C	Long sleeve shirt with PFD; paddling jacket optional
Between 15-20 C	Short wetsuits (top and bottom) with PFD; paddling jacket optional
Between 10-15 C	Farmer John or Jane, or full wet suit with PFD
Less Than 10 C	Drysuit with PFD, or pick another location

PHYSICAL LOCATION

- * Obtain local knowledge before picking a race locale.
- * The event should be held within sight of a shoreline with frequent opportunities for landing should the need arise.
- * Attention should be given to prevailing winds and normal storm tracks, and to weather forecasts. If strong, but manageable, winds are predicted, consider moving the race to lee of protect shore.
- * Avoid areas with strong tidal currents, i.e., greater than 2 knots. Avoid areas with tidal races or difficult tidal currents, potential for overfalls, long open crossing or difficult landings.
- * Estuaries, inlets or bays are sometimes the best sites.

SEA KAYAKING EQUIPMENT

Each boat should carry the minimum equipment as required by the Canadian Coast Guard.

- * Properly fitted PFD for each racer with a whistle
- * Spray skirts for each racer
- * Paddle for each racer
- * Pump
- * Tow rope
- * Flares
- * Paddle float (for single sea kayaks)
- * For some races, suitable maps/charts and a compass may be necessary.

SAFETY

The CCG should be notified in advance of the event. Details of the race should be reviewed with them, i.e., when, where, how many people, safety considerations.

Local emergency services (police, fire, hospitals) should be forewarned that the event is taking place. Where possible, consider using local search and rescue people as volunteers (e.g., Rovers, St. John's Ambulance, Volunteer Fire Brigades).

There must be a clear process for canceling a race. Everyone must understand this process before the race begins. The final call to cancel a race should be made by a designated individual from the rescue team, not a member of the race organizing committee.

Communication is critical, particularly when the going gets tough. All rescuers and race organizers should be in radio contact (marine VHF).

The minimum requirement for safety sea-kayaker volunteers should be CRCA Level 1, and where possible CRCA Level 2 should be encouraged. It is important that rescue kayakers be experienced, otherwise they could become an additional liability if conditions become difficult. Rescue sea-kayakers need to be well practiced in rescue techniques, including double kayaks.

There should be something in the order of 6:1, qualified rescue kayakers relative to racers.

Rescue sea-kayakers should be paired when possible as an additional safety measure. If a racer's boat capsizes due to the physical conditions, the rescue sea-kayakers will be exposed to the same risk.

There should be at least three suitable motorized rescue boats. All should be used during the race. If a rescue is needed, &/or a rescue boat breaks down, the others are back-ups. Each boat should have a minimum of two qualified people on board. The race organizers should be aware of the availability of other boats in the area, and how to access them, should an emergency arise.

Rescue boats should carry spare pumps and tow ropes. Both the racers and the rescue volunteers should be briefed about procedures and expectations before the race. The rescue volunteers should meet first to outline roles and responsibilities, then a meeting should be held with the racers.

Qualified first aiders, knowledgeable in hypothermia, should be stationed along the race-course (perhaps in the rescue boats). There needs to be plans for what happens in an emergency, and for an emergency evacuation in the event that the need arises.

Rescue volunteers and organizers need to fully understand their liability.

THE RACE

The sea kayak portion of the race should be the first event whenever possible. If racers get into difficulty during this phase of an Adventure Race, they need to be fresh. The ocean is unforgiving.

If there is any chance that racers might get out of sight of land, then each boat needs to be equipped with flares, and ideally a VHF radio. The racers should know how to use this equipment.

DURING THE RACE

If a kayak capsizes and needs assistance from a member of a rescue team, the race team should not be disqualified. If racers are disqualified for accepting help, they will likely

push themselves to the point where rescue and recovery are not possible.

Rescue boats need to stay in contact with the racers throughout the race.

END OF RACE

Someone should have responsibility for ensuring that all sea kayak racers are accounted for, off the water and safe before this portion of the Adventure Race is closed.

BACKUP

Why the sea-kayaking event should be the First Event? There will be a better chance that the racers are not too spread out over the race-course, if sea kayaking is the first event, and everyone starts at the same time.

If the weather/sea conditions deteriorate, having the sea kayak portion of the race will ensure that everyone is at their optimal level of performance to deal with an unforgiving ocean.

Additionally, if the weather/sea conditions are unacceptable, it is easier to cancel this portion of the Adventure Race or select an alternate route at the beginning, rather than mid-way through or at the end of the race.

If everyone is required to wear the same attire (e.g. wet-suits) for a given water temperature, then everyone shows up at the start line ready to go, i.e., no time is lost mid-race with suiting-up.

COLD WATER DRESS CODE

Hypothermia is the greatest risk in cold water and adverse weather conditions. Immersion in cold water kills more sea-kayakers than any other factor in the sport. Cold water is the most serious threat to the survival of an unprepared paddler.

Remember too that hypothermia can occur anytime that a body's core temperature falls below its normal 98.6 F or 37 C. This can happen, if the body is immersed in cold water, or is exposed to adverse wind, rain or sweating conditions. To stay warm the skin must be dry &/or insulated appropriately.

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