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Newsletter

of the
**INTERNATIONAL
SEA KAYAKING
ASSOCIATION**



**An international sea canoeing association open
to all interested in this aspect of canoeing.**

Aims:

**Promotion of sea canoeing • Communication • Organisation
of events and conferences • Safety and Coaching**

INTERNATIONAL SEA KAYAKING ASSOCIATION

NEWSLETTER No. 21

MAY, 1998

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EDITORIAL

With this letter comes the 1998 ISKA Membership List. It is always a marathon task putting it together so I do hope I have got your entry right. I can only offer an apology if not.

The March edition of this newsletter went out with the Canoe Exhibition so I am actually writing this whilst the memory of the International Canoe Exhibition at the N.E.C. in Birmingham is still fairly fresh. My thanks to Christine Carter for taking the ISKA Stand over for me as Jenny and I oversaw the launch of our new magazine, *Ocean Paddler*. I have taken the liberty of mentioning the Magazine later in this newsletter as I think it is important enough to give you an update. I did say that I want to edit both this newsletter and *Ocean Paddler* and keep them as separate entities. I am determined to do this and it is possible that as I canvas hard for material the contents of this letter will be more interesting. As you know I rely on including interesting stuff that I have come across in my reading of a load of different material. For many of you I am your eyes onto the kayaking scene. On the other hand the magazine will contain original material (hopefully). I desperately need you to keep me supplied with material for this newsletter. I often said that it is only as good as the articles you send me. Do let me know if I have a choice as to where I can use your material.

Without any doubt the biggest thing to affect all our lives is the Internet, whether you access it or not. 300 years ago Newton explained mechanics to us and so shaped the Industrial Revolution that changed the face of the world. Throughout the 19th and 20th Centuries the pace of scientific discovery intensified. In the past ten years, more scientific knowledge has been created than in all of human history. Computer power is doubling every 18 months. The Net is doubling every year. The epic phase of discovery is now drawing to a close. However, an age of mastery is about to begin. We are on the cusp of the transition from passive observers of nature to its active choreographers. The period from now until 2020 is to be one of the most exciting times to be alive.

It is predicted that the Internet, by 2005, will be as big as the telephone system is today. The Net itself is developing at break neck speed. In 1996 one could access about 70m pages. By 2020 it is said that the whole sum of human knowledge, including the

wisdom of the past 5,000 years of recorded human experience will be accessible on the Net.

All very well, but what is all this to do with an editorial for the ISKA newsletter? Apart from the massive and almost frightening spin offs from the growth of the Internet which will affect us all to a greater or lesser extent in the time to come, we are all going to need the opportunity to escape, some 'down time'. Technology has already overtaken most of us and we have to ensure it is our slave and not our master. The need to take your kayak on to the sea and lose yourself along the coast line has never been greater. Stress, anxiety and real pressure and pace of life has never been greater for most of us than it has at this time. we need to take stock and build into our lives some quality time. Leisure time and activities have always been important in that they help to keep us sane. Now we need these sort of interests more than ever.

So get you kayak out of winter storage (with apologies for all the year round paddlers) check them for last year's damage and get them on the water. Then write me an account of your experience for this newsletter and tell me that it was my editorial that inspired you to get out on the water in the first place!

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ASKC ties @.....	6.50	
ISKA Stickers.....	.60	pence
ISKA T Shirts; L, XL, yellow or black.....	6.00	
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Bound 'stand alone chapters from my forthcoming book "SEA TOURING - A Manual on Sea Kayaking"		
No 1 Expedition Planning @.....	2.00	
No 2 Expedition Medicine @.....	2.00	
No 3 & 4 The Sea/Navigation.....	4.00	
No 5 History of Sea Kayaking.....	2.0	

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* OCEAN PADDLER MAGAZINE - UPDATE. *
* 10,000 printed, 1,500 airfreighted around the world, 5,000 *
* sea freighted. Distributors established Europe, Australia, *
* New Zealand, Japan, Iceland, Canada, USA. *
* What I need to ensure the on-going success of OCEAN PADDLER *
* is material from you, yes you, the ISKA reader. I need *
* letters for our 'Dear John' page, I need articles and lots *
* of photographs, I need your news, events, expedition reports. *
* Ocean Paddler was launched at the International Canoe *
* Exhibition and has been well received. New subscribers are *
* joining us daily. The first edition was flawed in many *
* ways, though the contents themselves were fine. As editor I *
* am aware we need to have a much improved second edition. *
* I cannot do it on my own, I need your help. *
* * * * *

J Ramwell

From: david powell <dhpowell@clara.net>
To: john ramwell <jramwell@provider.co.uk>
Subject: internet weather info for ISKA newsletter
Date: 26 February 1998 22:57

Hi John Shelley Johnson wrote about the weather in the March newsletter. I have included all of my weather links below so sea paddlers can try them out if they like. All of these sites are free EXCEPT the Met Office.

<http://194.164.52.83/ukclimb/> <<http://194.164.52.83/ukclimb/>> UK Climbing Site with winter conditions reports.

<http://www.sais.gov.uk/> <<http://www.sais.gov.uk/>> Scottish Avalanche reports + comments on climbing conditions.

<http://www.ecmwf.int/charts/charts.html> <<http://www.ecmwf.int/charts/charts.html>> Predicted surface level pressure charts for the north Atlantic / UK.

http://www.met.fu-berlin.de/wetter/maps/europe_forecast.jpg <http://www.met.fu-berlin.de/wetter/maps/europe_forecast.jpg> Forecast map for UK / Europe.

http://wpx.atms.purdue.edu/mrf/mrf_500p_9panel_eur.gif
<http://wpx.atms.purdue.edu/mrf/mrf_500p_9panel_eur.gif> 9 Day predicted pressure charts, usually prone to change especially in the later days.

http://wpx.atms.purdue.edu/mrf/mrf_pres_9panel_eur.gif
<http://wpx.atms.purdue.edu/mrf/mrf_pres_9panel_eur.gif> Same as above but precipitation forecast for 9 days.

<http://www.telegraph.co.uk/et?ac=000233367750960&rtmo=3319b930&atmo=3319b93>
<<http://www.telegraph.co.uk/et?ac=000233367750960&rtmo=3319b930&atmo=3319b93>>
Daily Telegraph weather site - Quite good for short term forecast. <http://www.the-times.co.uk/news/pages/Times/frontpage.html?2255494> <<http://www.the-times.co.uk/news/pages/Times/frontpage.html?2255494>> The Times weather site - Also a good short term forecast.

<http://www.pa.press.net/weather/> <<http://www.pa.press.net/weather/>> Again a good short term forecast site.

<http://www.phy.hw.ac.uk/resrev/aws/weather.htm>
<<http://www.phy.hw.ac.uk/resrev/aws/weather.htm>> Cairngorm real time weather info.

<http://www.sat.dundee.ac.uk/> <<http://www.sat.dundee.ac.uk/>> Very good close up satellite piccys of UK. <http://www.quag.demon.co.uk/weather/satellite/metoffice.html>
<<http://www.quag.demon.co.uk/weather/satellite/metoffice.html>> Daily 1800 satellite pic of UK.
<http://www.meto.govt.uk/> <<http://www.meto.govt.uk/>> Very limited

by Austin Davis

A STROKE OF LUCK IN THE GULF OF MEXICO

On March 20, 1994, I was on the third day of a planned five-day solo sail to Corpus Christi, Texas, headed for home on my 26-foot sailboat. Having logged many solo miles offshore with the boat in the 18 months I had owned it, I felt comfortable sailing the boat alone. The weather was as moderate as the sea state. I was really into the solo rhythm of the boat and, except for running aground earlier that day when I went ashore to get ice, all seemed right with the world.

About 8:00 p.m. I was on the bow of the boat writing a poem in the red glow of the port running light. The self-steering mechanism was guiding the boat quietly about ten miles off the coast of Galveston Island. My float coat kept me warm in the evening breeze. Then the running lights blinked off. Grumbling at having to leave my comfortable perch, I went below to figure out what I assumed was a minor glitch. I stepped down into the dark cabin into knee-deep water and a nightmare. In the fading light I could see that water covered everything—my boat was dying. Reflexively, I ran up on deck and, with my trusty knife, I cut the halyards, dropping the sails. Then I cut the safety line on the anchor, setting it to hold the boat until I could sort everything out.

When I returned to the cabin, the water seemed to be even deeper. I searched for the source of the rising water. The batteries were submerged, so there was no power, and no option to use the radio. I felt too shocked and alone to be really scared, yet. While I searched in the dark for a leak in a boat filled with water, the thought crossed my mind that if I did not do something fast, I would soon be on the bottom of the Gulf with the boat.

My neck was my only hope, my 16-foot plastic kayak. I had always used the kayak as my dinghy and, with the sponsons deployed, it made a great tender. Now it would have to do duty as a life raft. When the boat was underway, the kayak was carried on the cabin top tied to the starboard handrails with three-quarter-inch deck lines. My knife again came to the rescue, making short work of the lines holding the kayak.

Placing the kayak in the water on the starboard side of the boat and getting in was aided by the ever-decreasing freeboard of the dying boat. I hung onto the swamped sailboat as it rocked wildly in the three-foot waves. I thought my arm was going to be ripped out of its socket as I held on. I figured the boat would stay afloat till someone saw us in this jam. (I was thankful the kayak was plastic and tough enough to take a gorilla beating.)

Within moments, the bow of my sailboat lifted and the boat began the last leg of this trip—straight down. Suddenly, I remembered the harness I always wear to secure me to the boat when I sail offshore was still tethered to the base of the mast. The movement of my knife seemed fluid, but very slow. The line cut cleanly just as it was taking on tension. The boat slipped into the blackness with the strangest silence. I paddled over to the place it used to be, trying to awaken from the nightmare.



With the sailboat gone, the task of paddling home began. I turned the kayak toward the glow of the horizon. I clearly remember thinking, within moments of losing the boat, "This is as bad as it could get." I was wrong.

I had the rudder in the "down" position while I steered with my feet, running with the waves. As I tried to secure the spray skirt, a wave suddenly broke over me. It slapped my face onto the deck and rolled me over and out of the kayak into the Gulf of Mexico. Stunned, I lost both my grip on the paddle and the boat. Losing two boats in less than five minutes is a record I hope nobody will ever have to beat. Sputtering in disbelief, I swam to where I thought the kayak should be. After a while, it occurred to me it could be just past any wave in the dark night.

A pull on the pocket of my float coat activated the CO₂ cartridge, which made a loud noise as it lifted me up high. The float coat kept me afloat and warm—as warm as my short pants and the 55-degree water would allow. Then I realized the mistake I had made, and felt as if I had signed my own death warrant. My wetsuit had gone down with my sailboat. The wetsuit and the rest of my safety gear were stowed all over the boat and, in my haste to leave, I had not grabbed any of the survival gear I carried for just this kind of situation.

Floating in the dark of night, I first thought about the movie *Jaws*, then about freezing. Then I got the giggles at the thought of being a frozen snack treat. The cold was already getting to me, as all I really wanted to do was go to sleep. I had to make a choice: either float in the heat-escape lessening position and wait to be found, or swim to find the kayak

and die sooner due to hypothermia. Boy, the choices seemed so good.

I decided to swim, and dumped the air from the float coat. I swam in the direction of the waves in a desperate hope of finding the kayak in the three-to-four-foot waves of the very dark night. As I swam, I counted my strokes and lied to myself. A hundred strokes and I will give up, I told myself. OK, two hundred and I will give up. Swim and lie, swim and lie. This went on until I realized there would be no stopping the search, as the kayak was the only way home. That night I planned my new life if I survived this experience, while I swam and swam.

Then I felt it! My hand touched the bow line, and I jumped at the shock of finding it. There was my kayak, swamped, but floating upright. Reaching behind the seat, I could feel that the sponsons were still there. I carefully clipped them to the boat. (In cold, dark, open water it is very difficult to sort out webbing and buckles.) When I finally inflated them, it was the first time since the loss of the kayak that I felt real hope.

My problems were not over yet. My cold hands would not cooperate to help untie the spare paddle from the tight, small knots of the parachute cord that held it. No paddle, no ride home. I cursed the knots as I struggled to free the paddle.

Finally, my frozen brain screamed, "Knife!!!" For the fifth time, the knife saved me. I carefully unclipped it from my pants and cut the knots. In my haste to get back into the kayak, I started to ditch the knife into the Gulf, but I realized I might need it again. I was not out of trouble yet. With the knife stored back on my waistband, I got ready to re-enter the kayak. The sponsons were the only thing that would allow me to get back into the kayak. With the bow line tied into a hasty stirrup, I climbed, pulled and crawled onto the boat face down. With the sponsons keeping the boat barely upright and my cold hands keeping a death grip on the back-up paddle, I hugged the boat and finally twisted into the cockpit after several tries. The bailer tied to the seat helped me get most of the water out while I again tried to steer with just the rudder. With the sponsons providing stability and the back-up paddle splashing out a rhythm, I made my way to the glowing horizon. Never mind the lack of a spray skirt; nothing was going to separate me from my kayak this time.

Navigation was simple after the faint glow on the horizon took form and I saw some detail. With the boat moving and the land growing near, the sea state seemed to calm somewhat, but all the paddling did not seem to make me any warmer. The cold was like a passenger in the boat with me. It made this otherwise simple trip home a real mental challenge.

I guess it was about one o'clock in the morning when I first heard the waves striking the beach. I do not remember crossing the surf zone, as I was in a dazed, detached state, paddling at a serious, yet automatic, pace. The feeling of my kayak's hull grinding on sand was glorious. A wet exit was the best I could do to get out of the kayak, as my legs seemed to have their own agenda. I dragged

the kayak and myself up the beach.

A zip-lock bag in the aft compartment held three flares. The first two brought no help, and the thought of all I had been through, only to freeze alone on the beach was too much. So I used the only survival strategy I had left. I got mad. I got mad at the boat, the kayak and the Gulf. I mean, *really* mad. I was storming and staggering. Anger sometimes is the only fuel that can run the engine of life. I stumbled angrily down the beach to a distant light.

That light was Galveston Island State Park. The camper who came out of the bathroom door as I was entering looked shocked at the sight of me—the cut harness over the spray skirt over the float coat, soaked and frozen to the bone. "Where am I?!!," I growled at the poor man. He just looked at me, stunned. Pushing him out of my way, I staggered to the showers. Now, in my 30 years of life, I have taken a bunch of showers. They all paled in comparison. The hot water stung, yet felt like velvet. The heat from the water slowly started my brain, and for the first time I felt safe. I don't know how long I was in the shower, but when I got out there was a small crowd. Someone told me about the pay phone, and in a few minutes I had the Galveston County Sheriff's Department coming to file a report. When my mom answered the collect call from me, I told her I had lost the boat, but was safe and needed some dry clothes. Half in shock and half asleep, she asked if I needed her to come pick me up. "No, mom, I just called to share!" My making a joke told us both that, yes, I really was finally OK. My parents were soon on the way to give me a ride home.

To this day I still don't know what caused the loss of the boat. Seacock failure, keel-hull separation, I don't know. What I do know is this: all emergency gear should be kept together in a floating container in an easy-to-reach place in case all does not go well. Play hard and hope for the best; just prepare carefully for the worst.

Equipment Used: SeaYak kayak by Prijon; Endura knife by Spyderco; float coat by Stormy Seas; Sea Wing sponsons by Georgian Bay Kayaks

Dear John,

please find enclosed my subscription to the ISKA newsletter for 1998, thanks for the reminder; I hadn't forgotten; I just wanted to use the impetus of being overdue to spur me on to finish a contribution towards the magazine. So now at last, I have finally managed to find the time to complete some additional thoughts on Paul Caffyn's article (ISKA Newsletter no 16) on Offshore winds, which I first began last September and have had little time to come back to since.

Paddling the calm below the cliffs - a cautionary tale!

In the July 1997 ISKA newsletter (no. 16) an abridged version of Paul Caffyn's article on offshore winds appeared. I read the article with interest and fully concur with the cautionary words of warning which he sounded. However the comments which interested me most, concerned the area of calm water found beneath a line of cliffs and the effects which gaps in those cliffs or promontories on them may cause. Paul describes the wind as 'funneling through the gaps with unbridled force, causing williwaws and violent gusts or bullets of wind..... the violence of the turbulence being able to cause the loss of a paddle or a capsized'. He is absolutely right. But, just what are we describing with these terms? How violent? What does a bullet feel like if you meet one? what is a williwaw? how long do they last? how would a group fair if they met these conditions? Paul describes the wind as being doubled or tripled in strength compared to the strength over land, which is probably fairly close to the truth, but this is only part of the picture.

A few years ago, I was spending a holiday on the Isle of Mull, based at a cottage on the south of the island at Carsaig Bay. It was one of those depressing holidays, long anticipated and planned for, but which turn out to have diabolical weather. NW gales force 7-9 prevailing for most of the two weeks. Whenever the wind abated sufficiently I would rush out to steal short coastal trips and had to be content to change plans and abandon the winters' armchair ideas. However this led to an unforgettable experience and perhaps an appropriate footnote to Paul's article.

On this particular day a NW 6-7 was blowing. A stable airstream placed mushroom shaped hats on all the Mull mountains and I watched the cloud form on the upwind sides, slide over their tops and dissolve again as the airflow subsided in their lee. As a result a broad sheltered lee was developed beneath the cliffs all along the south coast. Therefore, I decided upon a paddle from the bay at Uiskin for 12 miles eastwards under the cliffs back to base at Carsaig.

Conditions below the cliff to begin with were flat calm, but cold and shaded. The occasional line of disturbed air arrowed across the water now and then, to merge with a darker area of more confused water, further out into the Firth of Lorn where the wind obviously made contact with the surface after its passage over the Ross of Mull.

For over half the distance towards Carsaig I made good progress and enjoyed interesting views of the changing geology, wild goats, red deer, seals, an otter and countless skyscrapers of seabirds on their nesting ledges. At one point I landed to recover a set of antlers from the skeleton of a stag, a twelve pointer, which despite all that follows I managed to keep and which still graces the walls of our house.

At this midpoint of the trip is a right-angled recess in the coast followed by a promontory called Malcolm's point. Fantastic waterfalls pour from the 180metre cliffs in this corner and these provided the first signs of trouble. The main fall, nearest to the angle in the cliff was only falling for about 30 metres before being blown completely back up the face. A tremendous updraft was eddying beneath the rim of the cliffs, the spray drifting in huge curls across the upper face, then being whipped out into the air-stream off the top. I scanned the surrounding sea, which apart from a gentle but rising swell, seemed still quite innocuous, so I decided to continue. Here at sea level, I thought, the wind is having little effect so should not hamper my progress. The wind had other intentions. It is easier now to quote from my journal written a few days later.....

.....I continued to paddle across the diagonal of the inlet, aware of the gathering gloom beneath leaden skies and the darkness of the cliffs to my left. One of the three fishing boats had left, another was on its way and the third was now way behind, its running lights dots of colour over my shoulder. It was then that I noticed the wind. Whereas before, there had been infrequent gusts, I could now hear the wind. I could see nothing to indicate its presence, nor feel the wind but up ahead the water was alternately disturbed and calmed and overhead a low whining sound seemed to fill the air with an insistence which begged to be noticed.

I was busy deciding the best track to take to the point when I was thumped in the back, so hard and so suddenly that I gasped and lunged forwards in the seat. From that instant onwards I was fighting for survival. The wind

slammed into me from behind, then sideways and the shriek which accompanied it filled the air at a level never even dreamed of. In an instant I was laid over flat. To try to regain the upright was futile. I sculled for support for all I was worth. The wind lashed the sea to ribbons of flying spray. I could hardly open my eyes against it and I could not breathe without inhaling the water jetting up my nose. Desperately I sculled to stay above water, the paddle snatching and kicking in my hands. Horrified at the suddenness and ferocity my heart pounded hard enough to feel through my exertion. Turning my head to try to gain some relief from the spray I peered across the surface and could not at first comprehend what I was seeing. The water surface was depressed into a saucer, the centre of which was bouncing up and down with each successive hammer blow of the wind. The circle of devastation must have been about 30 metres across and from its centre whirls of spray raced out in all directions at hurricane speed.....and I was at its edge, broadside to the wind, leaning into the hole.

I remember thinking - I have to get the bow round! - but the paddle blade snatched and flicked, the lower end alternately giving lift then not. It seemed all to no avail. I was 500m offshore and being driven shore-wards at a rapid rate. Visions of boulders and breakers beneath the cliff flashed into my mind and I wondered what it would feel like to have my boat break up under me. Minute after tiring minute I sculled, perhaps fifteen minutes the pool of the hurricane went on in unceasing fury. Then the shrieking wind lifted above my head again. A great surge of water rushed into the centre and clapped together, as if a giant stone had just been dropped. The water sprang back from the middle, radiating outwards and I watched it as at last I righted myself. Even so, I wasn't ready. The wave flicked me over onto my left side and muscles unaccustomed to doing anything on the left nearly failed me.

Exhausted, frightened and spent I felt. How had I survived such fury? where did it come from? how could the wind come down vertically like that? And the noise! I'd only once ever heard the wind sound like that. Camped at Warnscale, beneath Scarth Gap on the Buttermere track to Haystacks one October night. The tent was flattened by wind which shrieked out of nowhere. The noise which preceded its arrival was unearthly, unexpected and totally unrecognisable. Only as the poles began to bend and break did we appreciate the significance of the noise. Indeed we had momentarily speculated on whether a train existed anywhere near, before the force of one arrived.

I was much nearer to the shore now than I wanted to be. There was again no sign of wind on the surface of the sea so I turned seawards and paddled as hard as I could, glad to use of my arm muscles in a different way. But, all the time the wind whined above me in a rising and falling reminder of the minutes before.

It was barely a few minutes before another down-draught punched the surface, over to my right but barring my way out. Fear gripped me as the raging pool seemed to seek me out. Its progress was rapid across the intervening gap. My mind raced with a series of thoughts.....set off your flares!summon the boat!turn to shore!.....turn towards the sea!... In the same instant the answers came to!.....the boat might founder!.....if I landed I might be trapped on the cliff by the rising tide!..... if I go further out I might capsize and not make the shore! The few seconds of thought ended and I turned to face the onslaught!

I was ready this time, bow into wind. The wind screamed at me as I put my head down to hide from the spray, but it still made me gasp and wince for breath. Leaning hard on the blast I tried to paddle to maintain the bows-on position. This time I needed to paddle on alternate sides but the blades kicked and snatched, strokes missed and I lunged from one chine to the other. I had to grip harder, make more effective strokes, the bow was coming round, the high prow acting like a sail. Every time I made to paddle the upper blade snatched, yet they were as low as I could get them.

I was in the middle now, bouncing like a ball. The sea rebounded to successive hammer-blows which depressed the water by over a metre each time and then converted into a lateral blast that shredded the water into a maelstrom of stinging spray. I was so tired, oh so tired. I wanted it to end and I called out for it to end.

Realising that I had just spoken and heard it made me understand that the wind was now on my back. Looking up for the first time in several minutes I was amazed to see the spray hurtling away from me at incredible speed and lifting high into a gigantic spiral. But, the way ahead was uphill. The rim of the saucer lay 10 metres away and 2metres higher. Suddenly I realised the forces were now reversed, my blades were being pulled away, they wanted to turn in my hands, I couldn't dig them in! I couldn't pull against the wind and the water together.

How the boat remained upright during that buffeting I don't know, but the hurricane passed, retreating shore wards leaving me tired and shaking. Suddenly, finding I could paddle again I made progress towards Malcolm's Point which still seemed just as far away and probably was.

In the sweep of my view two of these maelstroms flung their spray laterally across the sea. I would be lucky not to encounter another and as I feared the next was not long in arriving... It began as before, off to my right, out to sea by 4 - 500metres then drifted shore-wards. I couldn't predict where it would come next, but the change in intensity of the sound gave some warning that the down-draught was approaching the surface. Several times the noise intensified then waned away again. The low whining changed to a banshee shriek of tortured air as it dropped onto the surface. The sound was directionless, the whole air seeming to be filled with sound and then with spray together. It was mind numbing.

By this time I was feeling so tired that when the battering arrived I was unequal to the task of keeping the bow to wind. I entered the pool across the side and the bow would not come round, however hard I edged. Once again I sculled for support on my right. In an almost detached way I mused on the umpteen times I had practised sculling technique in the pool or against a current; for just what eventuality?this one? For a long time I sculled against the screaming wind which wanted to unseat me. With eyes blinded by spray upwind and the downwind blocked by the upper gunwale, the first I knew of the rocks was when I hit them.

Being run ashore was just the beginning of a new adventure. I had to abandon my boat and climb across enormous boulders for the remaining miles back to the cottage, where I arrived several hours late. It was to be three days before I could paddle back in another boat to repair and recover my Seaking.

Whilst I was confined to the shore I was able to observe from a higher perspective, more of the phenomena that I had experienced and found that:- 1. these down-drafts are in part a consequence of eddying. Air, like water, passing over an obstacle is naturally drawn into the lee of the object by a combination of reduced pressure and velocity. In this case the air mass passing over the hills of the Ross of Mull was also 'stable' meteorologically. i.e. the air mass was cold and dense and even given that it had been forced to rise quite high, causing a fair amount of condensation over the hilltops, it was still not warm enough to be buoyant when it reached the cliffs on the south of the Ross. This dense air, therefore sank quickly, back towards sea level once the hills were no longer in the way. 2. The NW. air-stream was also meeting the flank of Malcolm's Point, obliquely, which was adding a sideways and downward component to the air flow. 3. Across the Ross of Mull the configuration of the hills was funnelling the dense air flow towards the corner.

As a result, a narrow, concentrated and accelerated stream of dense air was intermittently pouring over the 180m cliff, which the shape of the coast just here further accentuated into vertical bursts of immense strength. In an hours observation, I watched twelve such down bursts with the following characteristics. 1. They all started about the same distance offshore 5-600m. 2. they all tracked in towards the coast. 3. some had a curved track, coming in towards the promontory. 4. they lasted on average 8 minutes. 5. the waterfall coming over the cliff was always being lifted back up the cliff during one of the down-drafts, but fell normally when there wasn't, suggesting strong local eddying. 6. there were up to 4 down-drafts visible at any one time and only short periods when there were none. 7. wind strength stated for the area was over force 6 on all the occasions when I could see the plumes of spray. 8. once I knew what I was looking at, I could see them from several miles away.

From a sheltered vantage point on a nearby cliff, I was shocked to see the beginning of one example clearly show as a horizontal blast of wind, hurtling across the water at incredible speed for a mere second or two, then convert into the down blast as suddenly. This I am sure describes a bullet of wind and it made me shudder to think of it's power. A williwaw, according to the dictionary definition is:- a sailors term for a sudden squall. It is further described elsewhere as a fast moving front of wind which can be seen approaching across water and can cause a boat to violently heel.

It is very difficult to estimate the speed of the wind. Normally we use recognised indicators, like the sea state, presence of white caps, or movement of familiar objects on land like branches. Here the sea was relatively calm except during the maelstrom. Recently a storm over the Gower Peninsular where I now live, was recorded by the Mumbles Coastguard station as being a steady 90+mph with a single gust of 107. At the height of the storm I went to watch the sea from the cliffs at Rhossili and sitting; for I was unable to stand; I remembered my experiences off the coast of Mull. Sitting in the full force of the gale I again experienced the same inability to breath, even without the flying spray and as near as I could remember the power of the wind felt very similar.

The phenomena which I experienced is clearly peculiar to a certain place given special conditions. It came without a warning which I was able to interpret. But the necessary factors were all there before I set off. Lack of fore knowledge cannot be pleaded because I had read various sea canoeing books well before this, in which vicious down-drafts from high lines of cliffs are mentioned. What was lacking was the experience to see where these factors all conspire with each other to make it happen. I certainly found out in an unforgettable way, and I hope my account and observations will help other would-be cliff huggers to make appropriate decisions, given similar weather conditions..

What would it do to a group of paddlers, if caught as I was?.....it doesn't bear thinking about!

Dave. Youren.
119, Pennard Drive,
Southgate.
Gower.
Swansea.
SA2 3DW.

*all the best - good paddling
in 1998,
Dave Youren.*

Taste Testing Foods for the Trail

Some of the outdoor convenience foods are quite tasty if not always gourmet

By Cindy Ross

Some said we were cheating—taste testing outdoor food at home rather than in the bush over a camp fire or stove. We disagreed, arguing that almost any concoction may taste pretty good when you are tired and hungry at the end of a long day of paddling but not fare as well in the comparative comfort of home. And we didn't want you to rely solely on our humble family's opinion, so we brought in about 25 of our friends, all outdoor enthusiasts and most of them paddlers, ranging from age 4 to 75, to sample the eats.

We set a long banquet table for the food-testing party. Blackened camp stoves and dented fuel bottles served as centerpiece. At each plate was a menu listing dozens of foods, from appetizers to desserts, and a stack of cards with the numbers 1 to 10 to rate them. I served no-cook freeze-dried, cook freeze-dried, and dehydrated foods from nine different suppliers one dish at a time, so it could be discussed and rated.

As the evening wore on, personal preferences, such as liking spicy food or not, influenced results. When someone rated an entree at 10, another may have held up a card with a 1. But that person may have rated another at 9, while the rest gave it a 1. Testers were usually consistent in placing foods at the extremes of lousy or excellent, and the occasional split scores did not radically affect the outcome.

Because the assortment of trail foods is vast (some companies offer more than 100 dishes), our purpose in the test was to provide readers with a general sense of which groups of foods were most palatable in their processed form and which suffered in transition from fresh to packaged. We chose not to try to compare the beef stew of one manufacturer to another's, and to compare freeze-dried to dehy-

drated would be like comparing raisins to oatmeal. Instead we chose to cover only the best in each group and discuss why they excelled.

We skipped the foods that provoked such comments as "nasty, liquefied mush, could be eaten by those without teeth, looks like cat food, wouldn't feed it to my dog, and yucky and ooey (my kids)." If you consider your traveling and cooking styles, your culinary skills, and what types of foods are out there and the various ways to prepare them, you will be able to choose what best suits you to eat in the backcountry.

Freeze-dried food is flash-frozen under high vacuum at low temperature. Then the ice particles are removed by a process called sublimation. To prepare no-cook freeze-dried, you simply boil water, mea-

sure it, and let it sit—the most minimal preparation and time. It's good for the most uninterested, unskilled cook, or for the times when you stay too long on the water and get into camp late, or when you are too busy with other activities like dealing with children or a long portage, or when you need to get a hot meal into you quickly because of nasty, wet, hypothermic conditions. No matter what your normal food preferences, no-cook freeze-dried is indispensable for those occasional killer days.

Cook freeze-dried takes a few minutes of simmering, usually five to eight minutes, may be a tad more complicated (two steps as opposed to one), and may have a little more substance, texture, and chunkiness to it. (Food pieces must be very small in no-cook food so they can rehydrate quickly.)

Dehydrated food is totally different. Moisture is removed from the food very slowly in a drying chamber. This occurs at low temperatures so that the nutritional value of the food remains intact. It may require an hour's worth of pre-soaking and 10 to 15 minutes of cooking or need to simmer as long as 20 to 25 minutes, and the dry weight is heavier than freeze-dried's. The trade-off is considerably heartier and less expensive

The assortment of trail food available in today's market is vast, varied, and, say many, delicious.



meals. Some companies combine freeze-dried and dried foods in the same meal.

No-cook freeze-dried, cook freeze-dried, and dehydrated food can all be prepared on a regular backcountry stove. If you want a little variety in your menu and have some extra time and fuel available, there are some handy cooking apparatuses that can elevate your meals pretty close to home cooking.

First, there is the BakePacker from Adventure Foods, a metal grid that nests inside a cook pot, allowing foods to be steamed in a loosely closed plastic bag. You can use the company's mixes or follow recipes to put them together from scratch. Food is mixed in the bag, freeing you from doing the dishes and allowing campers to enjoy baked goods such as corn bread, apple cake, and chocolate cake in the wilds. With a little butter on your bread, your need to return home greatly diminishes.

Then there is the Outback Oven from Traveling Light. A Teflon frying pan with a lid, it uses a riser bar and a diffuser plate to prevent the flame from burning your

food. A metallic, fold-up convection dome turns the pan into an oven. The foods you can prepare in this lightweight oven—pizza, apple pie, quiche, lasagna—are quite good. As with the BakePacker, mixes or recipes are available. Some recipes include active dry yeast and require a little bit of kneading, but they are simple to prepare and hard to screw up. These delicious, hearty foods are the most like homemade, the most like "real food" of everything we tested. In fact, all of their foods were rated high. If nothing else, this is worth treating yourself to on a lay-over day or when waiting out a storm.

Although all foods come seasoned and spiced (and some have an individual spice packet that enables you to control the amount yourself), it is still a good idea to carry additional salt, garlic and onion powder, grated Parmesan cheese, and instant milk to neutralize a too-spicy meal or to add zest to one that is bland.

As a rule, we have found that dishes based on cream or cream and cheese are more likely to appeal to a variety of tastes than the tomatoey dishes (besides spaghetti

and lasagna). If a dish has the word "spicy" in its title or description, be forewarned: Children, especially young ones, have a tendency to dislike the spicy types, preferring more bland, traditional entrees. In our experience, children choose noodle over rice dishes.

Years ago, your choices were limited to beef stew, lasagna, chicken and noodles. Exotic was chicken à la king. Now you can find nearly every culture and cuisine represented in "gourmet" trail foods, and while many of them are delicious, the old favorites often prove to be the most reliable.

Do not make the mistake of buying in quantity before you are certain that you crave a meal. We really enjoyed one noodle entree and bought two cases for an outing we had planned. But it was made with whole wheat noodles, which, however healthful, caused tremendous cramps and bloating for the entire family while on the trip. We mailed most of it back, where it still sits in storage.

Freeze-dried vegetables and soups from nearly any company are a sure bet. Dinner entrees vary, and breakfasts are an entirely different ball game. Freeze-dried and dried eggs are like instant non-fat milk—either you can stomach them or you can't.

Fresh food is best for lunches, but if you plan to be out longer than fresh foods will keep, freeze-dried fruited yogurts and freeze-dried cold salads (crab, tuna, chicken, etc.) are delicious and worth packing.

Some companies sell freeze-dried veggies or meat chunks in #10 cans that you can incorporate into boxed noodle dinners or packaged dried noodle and rice entrees available in grocery stores.

Trail food companies have also made great progress in making desserts. Carbohydrates/sweets rank very high on most outdoorspersons' lists of food cravings. Treating yourself to a good dessert at the end of a rough day may be all the motivation you need to keep paddling.

After you do your own research, be sure to check out the size of a serving portion when comparing foods. "Serves two" tells you little. Look instead for how many cups of food the package provides and factor in the appetite of those doing the eating. A cheaper meal may be lighter on your pocketbook, but it may not fill your stomach when dinner is served.

THE MANUFACTURERS

Here is a brief introduction to each of the nine companies we tested:

Alpine Aire's entire freeze-dried entree line has no artificial preservatives, colors, or flavors and offers a nice mix of vegetarian and meat dishes. PO Box 1600, Nevada City, CA 95959; (912) 272-1971

Harvest Foodworks features predominantly dehydrated vegetarian foods that contain no additives. Their portions are among the largest we've seen.

445 Hwy. 29, R.R. 1, Toledo, ON Canada K0E 1Y0; (613) 275-2218

Richmor has two distinct lines of freeze-dried foods: Natural High, all-natural, international gourmet dishes; and Richmor, featuring old-fashioned favorites whose recipes may have originated 30 years ago and been improved over time. PO Box 8092, Van Nuys, CA 91409; (818) 787-2510

Mountain House is an excellent freeze-dried-food company of long standing that carries predominantly meat entrees. They have recently removed all MSG from their entree line. Oregon Freeze Dry, PO Box 1048, Albany, OR 97321; (800) 547-0244

Wee Pak has some of the most unusual and creative freeze-dried foods we have tasted and

offers many of their foods in bulk for your creative culinary needs.

PO Box 562, Sun Valley, ID 83353-0562; (208) 726-2325

Adventure Foods offers a wide selection, but our favorites are the baked goods that can be made in their BakePacker.

Rte. 2, Box 276, Whittier, NC 28789; (704) 497-4113

Uncle John's dehydrated foods feature typical vegetarian recipes and come unsalted with separate flavor packets, so you take part in creating a meal to your liking.

500 Hathaway, PO Box 489, Fairplay, CO 80440; (800) 530-8733

Backpacker's Pantry's desserts are superb. In addition to exceptional foods, this company offers complete meals packaged for four persons. 6350 Gunpark Dr., Boulder, CO 80301; (800) 641-0500

All **Traveling Light's** foods were created to be made in their amazing Outback Oven. They offer a dozen fabulous entrees plus bread and other baked goods that double as dessert or breakfast. 1563 Solano Ave., #284, Berkeley, CA 94707; (800) 299-0378

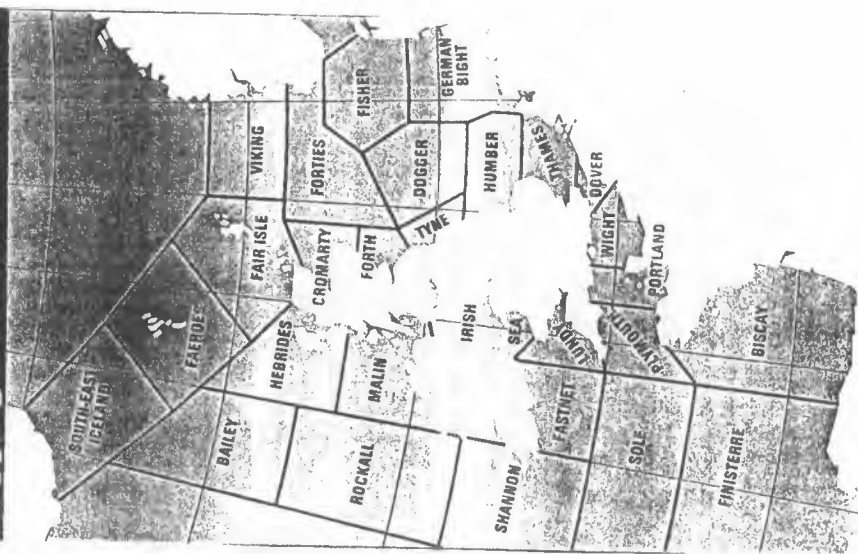
BEAUFORT WIND SCALE

For an effective height of 10 metres above sea level

Beaufort Number	Descriptive Term	Mean wind speed equivalent in knots	Deep Sea Criterion	Probable mean wave height* in metres
0	Calm	< 1	Sea like a mirror	
1	Light air	1-3	Ripples with the appearance of scales are formed, but without foam crests	0.1 (0.1)
2	Light breeze	4-6	Small wavelets, still short but more pronounced; crests have a glassy appearance and do not break	0.2 (0.3)
3	Gentle breeze	7-10	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses	0.6 (1)
4	Moderate breeze	11-16	Small waves, becoming longer; fairly frequent white horses	1 (1.5)
5	Fresh breeze	17-21	Moderate waves, taking a more pronounced long form; many white horses are formed (chance of some spray)	2 (2.5)
6	Strong breeze	22-27	Large waves begin to form; the white foam crests are more extensive everywhere (probably some spray)	3 (4)
7	Near gale	28-33	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind	4 (5.5)
8	Gale	34-40	Moderately high waves of greater length; edges of crests begin to break into spindrift; foam is blown in well-marked streaks along the direction of the wind	5.5 (7.5)
9	Strong gale	41-47	High waves; dense streaks of foam along the direction of the wind; crests of waves begin to topple, tumble and roll over; spray may affect visibility	7 (10)
10	Storm	48-55	Very high waves with long overhanging crests; the resulting foam, in great patches, is blown in dense white streaks along the direction of the wind; on the whole, the surface of the sea takes a white appearance; the tumbling of the sea becomes heavy and shock-like; visibility affected	9 (12.5)
11	Violent storm	56-63	Exceptionally high waves (small and medium-sized ships might be for a time lost to view behind the waves); the sea is completely covered with long white patches of foam lying along the direction of the wind; everywhere the edges of the wave crests are blown into froth; visibility affected	11.5 (16)
12	Hurricane	64 and over	The air is filled with foam and spray; sea completely white with driving spray; visibility very seriously affected	14 (-)

*This table is only intended as a guide to show roughly what may be expected in the open sea, remote from land. Above number 6 conditions are unsafe for small boats. In enclosed waters, or when near land, with an off-shore wind, wave heights will be smaller and the waves steeper. Figures in brackets indicate the probable maximum height of waves.

Shipping weather forecast areas



GPS Navigation Equipment

A Report by Michael Rochester

Obtaining the Kit

The expedition was lucky to be offered the opportunity to buy, at a heavily discounted price, two Garmin GPS45 Satellite Navigators, for which our thanks to Mr. Turner of Garmin UK. There are a number of companies offering competing products, all vying for a share of the small but growing interest in this new field. A number were approached but only Garmin and Mairead Molloy of Trimble UK responded positively – Garmin with their discount offer, and Trimble with the offer to loan us their ENSIGN navigator for the duration of the expedition. Both offers were taken up.

Both pieces of equipment are hand portable versions of the systems which have been available for ocean-going yachts for some time. Initially costing thousands of pounds, the price (in line with the trend for all new technology products) is slowly coming down to an affordable level. Both the Trimble and the Garmin have a retail price of around the £600 mark, or lower. This might seem to be expensive, but in my opinion is worthwhile when considering the power of the system and the benefits it allows the expeditioner to enjoy in terms of precision, economy of effort, and safety.

The GPS system

The Global Positioning System (GPS): how does it work? The system works by referring to a constellation of 24 satellites placed in very precise orbits by the USA Department of Defence. Each satellite orbits twice a day at an altitude of 20,000 km. and carries an atomic clock so that it knows its position both in space and relative to other satellites right down to the proverbial gnat's eyelash. By timing the signals arriving at the earth the GPS navigation unit can calculate its position in space, giving a readout normally in terms of Latitude and Longitude plus altitude. If poor satellite coverage conditions prevail, or weak signals are received, then the fix is likely to be two dimensional only, with degraded horizontal accuracy.

The accuracy of the system available to the Military is quite fantastic, literally to a metre at the earth's surface. However, this accuracy is deliberately degraded to about 50m at best for civilian use, probably to prevent technologically-minded terrorists using the system for their own guidance device. Furthermore, the Military can switch the system off or undertake maintenance at will which would render the GPS useless at worst, unreliable at best. However rare a likelihood this may be, it follows that backup 'traditional' navigation systems follows that backup traditional' navigation systems (plus the skill to use them) are essential. Potential to expand the satellite constellation exists; if and when this happens the system will be even more quick and precise than it is already.

It seems likely that GPS equipment will soon find its way into everyday life, perhaps first into cars as an onboard 'get-you-anywhere' road atlas, but possibly even may develop into a sort of worldwide 'postcode' system where addresses are described in terms of co-ordinates rather than words. As more people get to use this system its potential will be realised and more and more innovative ways of using its power devised. Big Brother is with us.

Getting to grips with the equipment

The Garmin GPS45 we received was literally from the first batch off the production line and claims to be the smallest, most battery-economic, state-of-the-art equipment available. The GPS45 has a generous 57mm x 38mm LCD display which can display five different pages: Satellite data page, Menu page, Position page, a Moving Map display, and a 'Highway' page (a graphic display which guides the traveller down an ideal track to his or her destination). Additionally a number of further sub-pages are available from the Menu to view waypoint lists and routes and to enable map datum/units setup, waypoint definition, route setup and operational setup (simulator/battery save/normal/autolocate options).

The first impression of the instruction manual are a little daunting; an avalanche of information comes across and no matter how sincere the manual writer's effort has been to break it into digestible lumps, it really

does seem to demand a lot of time to get the most out of the equipment. The manual alone. It is possible to buy for \$29 an instructional video which gives the personal touch and I am of the opinion that Garmin should make this a part of their standard package included in the price. I'm sure the \$29 could easily be reduced if this were made the norm and it would ensure that even the less technically-minded could gain access to the more advanced functions of the equipment. The learning-curve can be quite slow initially but, with persistence, a thread of common-sense eventually emerges and quite suddenly all the functions have been mastered. Passing on these skills verbally and by demonstration to others is very easy and speeds the learning process considerably, which brings us back to the instruct to the video ... it would really help.

Upon switching on, the system automatically sets about acquiring satellites and establishing its position. A major omission has been made in the manual over this as, after a fruitless 15 minutes of failing to find any satellites, the navigator shuts itself down. This is because it was 'born' on the other side of the world in the USA and quite reasonably expects still to be there when it is next switched on. It searches for the last set of satellites it saw and fails to find them. There is a way of overcoming this, using the 'autolocate' function which should be used whenever the unit moves over 300 miles while switched off. In reality this is always going to be the case with new equipment and the use of this feature should be written into the manual as routine procedure for initial setup, or better still made automatic as with the Trimble. It takes up to 15 minutes to autolocate and then displays the position page. If switched off and then on again it very quickly establishes its position (less than 2 mins. normally) because it roughly knows where it is.

The 'position' page (which displays automatically once position is fixed) shows location in any one of several systems, including Latitude & Longitude, British/Irish/Swiss grids, and UTM and can relate to any one of 102 International map datum. Selectable distance units available are Metric, Statute miles, and Nautical miles. It is essential when initially setting up the equipment to ensure that appropriate map datum, location co-ordinate, and distance units are inputted for the map/chart in current use, otherwise navigation errors will occur; once stored they remain even when switched off or the batteries changed. The light and compact 'packaging' of the Garmin and, perhaps more important, the user-friendliness of the displays makes it an excellent general purpose navigator for worldwide use. As a design solution it probably points the way for the future for this type of equipment.

Basics

At the very minimum the unit, as with the Trimble, instantly earns its keep by quickly and simply telling the user exactly where he or she is. This fact combined with normal map/compass navigation skills will be enough to get most travellers out of trouble. The technically nervous need go no further.

Once on the move the 'position' page will show location, speed, and track; but there are two far more useful options. Both the Moving Map and the "Highway" page give a very successful visual picture of one's passage. The Moving Map displays the position relative to waypoints logged in the memory. If one has been designated as 'GOTO' then a line links the present position to the waypoint. If the line is straight up the screen then the traveller is on course, heading straight for the waypoint; if it is a little left then he or she needs to bear left. Map scale can be adjusted from 0.5km to 600 km. along the long (vertical) dimension of the screen.

The alternative "Highway" page is a bit like looking at a perspective view of a straight road going off into the distance. The centre line is the ideal track to the next waypoint and, in the distance, a 'finishing line' can be seen across the road. A blob shows present location and moves left and right of the centre line to show cross track error and the finishing line moves closer as progress is made. A cheeky little arrow gives "turn this way you fool!" prompts to suggest how to get back on track when off track and when the hiker is one minute from his or her designated waypoint the unit beeps and displays a message that the hiker is approaching his or her next goal - a really good feature. Both of these pages display in addition to the graphic images figures for bearing, track, estimated time and range to the destination, figures which are constantly updating.

Complex routes are quite easily entered and once made actively guide the traveller with the absolute minimum of button-pushing to his or her destination, beeping cheerily on approaching waypoints and then advancing automatically to the next. If the unit is switched off for a while on an easy section, it will automatically identify where it is when switched on again, and then will give directions to the next appropriate waypoint in the route ... neat! This characteristic can cause problems and is an example of an instance in which the Garmin is inferior to the Trimble. If the route is simple then progress is straightforward, but if you set a convoluted route of maybe ten 'legs' where (say) on the way to No.6 you pass close by No.9, then the unit I captures' the nearest waypoint and would tend to take the orienteer on a shortcut, bypassing No.7 and No.8 and going direct to No.9. This is OK if a shortcut is acceptable but with the Garmin there is no choice, and so one needs to be alert to the possibility of it happening. On the Trimble a number of setup options exist to prevent this occurrence or at least to give the operator some control over what is going on.

Trimble : Garmin comparison

The Garmin is noticeably smaller and lighter than the Trimble, weighing in at 10 oz. with batteries as against 13 oz., although it does not slip so easily into a pocket. The antenna has to be oriented upright manually whereas the Trimble's ergonomic banana shape has no appendages to snag and slips easily into a hip-pocket; obviously moulded to the standard buttock! Battery

life is a really winning feature on the Garmin; both it and the Trimble have battery-saving modes which work by reducing the rate at which the unit updates its position, in that the less sampling it does the longer it can 'doze' in between and so save battery power for during these quiescent periods little power is used. In battery-saving mode the Garmin lasts twice as long as the Trimble, some 20 hours on a set of four Alkaline batteries. Both pieces of equipment come with soft cases, the Trimble's being quite a quality soft leather item but is nevertheless beaten on the design front by the Garmin's which not only protects the unit but has a transparent window which allows the unit to be operated while in its case; neat again! Only the Garmin claims to be 'nitrogen filled and waterproof', whereas the small print of Trimble's warranty suggests that it will be invalidated if the unit 'has been immersed or exposed to fresh or salt water spray'; not so good for the explorer, expeditioner, or ocean-going yachtsman.

All this concentration on the Garmin should not suggest that the Trimble ENSIGN is an inadequate piece of kit; quite the opposite, for it actually offers more in many ways but differently. What is actually the case is that the two come from different 'generations' in terms of technology, software, and design. I'm sure that if I dared to take a screwdriver to the cases I would find the same basic 'chip' inside running the GPS side of things and a second containing the software which gives each machine its operational characteristics. Trimble's software is 1992 vintage whereas Garmin's is hot-off-the-press 1994; and the difference shows.

Trimble's 56mm x 25mm LCD screen displays four rows of large, clear letters and, unlike the Garmin, fires up from 'cold' anywhere in the world without any button-pushing, taking about 15 minutes to acquire a constellation of satellites and display a location and then typically about one minute to reacquire if switched off and then on again. The digits are much more legible than some of Garmin's smaller offerings and a wider range of alphanumeric characters and symbols are also available. Ten spaces are available to spell waypoint names as against six for the Garmin, an advantage avoiding the need to invent excruciatingly brief abbreviations. A wider range of map 'datum' (123) appear to be available; however I wonder if this is actually the case in that with the Garmin's (102) they have simply grouped them differently? Whichever, both have more than most mortals could possibly need and are easily selected and installed when originally setting up.

The Trimble screens, with the one exception of the cross-track error, display one line which appears rather like this: [. . . O . . .]. They are purely in terms of letters and numbers and, I imagine, reflect the yachting origins of the system which has been shoe-horned into a (really quite attractive, ergonomic, choice of three colours) package. Personally, as a land navigator first and foremost I tend not to think in terms of numbers and abbreviations such as VMG (Velocity Made Good) but prefer visual images to which I can

relate directly to the hardware. I am not surprised if later versions of the Trimble follow suit, for it's just a matter of designing a new software chip.

Trimble's instruction manual is as good as it might reasonably be expected to be in helping to describe the workings of a fairly technical piece of equipment. Coupled with the slightly daunting screen-full of digits it causes a few hiccups at first, for one screen full of abbreviations and digits looks much the same as the next to the untutored eye! It would be wonderful if instruction manuals could be written by people who actually found the skills described therein difficult, but I suppose there is an obvious chicken-and-egg contradiction there. However, as with the Garmin, there is a definite 'hump' to get over before the learning curve steepens and you really get into the workings of it; persistence is all! I feel that the main fault with the manual is that the writing of complex routes is not really very well explained, with the operator only cracking this nut when he or she gets quite adept at button-pushing. I worked it out by accident! The complex route feature is rather compromised by the limited number of waypoints available; only 9 routes of 9 waypoints each (Garmin 19 and 30 respectively by comparison) are available, which limits the route-writing possibilities. However an easier and simpler solution is to enter up to the maximum of 100 waypoints (Garmin = 250) into the waypoint library and then to select each one individually as a 'simple route' destination.

In terms of out and out navigational sophistication the Trimble has it over the Garmin by a head as it has the facility to be set up in a significantly wider range of configurations and permits rather more precise control over the way routes unfold and information is displayed. It also offers a range of six languages (with English as the default setting), making it suitable for worldwide sales or use by international expeditions, something Garmin might well emulate. Against this, as I have said previously, it is rather specialised toward the sailing fraternity and daunting in its style of screen display, which offsets some of its advantages.

In practice the Trimble is not an ideal tool for the hillwalker who twists and turns his way in a number of relatively short 'legs' across the landscape. It is excellent for the ocean sailor or aviator who tends to undertake longer legs, making fine navigational adjustments as he or she goes, or for the land navigator to use to obtain a 'fix' before continuing to navigate conventionally. The feedback from the screen is not so immediate or so easily interpreted as the Garmin. Trimble might well consider moving fast to catch up and compete, for at the moment the Garmin offers the navigator on land or in the air somewhat more for much the same money. At sea I suspect the Trimble still has the edge, but for land use in particular and for general purposes the simplicity and user-friendliness of the Garmin makes all the difference when reaching for the hard-earned contents of one's wallet.

compass as the GPS navigators announce. It not actually have the fault in (although with the electronic flux-gate compass, the technology does exist). They show speed and direction once on the move, but at a standstill, as when getting ready to move off at the start of a 'leg', a separate compass is required to give the initial heading. Once moving, the GPS navigator will enable the traveller, by referring to the screen displays, to make fine adjustments to the track and to judge the range to the next destination.

A degree of healthy scepticism is necessary when using GPS, for if an error has been made in entering the waypoint details, then the machine will diligently direct to the wrong place. Micronavigation does not work especially well as sometimes the horizontal error from the machine will add to a slight grid reference error made when reading waypoint coordinates off of the map, and so result in a significant error on the ground. It is vitally important not to remove intellect from the business of navigating; slavishly following the GPS in 'head down/brain off' mode ignoring the evidence of eyes and the lessons of experience is unwise at best and dangerous at worst. There is no doubt though that when the navigational chips are down these GPS units will take a lot of the uncertainty out of making important decisions.

Field trials

Well, so much for the theory, do they actually work? Well Yes and no! Around and about in rural Leicestershire they performed well and inspired confidence, the Garmin especially so because of its ease of use. I really looked forward to putting them both to work in Montana but, as is often the case with technology, it sometimes lets you down at the crucial moment. So it was on this occasion.

On arrival in Basecamp, a spacious meadow flanked by mountains on one side and low hills elsewhere, close by the Front Ranges of the Rockies, all three machines (two Garmin and one Trimble) were fired up to enable them to locate themselves after the transatlantic journey. This was accomplished in textbook fashion and bodes well for the future. Satellites were acquired successfully and the waymark libraries were (rather laboriously) filled with the thirty-two location coordinates required for the proposed eighty-five mile hike through the Front Ranges. This was easier to accomplish on the Garmin than the Trimble as it seems that not only is the amount of button-pushing required less, but the software actually prevents stupid errors by the operator in entering the coordinates into memory. We used the Universal Transverse Mercator (UTM) Grid system to describe each location. This sounds pretty fancy but is actually hardly any more complicated than the OS Grid we all know and love, relying on a letter/number prefix to denote the general area and a six or eight figure reference to describe the location. For example, my home is located at SK853081 using

the OS Grid or at 3OU 0652/5837 using UTM. The great thing about UTM is that it works worldwide and is universal, unlike most of the other grid systems which only work well for individual countries. It seems likely that in time UTM will come into general usage. Returning to the equipment, it required only to enter the eight figure reference into the Garmin for the machine automatically to deduce the prefix; this was very handy as on the hike we moved from area 12T to I2U and there is nothing on the American map to indicate that this is in fact happening. The Trimble does not have this facility and does allow you to enter nonsensical references. In practice I loaded all the waymarks into the Garmin first then transcribed them, references prefixes and all, into the Trimble.

Exploratory short hikes toward the first waymark some 1.8km away suggested that everything was in order and so, with some confidence on my part and after a little basic training, the equipment was pressed into the hands of the Fire Leaders due out on the hike first of all. They seemed impressed with their new technology and I anticipated glowing reports.

"How did you get on with the satnav?" I inquired cheerily on meeting the said Fire Leaders in Basecamp after the first phase. "Absolute rubbish" replied Darren (never one to mince his words) tossing me the Garmin with a dismissive gesture. It had, for some reason, dumped all of its waymark library and had reverted to autolocate mode trying to reestablish where in the world it was supposed to be. It never succeeded, seemingly having gone totally 'on the blink', eventually shutting down having failed to autolocate. We counted our blessings in that we had a spare one ready to roll for the next phase!

The Trimble received a much more diplomatic review from Mike (a one time transatlantic sailor who knows about these things), who reported that in the closely forested country and deep valleys that typified the route, satellite acquisition was unsure at best and, unless five satellites were acquired, accuracy was unreliable. Nevertheless more than five satellites acquired produced pinpoint accuracy but was rarely achieved except on high ground and in the clear. In the daylight and good visibility which were the conditions mostly enjoyed by the walkers, this meant that the satnav only worked when they could already see where the heck they were! When lost in the undergrowth in some deep and wooded valley having trustingly followed a trail until it disappeared, the darned thing would not work. My own experience on the second hike phase carrying the Trimble was a little better as it really did get me out of trouble in the deep forest, but only because I was lucky enough to find a decent clearing on the flank of a hill where the machine could get a clear sight of the sky. Nevertheless it did save my bacon on that one occasion and helped significantly on others. It seems that any amount of tree canopy affects reception significantly, for when walking a lightly wooded ridge at over 7000ft I could still only get three satellites, which was not enough for accuracy and rather disappointing.

In phase two the second (healthy) Garmin was broken out for use by Margaret and it too immediately went "on the blink" in Basecamp, this time retaining all its waymark memories but failing to find any satellites. Despite trying every trick in the manual, including attempting to restore it to some sort of base line by removing the batteries overnight, programming in its current location to actually tell it where it was, and repeatedly using the autolocate feature, it never recovered and is now back with the manufacturers for repair. Further efforts with the first Garmin eventually achieved success after several attempts and sets of fresh batteries, and it was coaxed back into life to navigate another day. Of course it had dumped all its waymark library so had to be reprogrammed; more button pushing. Either we have been very unlucky or very incompetent with this equipment or there is a basic fault lurking in there somewhere which needs sorting; or it may be that there is some troubleshooting procedure that does not appear in the manual that would have got us out of trouble. Whichever, it baffled me and didn't work again. Throughout all this the Trimble carried on working in its unremarkable but competent way.

The first Garmin behaved itself during the second phase but suffered like the Trimble from poor reception in the valleys and forest. However it earned its keep in resolving a major navigational problem early on during the hike when the party got thoroughly confused by the terrain and it proved that they were actually one reentrant away from where they considered they were.

The third and final phase hikers experienced much the same as their predecessors, enjoying the benefits and frustrations of satnav in this less-than-ideal (but typical, it has to be said) country, getting by successfully using traditional navigational techniques backed up by modern technology, which is probably the best plan. I imagine that satnav could really come into its own on ice-caps, high moors and in deserts, where the country is by its nature more open and featureless. In mist or in the dark it would also provide a useful crutch upon which to lean; I look forward to trying it out in those circumstances. One Garmin will be tried on a school expedition in southern Africa next summer, and I hope to use the other in difficult conditions in the UK over the autumn and winter. The Trimble of course gets returned as it was only borrowed for the duration of the expedition.

Like any new tool, capabilities and limitations have to be learnt. It seems that from this first experience that it should form just another weapon in one's navigational armoury. Faithfully following the satnav and ignoring all the other signs could easily be a recipe for disaster but, when the reception conditions are favourable and the machine is not misbehaving, we can trust it in the same way as we do the compass. There is no doubt that the system and equipment will improve and that we will all benefit in time. The teething troubles experienced with the Garmin hopefully will be no more than just that; as a piece of design it works well but the reliability must be improved.

The Trimble... excellent screen displays, user-friendliness and graphics.

Would I recommend them? Tricky one that; a cautious 'yes' I think, but they cost a lot of money at the moment. In five years time hopefully they will be better, smaller and cheaper and my recommendation might then be rather less qualified. But if I were to set out to cross an icecap or a desert, definitely I'd have one in my pocket!

WE ARE SURVIVORS

This is an article for those born before 1950

We were born before colour television, sugar lump immunisation, frozen foods, Xerox videos, frisbees and the Pill. We lived before credit cards, split atoms, laser beams, dishwashers, tumble dryers, electric blankets, air conditioners, drip-dry clothes and before man walked on the moon.

We got married first and then lived together (how quaint can we be)! We thought "fast food" was what we ate in Lent. A "Big Mac" was an oversized raincoat and "crumpet" we had for tea. We existed before house-husbands, computer dating, dual careers, when a meaningful relationship meant getting along with our cousins and sheltered accommodation was where we waited for a bus.

We were born before Day Care Centres, Group Homes and disposable nappies. We had never heard of FM radio, tape decks, electric typewriters, artificial hearts, word processors, yoghurts and young men wearing earrings.

For us "time sharing" meant togetherness, a chip was a piece of wood or a fried potato, hardware meant nuts and bolts and software wasn't a word.

Before 1948 "made in Japan" meant junk, the term "making out" referred to how we did in our exams, a stud was something that fastened a collar to our shirt and going "all the way" meant staying on a double decker bus until it reached the depot.

In our day cigarette smoking was fashionable, grass was mown, coke was kept in the coalhouse, a joint was a piece of meat we had on Sundays and a pot was something we cooked it in.

Rock music was a grandmothers lullaby, Eldorado was an ice-cream, a gay person was the life and soul of the party and nothing more, and aids just meant beauty treatment or help for someone in trouble.

We who were born before 1950 must be hardy individuals when we think of the ways in which the world has changed and the adjustments we have had to make.

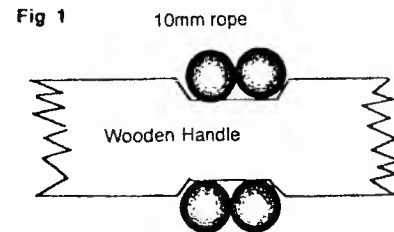
BUT, BY THE GRACE OF GOD, WE HAVE SURVIVED.

Toggles and Handles

T Once upon a time a long long time ago, a little old man was swimming his kayak ashore through a fair sized surf, when his hand became entrapped in the safety loop attached to the end of his craft. This is not a good feeling.

E I fill the extremities of the hull and drill right through. The rope runs loosely through this hole. Cut 300mm of the end of your wife's broom and you will have enough material for two handles. A hole can be drilled through the handle to take the rope, but I consider a notch cut right around the middle to be stronger (Fig 1). Secure the rope with a hitch. Add some whipping and it will never come off. Now to prevent it all flapping around and banging on the boat. Boat chandlers sell small plastic hooks which can be screwed onto the deck an inch or so further than the handle can reach. An ordinary

rudder gear can lead to bleeding, and bleeding could lead to sharks. Have fun and don't fall out!

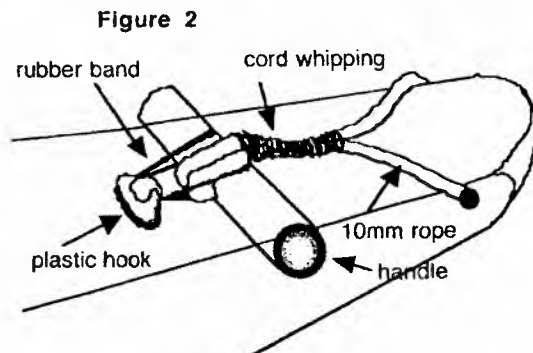


Learning from the incident the little old man added a wooden handle to the loop. On a stormy day much later, while floating around hanging onto this handle, he

reaped the reward. He survived an hour in the water before rescue. Holding a rope for a length of time becomes uncomfortable. A round wooden handle can be held one or two handed. It is positive to grip, enabling you to lift yourself higher to breath more easily. Changing hands is easy. Slide your hand down the rope and it strikes the handle without you losing your grip. When swimming a kayak through the surf you need to hang on very tightly or lose it. The handle must be strong and well secured.

But when not in use a flapping handle can be a great annoyance as it bangs against the hull. Take a look at the diagram. I do not trust the strength of many decks.

John Basemore



rubber band holds the handle onto the hook and will break free easily when needed or can be slipped off if you have time (Fig 2). When fitting them, remember rudders and handles conflict with each other. I would do my best to avoid clinging to that end of a ruddered boat if I had a choice. Cuts from

Coastal station closures backed

By NICHOLAS WATT

GOVERNMENT plans to cut the number of coastguard stations around Britain won support yesterday from the National Audit Office.

Ministers were accused last November of putting lives at risk with a five-year plan to close the Pentland, Oban, Liverpool and Tyne stations and to replace Portland and Lee-on-Solent with a single station at a new site. MPs from all parties urged them to reconsider.

However, the public spending watchdog said in a report that some of Britain's 21 coastguard stations dealt with few incidents. "The number of centres could be reduced without adversely affecting search-and-rescue operations, and there would be positive benefits in allowing more flexible and effective use of staff."

The report praised the service for sending out helicopters and lifeboats quickly but asked it to assess whether more could be done to reduce the number of false alarms.

• Light and Soul gone...

This year, 1998, sees the end of a 400 year story when the last 9 of the 150 lighthouses around our coasts will cease to be manned. By the Autumn all will be controlled automatically by computers based in Harwich and Edinburgh. Modern navigational aids have made the lighthouses less necessary to the big shipping companies that support and fund them. The use of automating technology cuts costs and enables the lighthouses to continue to function for the benefit of the rest of the sea faring community.

30, Albemarle Road
Cross Heath
Newcastle
Staffs ST5 9BN

Dear Paddler

STOLEN KAYAKS 9th Feb, 98

I would be very grateful if you would keep this letter for reference in the event of the following kayaks are offered to you for sale or they are found abandoned.

CONQUEST

blue with a black nose cone.

Kathy Chaloner (my previous surname)
Tel: 0782 629529

is written inside and pale blue strapping is tied to the and toggles.

MOUNTAIN BAT

yellow with old fixed handles to close to body of canoe for carrying. Green frayed strapping attached. Bad crack under seat, plated and glued, but still inclined to leak.

We have sent this information to all B.C.U. affiliated Clubs in the Midlands and the North West, local boat chandlers and anyone else we could think of, in the hope we can make them unsaleable. We would appreciate your help, so if you have any information

Please, please, please phone.

Kathy and Will 01782 629529
Work 01782 622132
Newcastle Police 01782 717071 Ref: C/N 1457/98 M/A

or your local police station.

Thanks for Listening,

Will and Kathy Boyce.

From: Chris Bolton <Chris_Bolton@compuserve.com>
To: John Ramwell <jramwell@provider.co.uk>
Subject: Advert in ISKA newsletter
Date: 18 March 1998 22:08

John,

Please would you include the following in the next ISKA newsletter.

Wanted. Sea kayak. Please ring with details. (NW England) 01704 541960

Thanks. Good paddling in 1998.

Chris Bolton

• Hypothermia update

Victims of hypothermia could be so cold that they go into suspended animation. Low temperatures protect their brains and other organs from harm during the time when there is no detectable heartbeat.

Two out of five patients who were apparently dead, were revived by a specialised rewarming method at Glasgow Royal Infirmary. Two others were brought round but died from other complications. The patients were checked for high blood potassium levels which indicate that life has

ended. But a low level means there is a chance of resuscitation provided the blood is removed and rewarmed to 37°C by pumping it through a by-pass machine. In this way heat is applied internally to the vital organs first. The process of resuscitation can take up to five hours so mechanical breathing and chest thumping apparatus is required since humans could not keep this going for that long. Doctors now say that a hypothermic body is not dead until it is warm and dead.

Building a Greenland Kayak

Andrew Wright couldn't be doing with the 'acrobatic bathtubs' that are modern kayaks, so he turned to the sea-wisdom of the Greenland Inuit for inspiration. One of their slender but seaworthy craft, built by eye to fit the prospective paddler, was just what he wanted. But pack-ice driftwood, seal-skin soaked in urine and whalebone are a little hard to come by in Worcestershire...

There is little in the standard modern kayak, of rock-roughened polythene or endlessly patched fibreglass, to lift the heart and inspire the affection of a lover of traditional boats. These acrobatic bathtubs are designed for white water and are most at home — and great fun — on winter rivers, when the water runs bank-high, the colour of milky tea. But for gentler summer days they simply will not do.

It was my search for a season-lengthening alternative that led me to the most beautiful of all kayaks, the modern expedition sea-kayak and its Greenland ancestor (see panel, page 59). A quick look through the price-lists of the former determined that I should try my hand at the latter.

The traditional method of construction does not encourage the production of exact replicas: no moulds or formers were used and the builder measured everything by eye. Overall length, width and depth were dictated by the prospective paddler's own dimensions — the kayak being designed to fit him like a glove. He sat in the cockpit, which was tight enough round his waist to require some effort to get in and out, with his knees forced out against the gunwales. In this way he could control the kayak in the waves, and right it in the event of a capsize. The volume of the boat was such that when laden with a captured seal the afterdeck was awash. Windage was kept to a minimum.

My own needs were not so stringent. My generous Anglo-Saxon frame and unsupple joints required an altogether looser fit. The placing of crossbeams had still to be such as to anchor me inside the boat, but I wanted to be able to eject, in the event of a capsize and unsuccessful roll, in rather less time than it takes to drown. For the Inuit "going for a swim" in Arctic waters merely substituted one kind of death for another.

I chose Douglas Fir for all the longitudinal members. This was dictated by local availability and the price of clear Sitka spruce. All other woodwork was in ash. Originally, Greenland kayaks were

made from driftwood logs brought down in the pack-ice by the circumpolar current from the forests of Siberia and North America. All joints were lashed or pegged, or both, and the frame was covered with seal-skin, or occasionally canvas. The preparation of the seal-skins was a special skill: they were first soaked in a vat of urine, then the half-rotted fur and residual fat was scraped off, the trimmings being snapped up as a delicacy. Sadly, kayak-building in Greenland is nearly extinct today, though attempts are being made to revive it.

A description of the building process I used is to be found in *Skin-boats of Greenland* by HC Peterson, an Inuit working for the Greenland Provincial Museum. I followed Peterson's advice in most things, often realising the error of my ways later whenever I had tried to be imaginative.

Construction

The deck-frame was built first, of two gunwale strakes three times my height in length — 17ft 9ins (5.4m) — by 3in x 3/4in (75 x 20mm), held apart by 12 crossbeams morticed in to them at an angle of 70° so that the two strakes flared outwards (see Figs 1 & 2). The three crossbeams over where my legs would be were progressively curved, to raise the deck for more room and to help shed water in front of the cockpit.

The mortices were sited to allow a gap between the crossbeams and deck-covering, and to allow for the planing away of some of the upper gunwale edge in order to emphasise the uptilt at bow and stern. Slots for 20 ribs were then cut in the lower edges of the gunwale strakes. These were spaced so that my bottom lay between two ribs and so that the rib and crossbeam mortices did not coincide.

The ribs themselves were of ash, 1 1/4 x 3/4in (30 x 7mm), and here I departed from tradition. The Inuit used green willow by choice, soaking the wood and then bending it while crushing the inner

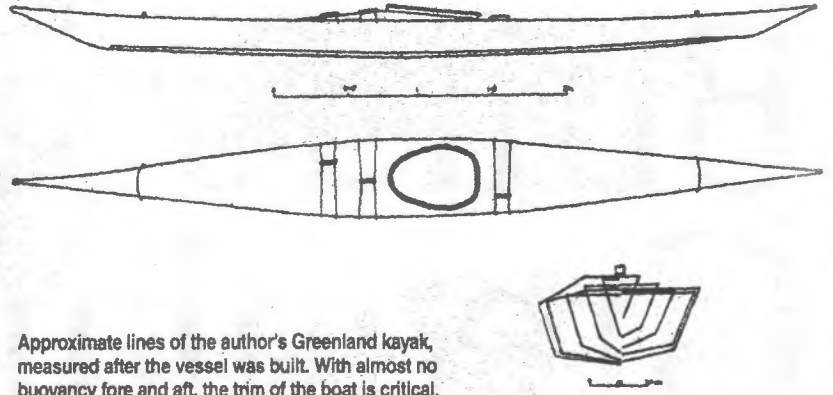
Skin boats of the Inuit

Decked, single-seater skin boats have been used for hunting in Arctic waters for centuries. Designs range from the somewhat canoe-shaped *baidarkas* of the Bering Strait, with their curious bifid bows, to the six-metre stilettos of East Greenland. Some are definitely calm-water craft, broad-beamed and with open cockpits; others are watertight and fit for Atlantic weather. Indeed, in the 18th and 19th centuries more than one ended up on our shores, blown hither by storms, with their occupants still alive.

The earliest recorded example, however, hangs suspended with its occupant from the ceiling of Trinity House, Hull. The inscription reads: "Andrew Barker, one of the masters of this house, on his voyage from Greenland, anno domini 1613, took up this boat and a man in it, of which this is the effigy." The effigy has a long-suffering, grim air which is immediately recognisable as the look of a man making a landfall on a beach full of holiday-makers in a precious but vulnerable craft.

A more recent and amicable relationship was struck up between British Arctic explorer Gino Watkins and the inhabitants of Angmagssalik on the east coast of Greenland during the early 1930s. In contrast to previous expeditions, Watkins and his men tried to emulate the Greenlanders' hunting methods and to become, like them, entirely self-sufficient in food. To this end, several members of the group learned to kayak — in boats specially built for them, as they were too large for their hosts' own craft — and eventually to roll hunt. Gino Watkins himself became highly skilled and was regarded as the equal of his teachers by the end. His self-confidence led him to hunt by himself, however — something even the Greenlanders were unhappy to do — and on one such solo trip he disappeared. His empty kayak was found floating in a fjord and soaked clothes were found on a nearby ice-floe.

One of the legacies of this tragic affair was an interest in sea-kayaking in Britain which grew into the sport as it is today. Expedition members brought back several East coast kayaks and film of Inuit paddling them and hunting. They paddled their boats on the Cam, inspiring one Cambridge undergraduate to build his own replica for a total of £3 — the earliest, and almost certainly the cheapest, kayak ever built in Britain. The original boats can still be seen at the Scott Polar Research Institute in Cambridge and at Atlantic College in Wales.



Approximate lines of the author's Greenland kayak, measured after the vessel was built. With almost no buoyancy fore and aft, the trim of the boat is critical.

fibres in their teeth. I preferred to steam mine and then bend them round a variable former (see Fig 3). This took a long day: the first dozen were finished in about three hours but the last couple at each end took nearly an hour apiece, with the curves growing tighter, the breakage rate rising and my temper shortening exponentially.

The stem and stern pieces were carved with central fillets to lie between the gunwales and scarf-jointed, with buried peg locators, to the keel. Everything was then lashed with polyester twine. No glue was used. A few joints were also loose-pegged, the pegs being held in place by the canvas covering.

Two stringers were cut and shaped to provide the required hull cross-section. Planing them so they lay flat against the ribs proved to be the most difficult woodworking job of all, and took another whole day. They were finally lashed, resisting vigorously, to the ribs and to the stem and stern pieces with yet more of Marlow's finest. Turning the framework right way up I climbed in, so as to determine just how little knee-room I could get away with when fitting the final crossbeam or *masik*. This curved piece is pegged to the top edge of the gunwale. The kayak is picked up by it, and it forms the part of the deck on which the cockpit coaming rests. It must therefore be both strong and slim, and for this reason I again strayed from authenticity by making mine out of laminated ash, using glue for the first time. A few small deck longitudinals, fore and aft of the cockpit, and some floorboards completed the structure which I then soaked in Cuprinol and oiled. A cockpit coaming of laminated ash with a lip for the spray-deck was also shaped on a former. Many Greenland boats used mast-hoops, bought at Danish trading stations for this purpose.


Resisting the siren call of seal-skin and its gourmet trimmings, I covered her with 15oz cotton duck, stretched as tight as possible over each end and then brought up over the hull and on to the deck and fastened with a running zigzag stitch (see Fig 9). This was repeatedly tightened and the seams were then sewn with two lines of running stitches which further tensioned the canvas. The cut edges were then buried (see Fig 10). The kayak was brought into the drawing-room for this procedure, as it was midwinter outside and I

needed conditions that were both warm and dry.

When the cocooning was complete, a star-shaped cut was made in the centre of the cockpit area and the flaps were hauled up and sewn to the inside of the cockpit coaming, using as much tension as was humanly possible. The completed covering became as tight as a drum. Two coats of Danish Oil and three of Dulux Weathershield saw to the waterproofing. This recipe has proved successful and was my own. The books gave no guidance — what on earth is "train-oil"? — and I absolutely drew the line at Hypalon.

For the final fitting-out I had to break with tradition yet again. Whale-bone is used for the false keel, secured with tacks made from antler. A colleague offered me a whale rib brought back from the Falklands by her husband, but its years in their garden had weathered it beyond usefulness. I settled for elm. The deckline tighteners were made from boiled cow shin-bones supplied by the butcher husband of another colleague. The shin-bones were shaped on my bandsaw — a mistake, as it now smells like an abattoir whenever it is switched on. These decklines and their bone accoutrements are a vital part of the kayak, holding the harpoon, throwing stick and knife and allowing prey to be secured on the deck for the journey home. Mine hold my sandwiches and a small bilge pump.

So how does she paddle? She is tipper than some modern boats but, when heeled over until the gunwale is awash, a secondary point of stability is reached. This makes her feel quite stable in a swell. She is definitely a wetter boat to paddle than a fibreglass sea-kayak as she lacks any flare to her bows, so I use a traditional Greenland design of paddle when I am feeling brave and an ordinary modern one when the sea gets up.

She cost me £250 to build and took three months, working evening and some weekends. Including the cost of an earlier, less successful version and some new tools, I have now spent around £700 altogether — about the price of a shiny new glassfibre sea-kayak! 

'Skinboats of Greenland' by HC Peterson is available for 380DK (about £33) plus p&p from the Roskilde Viking Ship Museum (see Useful Addresses panel on page 84 for contact details).