

looked aft to check her alignment. Close behind her a great wall of water was towering above her, so wide that she couldn't see its flanks, so high and so steep that she knew Tzu Hang could not ride over it. It didn't seem to be breaking as the other waves had broken, but water was cascading down its front, like a waterfall.¹

How was this liquid wall formed, that plowed into *Tzu Hang*, sweeping both masts and the doghouse away, to leave a half-swamped boat on the point of sinking, with a 6 ft opening where the cabin had been? Coincidence of several seas crossing just at the wrong time? I would be inclined to think so. But freak waves could possibly have a completely different origin: perhaps the enormous surge from an iceberg capsizing far to the south. It is only a hypothesis, of course, but so many strange things happen at sea. And icebergs can capsize, it's well known. . . Also there are glaciers, which can calve, dropping huge blocks of ice into the sea.

It should be noted that *Tzu Hang* pitched in 98° west longitude and 51' 20" south latitude, just inside the extreme iceberg limit, according to the American Pilot Chart for the months of December-February.

This hypothesis remains fairly unlikely for small yachts such as ours, which generally pass well clear of the iceberg area. But I do not think it can be completely discarded, particularly since the ice area is fairly close to the south when the boat is rounding the Horn.

Problems under way

Celestial navigation

I used the English AP 3270 tables (the equivalent of the American HO 249). Three volumes cover the whole world (two for sun, planets and moon, and one for the stars). A position line is quickly worked out with HO 249: a single entry for the stars, two for the sun and planets. The 1963 reprinting of HO 249 explains how you can use it without a nautical almanac until the year 2000. HO 249 is put out by the US Navy Hydrographic Office.

¹ From *Once is Enough*, by Miles Smeeton (Adlard Coles Ltd)

It is good if the sextant telescope can be easily removed to allow aiming with both eyes open when the sea is heavy, or for star sights. At dusk, one can make out the horizon much more easily with both eyes open.

For this trip I took only three star sights in all, as the sun was enough, navigation being simple on the high seas. I was content to draw a position line in the morning and a meridian sight at noon, except when nearing land, when I drew further position lines in the afternoon. It must be kept in mind that the afternoon lines sometimes involve errors due to greater refraction, particularly in warm regions. Using stars, there is no refraction and fixes can be incredibly accurate (to less than half, sometimes a quarter of a mile), which is invaluable when nearing a low coast or an atoll. Then night fixes can be excellent, but the sextant observations must be good. Without the telescope and with both eyes open, I often took very accurate star sights on moonless nights during my previous sailing. It would have been impossible using the telescope.

Time

A 4 second chronometer error means a 1 mile error in a fix; 1 minute means a 15 mile error at the Equator and about 12 miles in the temperate zones. Since the advent of radio there are no more problems; one could navigate with an alarm clock.

For time signals, I use Station WWV, which gives Greenwich Mean Time every five minutes, 24 hours a day, on 5000, 10,000, 15,000 and 20,000 kc/s. I was able to pick it up during the whole trip on my Technifrance radio, which has been aboard for eight years.

As far as chronometers are concerned, I use the big Fred wall clock which is powered by a little mercury battery. It is regular, losing three seconds a day, and its battery lasts six months. I liked this big clock a lot because I could read the seconds from the cockpit, thanks to its large hands. I also had a waterproof self-winding Rolex which did not leave my wrist for the entire trip; the strap never broke, as I feared it might. Very accurate and regular, it was the watch I used most for sights, as I could read it any place on deck that I happened to be at the moment of observation.