3

EVOLVING AS SKIPPER OR CREW

"A good sailor isn't fearful of high winds and big seas—he's petrified of the deep!"

—a favorite saying of Ernest Shackleton, commander of the 1914–16 *Endurance* expedition, and Frank Worsley, captain of the *Endurance*

At some time or another, all offshore veterans settle in their berth and ponder the hull skin that separates their tiny seagoing habitat from the great abyss beneath. Since the human mind is imbued with both a strong sense of survival and inductive reasoning, it's not surprising that most crews step up and care for their vessels. Nor is it surprising that we continue to see naval architecture and engineering advance and evolve. Sea sense coaxes a skipper to commission a refit, develop survival strategies (including a rational damage-control plan), replace tired rigging, upgrade firefighting gear, and take steps to avoid capsize.

This same sea sense leads skippers to develop an onboard routine that allows the crew a safe and enjoyable passage from point A to point B. Few land-based activities allow such complete control over day-to-day operations. However, this control also brings profound responsibility for both what skippers do on board and what they fail to do. Therefore, prudent skippers learn to match their decisions to the boat's strength, the conditions at hand, and the crew's abilities.

Skippers and crew find themselves continuously tested. Whether arriving, departing, or sailing in between, the never-ending changes in wind and sea reset the stage, even on familiar, often-repeated passages. Veterans of twenty-plus Bermuda runs will tell you that no two passages are ever quite the same.

Skills are typically acquired in incremental steps, and as discussed in the previous chapters, if your goals include long-range cruising, we recommend developing those skills closer to home. Even simple things should be part of the skipper's set of skills, such as knowing how to use an aft spring line when coming alongside a dock or to back against a forward spring line to outwit an offsetting current. We know that some voyagers learned to navigate on their way to Tahiti and lived to tell about it, but we also know such impulse voyaging more likely ends with less-than-ideal memories.

During a summer sail-training cruise, U.S. Naval Academy midshipmen and an active duty officer work out the time-honored skills of watchkeeping.

A seafaring New Zealander and good friend, Ross Norgrove always expressed his insights into cruising with a quizzically impish grin. Here's one of Ross's favorite observations: *More great voyages have been made despite rather than because of the vessel in which they were sailed.* This characteristically backhanded Kiwi compliment underscores the importance of a competent crew, the most valuable component in any voyage and the first line of defense when the going gets rough. True, a seaworthy boat is surely a safer boat, which is why we've included Chapter 12 to consider the attributes of seaworthiness. But the seamanship of the skipper and crew matter *(continued page 49)*

TRAINING OPPORTUNITIES

Local Learn-to-Sail Programs

Many boatowners never experience the value of a local sail-training program. While the quality of such programs can vary greatly, depending in part on the instructor's sailing and communications skills, many programs now have a stronger curriculum and better training process. US Sailing and the American Sailing Association are two primary overseers of sail training across the country, training instructors, developing standards, and publishing instructional materials. US Sailing uses sea trials to gauge their instructors' competence. For decades, Timothea Larr and Sheila McCurdy have helped guide US Sailing's National Faculty and Training Committee. The group annually gathers together professional and amateur sailors to develop training materials for sailors ranging from youthful beginners to experienced ocean passagemakers.

Sailing schools have put great effort into improving the instructional process. Like the U.S. Power Squadrons and the U.S. Coast Guard Auxiliary, they are committed to improving safe boating with engaging training opportunities.

Offshore Sailing School

Programs pioneered by Steve and Doris Colgate offer a fast track for entry-level sailors to gain boat-handling and sail-trimming skills. Much of the US Sailing curriculum came from Steve and other master trainers. Graduates of entry-level programs can often continue to higher-level courses within the same school and progress from basic boat handling to cruising skills that prepare them for chartering in remote locations or heading off on their own boats.

Small sailing schools across the country, such as Bay Breeze on Little Traverse Bay, Michigan, fine-tune their training with local conditions in mind. Every coastal or lake region has a unique set of weather patterns and challenges in the local waters—another reason why local training counts.

J/World Annapolis owner Jahn Tihansky, also the head sailing coach at the U.S. Naval Academy, checks over the running rigging on a new Navy 44 MKII. He stresses to midshipmen and civilian students that whether you are cruising or racing, vessel preparation can make the difference between a good and bad day on the water.

TRAINING OPPORTUNITIES, CONTINUED

Colgate's Offshore Sailing School, like many other sanctioned programs, uses textbooks jointly developed with US Sailing. The Colgates have sailing schools around the country.

J/World

Another sailing school, J/World, also offers great learning opportunities, with a greater emphasis on boat speed and competitive tactics—what racing sailors call performance sailing. Participants at the Key West, Annapolis, and other J/World bases spend a week learning the tricks with which the pros cross the finish line ahead of the rest of the fleet. At Key West winter weather conditions provide good sailing breezes to help ensure that onboard action is fast paced and full of learning experiences. Having a professional sailor guide you as you practice spinnaker sets and takedowns can clean up bad habits and add the nuances that translate into extra seconds saved in a mark rounding.

The Annapolis School of Seamanship

Without question, some skills are better learned on deck than in the classroom, but the reverse is also sometimes true. The Annapolis School of Seamanship provides one of the most effective shoreside training programs, and its founder/owner, John Martino, built a reputation for teaching cruisers and commercial mariners exactly what they need to know. His navigation programs merge theory with practical, hands-on piloting skills. Then he segues to the latest 3-D digital electronic charting simulations and blends both techniques. Simulator training is part of the classroom experience, as close to learning underway as a shoreside experience can be. His hands-on diesel lab and systems training prepare cruisers for the problems that always seem to crop up along the way. In addition to these lessons for those cruising under sail or power, the school offers U.S. Coast Guard licensing training and special underway learning experiences.

The Annapolis School of Seamanship runs both recreational and Coast Guard–approved licensing courses at a variety of locations nationwide. A growing trend among boaters is to seek specific information on topics ranging from electronic navigation to diesel repair, and these professional training programs are a good source for such learning.

Hands-on Safety Seminars

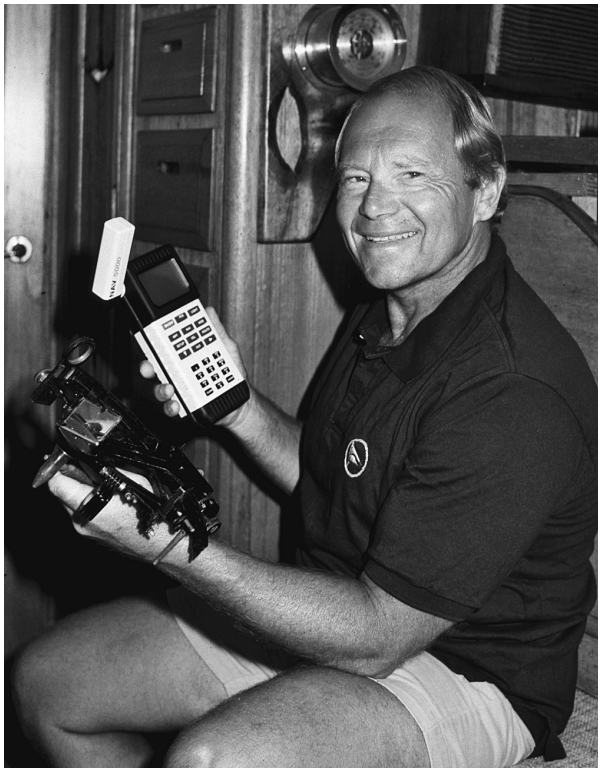
The Hands-on Safety Training Opportunities sidebar later in this chapter describes several training sessions aimed specifically at emergency situations.

For more on organized learn-by-doing training opportunities, see The Lure of the Rally in Chapter 1.

more than the seaworthiness of the boat. In the safety triangle discussed in Chapter 1, seamanship is the longest leg.

We can see Norgrove's salty wisdom in many legendary stories. The heroic and legendary seamanship of Frank Worsley is one of the best examples of all time. Worsley, Sir Ernest Shackleton's stoic sea captain and master mariner aboard ships as well as small craft, brilliantly displayed his skills piloting the *Endurance*'s 22-foot lifeboat, the *James Caird*. Worsley successfully maneuvered the lifeboat in an escape mission from the ice-choked waters of Elephant Island in the Antarctic Convergence to the relative safety of South Georgia Island. Against the odds, this incredible voyage resulted in the eventual rescue of the *Endurance*'s crew. These men had spent more than 18 months shipwrecked in the unforgiving Antarctic —living on an ice floe and enduring unimaginable hardships and deprivation.

The *Caird*'s 26-day voyage crossed 700 miles of the roughest ocean in the world and remains a standard for measuring great seamanship skill (along with an ample dose of good luck). It's a case study for those interested in how far the human will and spirit can be stretched. Nearly shipwrecked before making landfall at the cliffs on the southwest side of South Georgia, Shackleton, Worsley, and four shipmates were anything but home free after stumbling ashore. Their final challenge was to traverse an uncharted mountain range to reach help at the Stromness whaling station. Met initially by disbelief, their arrival led to an all-hands effort to recover Shackle-



I recall the first time I shot a round of star sights with a GPS unit to grade my work. I would like to think the Selective Availability scramble put the GPS fix off, rather than my fix being a mile off. But in truth, a celestial fix that's only a mile off gets a nod of approval from most navigators. (Courtesy Lenore Naranjo)

ton's crew, and Sir Ernest once again arrived on Elephant Island, more than a welcome sight for the rest of his stranded crew.

True, Shackleton's can-do attitude contributed to getting his crew into trouble in the first place. Some attribute this advertisement for the voyage to Shackleton himself: "MEN WANTED: FOR HAZARDOUS JOURNEY. SMALL WAGES, BITTER COLD, LONG MONTHS OF COMPLETE DARKNESS, CONSTANT DANGER, SAFE RETURN DOUBTFUL. HONOUR AND RECOGNITION IN CASE OF SUCCESS. SIR ERNEST SHACKLETON." That attitude, together with his leadership in the face of adversity, made possible the crew's rescue. However, the crew themselves played a vital role in their own survival. Working as a team, Shackleton's crew possessed a rare tenacity. They showed their ability to rise to any occasion, dealing with unforeseen circumstances and using their carefully honed skills and talents to cope with what fate dealt them. Competence and toughness allowed them to persevere while stranded on the ice floe. The crew on the *James Caird* endured the Drake's Passage crossing in a proverbial cockle shell.

Shackleton's benevolent leadership skills and Worsley's consummate seamanship held the crew together throughout their ordeal. In his book, *Shackleton's Boat Journey,* Worsley recalls conditions en route to South Georgia Island:

"We rolled and plunged along in the dark. . . . Dark hills of water reared suddenly . . . ahead and astern capped by gleams of breaking seas. A hiss of water at the bows as she ran heeling down a long sea. Dark shapes of sails overhead and forward bellied to leeward. Drenched through again and again there was yet a certain satisfaction in holding her to her course."

The days of adventure-seeking gentlemen enduring such ordeals appear to be mostly behind us. For better or worse, today's average boater likely spends more time dealing with refrigeration system malfunctions than worrying about running into slabs of ice. But the challenges confronting today's sailors should be met as the crew of the *James Caird* met theirs. Weigh your options, use well-tested seamanship skills, and anticipate the vessel and crew's attributes and limitations.

Many of the most competent sailors I've met developed their seamanship skills both learning by doing and under the guidance of others. Some launched their first boat and sailed, rowed, or steered a tiny outboard about the same time they were learning to ride a bicycle. Others started with junior programs, family cruises, or community sailing and then carried their sailing interest farther afield. Getting a start in sailing before adolescence has set the hook for many competitive racers and serious cruisers, but plenty of highly competent recreational mariners didn't begin until adulthood.

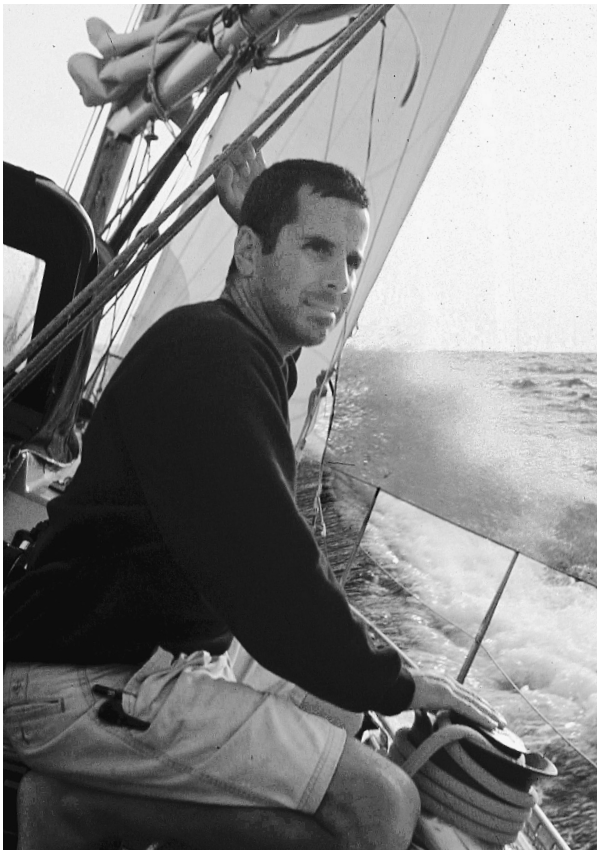
Two key factors affect the best approach to learning: the type of boating skills you hope to acquire, and whether you need more theoretical knowledge or boat-handling experience. For both, training options are available to help reach your goal. We've listed some in the accompanying sidebar.

In my own case, I acquired skills in a number of ways. Messing around in boats as a child led to a meaningful Sea Scout experience, dinghy racing in Southern California segued into MORC (Midget Ocean Racing Club) racing, and a young family nudged us toward cruising. Between my family's voyage around the world and our next cruising stint, I ran a full-service boatyard, occasionally spending time racing with clients and delivering boats to and from the Caribbean and other destinations. It was a good time to become more familiar with the seafaring syllabus, so I taught myself what was needed to acquire a U.S. Coast Guard 100-ton license. Operating commercial small craft helped me gain a feel for the nuances of the International Regulations for

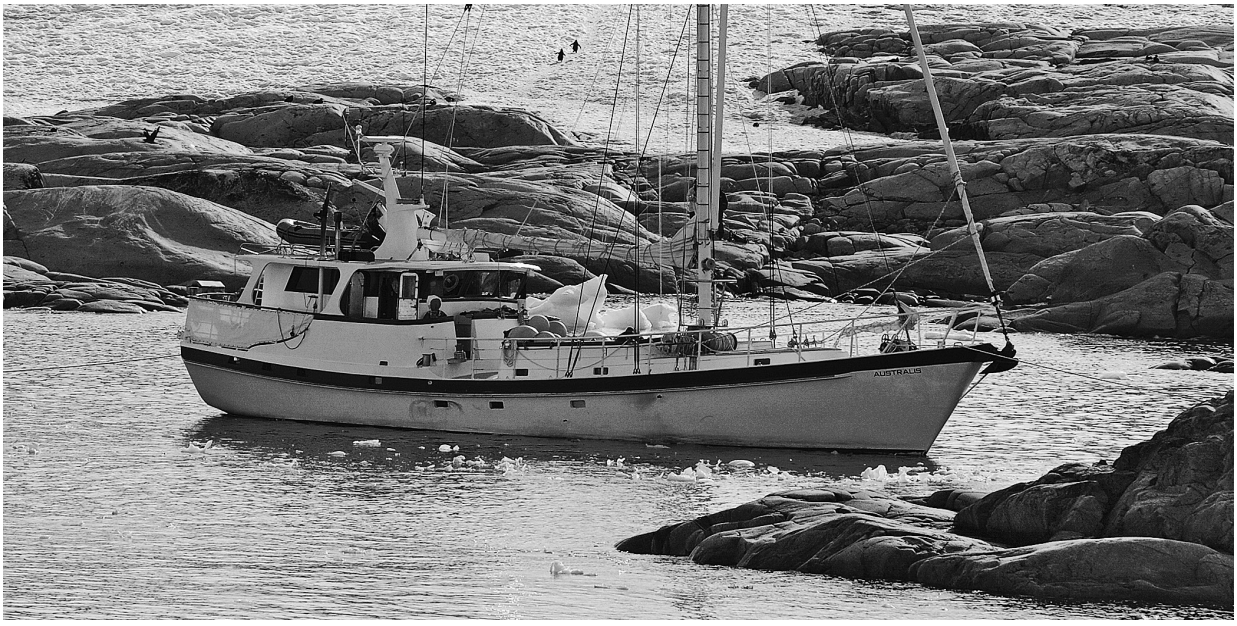
Preventing Collisions at Sea (COLREGS) Rules of the Road—the lights and shapes and the stand-on and give-way requirements.

I also took a course on astronomy and the spherical geometry implications of celestial navigation. Until then I had been a plug-and-chug worksheet devotee, eventually moving to a programmable calculator to solve the celestial triangle. Finally learning the theory behind what I had been doing with the sextant and time calculations was rewarding, albeit a little anticlimactic. After all, despite my less-than-stellar grasp of the principles behind solutions to the celestial triangle, my practical, cookbook approach had gotten us around the world. Today, at the Annapolis School of Seamanship I teach the arcane science and history of John Harrison and his chronometer, including explaining why solving the celestial triangle to derive latitude and longitude still makes sense in the age of GPS. But I don't lose sight of the most important job at hand: coming up with an accurate and reliable fix every time the need arises.

Learning a task in a classroom and performing it at sea can prove to be quite different. For example, in one of my navigation classes the brightest students grasped what it took to reduce sights using trigonometric equations and a handheld calculator. In the final exam the class went to sea and had to find an offshore tower. Soon after setting off on a lumpy sea with big swells, the skipper and two thirds of the crew—including the most gifted students—became



Join others on offshore passages and races. Time at sea with a good crew and capable vessel is time well spent.



Most training cruises are not quite as expeditionary as those aboard Australis*, which regularly sails between Cape Horn and Antarctica, and recently accompanied filmmakers and adventure sailors on the 100-year anniversary recreation of Shackleton's escape from Antarctica.*

so violently seasick that they could take few sights and no one could sit at the chart table long enough to plot a line of position (LOP). One of the underachievers in the class popped up with an RDF and efficiently took a series of bearings on a weak beacon signal, crossed it with his sun LOP, and navigated the crew toward success.

You can acquire learn-by-doing skills through sailors in a local marina, an active yacht club, or a good sailing school. This is the modern recreational sailor's equivalent of the traditional mariner's before-the-mast training to hand, reef, and steer. Skills for setting sail, reefing, line handling, and general boat handling comprise a good portion of seamanship. Even when you're excited about turning your attention to outfitting and preparing a vessel for a specific cruise, there's good reason to continue building your skills.

ATTRIBUTES OF A GOOD CREWMEMBER

Capable crewmembers are attuned to the vessel they're aboard and the mission it serves. Daysailors, ocean racers, and long-distance voyagers each face a particular combination of challenges, and their skills evolve to meet those demands. For example, foredeck crew on a race boat must be especially physically fit and agile and possess sail-handling skills they can also use aboard cruising boats. When it comes to handling ground tackle in bad weather, however, racing sailors often come up short. Racing crews might deal with a gale at sea or while tethered to a dock or club mooring, but they seldom face peril on an anchor rode. As a result they tend to see an anchor as clutter on the forepeak and therefore may prefer a lightweight aluminum anchor that can be disassembled and hidden away.

Cruisers, on the other hand, spend more time on board with a lower percentage of time underway, so they're more likely to encounter bad weather in anchorages. They stake the well-being of vessel and crew on the anchorages and ground tackle they choose. Of course, cruisers also need the skills to cope with heavy weather at sea.

The goal here focuses on acquiring the versatile seamanship needed by capable cruisers, defined as an array of skills equal to almost all occasions, except perhaps the extremes encountered by adventurers as fearless and imprudent as Ernest Shackleton. Five key attributes form the foundation: mental acuity, physical agility, vessel-handling skills, ingenuity, and forehandedness. By no means are these the only attributes shared by proficient mariners, but to some degree they're common to all competent sailors.

Agility and fitness are one side of the crew competency coin, and the flip side is more cerebral and involves effective decision making. Those who cultivate both usually fare best.

Mental Acuity

Of all the seafaring attributes I've admired, I consider mental acuity most notable among capable long-distance voyagers. Perhaps the word *savvy* best describes this reflexive wisdom that emerges from a combination of experience and decision-making ability and is tested and augmented in every new encounter. More than versatility, this acuity involves a hair-trigger action for the correct solution sooner rather than later.

Not long ago I read an account of an encounter with Ambrose Light. *Axel Spirit*, an 819-foot merchant ship, had been anchored in the open roadstead off Long Island. It got underway at night, in good visibility, to make the short transit into New York Harbor. The master gave the second officer the course to steer. Then the bridge watch noticed that the ship's track was directing it toward a potential allision (collision with a fixed object) with the tower.

The master approved a 5-degree course alteration to port, but a side-setting 1-knot current negated the effect of the small correction and the tanker's starboard side struck the light tower and tore away most of its structure above water. A subsequent National Transportation Safety Board (NTSB) investigation found that the master "failed to use all available means to determine the vessel's position."

Given all the formal training and certification required to operate a tanker carrying 441,000 barrels of crude oil, how could such an incident occur? In truth, even with years of class time, required formal training, and corporate oversight, we can't always prevent operator error, especially when communications break down. In this case the lowest-ranking member of the bridge team, the lookout, saw the developing problem unfold and knew a larger course correction was needed, but the mate and master failed to perceive the strength of the side-setting current. We also need to consider having one's "mind in the game." Standing watch requires absolute vigilance and situational awareness, and when attention wavers, bad things can happen. In this case, Ambrose Light came to a sad end when its remains had to be dismantled. As sailors and ship captains had in the past approached the busy harbor, Ambrose Light had served as a welcoming beacon that validated their piloting.

Physical Agility

Crewmembers who are to contribute fully to the operational routine of the vessel must be boat-agile as well as physically fit. Mobility aboard a docked sloop is one thing, but if you've ever patrolled the foredeck of that same vessel while beating to weather in a steep seaway at 0100 you know that the bow can pitch down faster than your body can follow. In those conditions your strength and agility, along with knowing the location of every handhold along the way, can be what keeps you upright.

The maxim "one hand for your ship, one for yourself" has likely been part of seamanship since the ancient Dorians explored the coast of Greece. Today, it's still unfailingly passed along from old salts to young apprentices. It's simple common sense but remains effective advice regardless of the latest technology. This simple guideline helps prevent crewmembers from falling overboard. Today, the U.S. Coast Guard—and other coast guards around the world—continuously remind boaters of the value of wearing a life jacket. US Sailing, the national governing body for sailboat racing, continues to fine-tune its guidelines for harness, tether, and jackline use. Agility may get short shrift in some of these discussions, but it's as important as purchasing safety gear from the local chandlery. It's a given that you need the necessary safety gear on board and in good working order, but you must also be proficient in its use—a proficiency developed at sea.

Onboard agility goes beyond being able to cross a swaying deck and remain aboard. Agility is needed to go aloft to re-reeve a halyard or repair a fitting. It may include skills such as donning a mask and flippers and going over the side to free the prop or rudder from a line. Even in a gentle seaway, when working in cold water you'll be amazed how vulnerable you feel under that pitching stern, how quickly exhaustion overtakes you, and how difficult it is to direct your energy to the task at hand—being fit and agile will help.

A fit, agile bowman is always a big plus. Even aboard the most sedate cruiser, situations arise that require someone fit enough to go aloft or over the side to clear a fouled prop.

A crewmember may have to turn an inflatable dinghy into an impromptu pushboat or haul a storm anchor to windward. A shorthanded crew needs to be as versatile as possible, and agility and overall physical fitness make it much easier to learn new techniques and implement them in rough conditions.

Early mariners needed much more physical strength than we do today, thanks to improved design and engineering. Even so, at times a strong, agile crewmember is the most valuable hand on board. A "tug-yourself" trip to the masthead or a hand-over-hand descent down the anchor rode to inspect the anchor's set can quickly convince someone that sailing or cruising is indeed a physical activity and that a reasonable level of fitness can pay big dividends.

To be able to perform efficient work on deck, the crew must adapt to the motion of the boat underfoot. Seakindly racer/cruisers like the venerable Navy 44 MKI offer wide side decks and an evenly cadenced pitch and roll.

The smaller the crew, the more manageable the sail plan should be. Adding lazyjacks and a sail-catching cover and running all lines aft to the cockpit makes it possible for a shorthanded crew to handle trimming and reefing requirements.

Vessel-Handling Skills

In the era of iron men and wooden ships, an entry-level able-bodied seaman was expected to "hand, reef, and steer"—meaning that he could haul up sails, tuck in reefs, and hold a steady course during his jig at the helm. When Richard Dana, lawyer, politician, and author, published *Two Years before the Mast* in 1840, few sailed simply for the fun of it. Today the tide has turned, and commercial sail is nearly extinct. However, that three-part job description remains the backbone of coastal and ocean sailing and a good basis for judging the competence of any new crewmember. By enumerating what skills are needed, skippers can share responsibilities with their regular crew in a logical and equitable fashion. The larger the crew, the more specialized individual roles tend to become, but for safety's sake and crew morale and engagement, we should always welcome overlap.

The verb "hand," originally describing the act of hauling on a halyard or climbing the rigging hand over hand, now refers to most sail and line handling. Able crew have additional skills under the "hand" banner that go beyond hoisting sail and hauling ground tackle. These include tasks such as handling a tender, stepping a spar, repairing rigging, or unpinning a rudder. We can use the term to refer to most actions that require lifting, hoisting, and operating running rigging. We cover boat handling in Chapter 4 and line handling in Chapter 5.

Whether you've known the boat you're sailing for a decade or you've just stepped aboard, you should become as familiar as possible with every line, valve, and electrical cable. Unfamiliarity is one of the biggest dangers during an offshore passage, and a bewildering deck layout or through-hull array, for example, can compound a difficult situation.

Experienced sailors aboard a new boat spend time determining what lines lead where, and especially

for a delivery, they may bring along some 3M long-life silver masking tape and a waterproof marker to add temporary labels to rope clutches, halyard leads, manifold valves, and electrical panel breakers. This simple effort can prevent mistakes such as releasing the wrong line or selecting the wrong fuel valve. For example, when a crewmember attempts to release a down guy held in a rope clutch and inadvertently blows the spinnaker pole topping lift, the result can be more than just a big surprise to the bowman.

The versatility of a sail plan is as important as its ability to deliver high-end performance in average wind strengths. A capable crew knows how to harness lift and mitigate drag in a variety of wind and sea conditions, and they recognize that a roller-furling jib and roller-furling mainsail do not cover the whole range of weather possibilities. Many cruisers discover that the only way to avoid having to run the diesel auxiliary frequently (and installing a larger fuel tank) is to carry and know how to use specialized sails for light air and heavy weather. A storm jib and storm trysail make sense for the latter, but light-air sails for single-digit wind velocities require some forethought. We'll look in detail at sail handling in Chapter 7. For now, it's enough to say that having a storm jib, storm trysail, and light-air sails aboard does little good unless the crew knows how to fly them. Light-air sails can be tested when light air arrives, but you'd better know how to set the storm sails before they're needed.

The ability to reef is the second of the three vessel-handling attributes of the able seaman. The fact that it isn't lumped in with other "hand" tasks highlights its importance. Even in a world of electrical relays and a ballast load of batteries, reefing still requires significant crew interaction. Modern light-displacement, mainsail-dominated, agile sailboats keep their crews in sync with minor changes in wind velocity and the reefing actions required.

Capable cruisers tend to reef before a reef is needed and are much happier to shake out a premature reef than face the task with 10 knots more breeze than can be reasonably handled with the present spread of sail. In contrast, race crews hold off as long as possible, flattening and thus depowering the mainsail by means of sheet, vang, traveler, and outhaul adjustments and tucking in a reef only when significantly overcanvassed, but this approach requires multiple skilled hands and careful boat handling. (The ins and outs of efficient reefing are detailed in Chapter 7.)

The ability to steer a steady course is the third trait in the able seaman's vessel-handling repertoire. This too is still a good test of the modern recreational mariner. In addition to maneuvering in tight confines or being among the first tier of competitors charging a starting line, steering is a talent that makes you comfortable as a boat handler. The learning process begins with discovering how a vessel reacts to rudder angle and how doggedly it *carries way,* or maintains motion through the water once the sails are completely luffing or the engine is in neutral. So that all crew gain the feel of "coming alongside," we recommend practicing the skills of arriving and departing a dock or mooring. The cardinal rule is to arrive with as little way on as possible; the heavier the vessel, the more significant this becomes.

Today's sailboats and motorsailers with a low ratio of sail area to displacement depend more on the diesel engine, although too many sailors try to ignore it. But this trusty but often maligned fuel-burning source of propulsion is a true work of genius. We should recognize our reliance on the "iron genoa" for propulsion and to generate energy. The diesel engine has grown ever more efficient and more compact over the years and is the engine of choice for sailing

Modern reefing is far less dramatic than reefing from a yardarm, but the midshipmen on this transatlantic voyage nevertheless had many occasions to master the skill of tucking in and shaking out reefs.

Midshipmen at the U.S. Naval Academy undergo a fast-track training program using sailboats for seamanship training and as a leadership laboratory. Sailboat racing and cruise training are both available. Volunteers like the late Rear Admiral Henry Morgan teach midshipmen about sailboat racing and commanding a nuclear submarine. These experiences on the water align with course work in navigation and other seamanship training.

Many sailors can steer, trim, and track a course on a chart, but few can find a fuel line leak on the suction side of the fuel pump. If you can, you'll prove your value over and over again.

auxiliaries. But too much reliance on its thrust turns sailing into powerboating.

Every crewmember on a sailing vessel equipped with a diesel auxiliary needs to know when and how to start and engage the engine. Statistics show that sailing crews tend to call on the engine in times of emergency, such as performing crew-overboard rescues. Since there's always a chance that you can't use the engine because of a line around the prop or a victim vulnerable to injury from spinning blades, however, the crew should practice overboard rescues under sail as well as under power.

Hand, reef, and steer. In coming chapters we'll expand the list of attributes essential to passagemaking in small craft and suggest how to avoid the seven deadly sins of seamanship.

Ingenuity

The classic TV series *MacGyver* elevated the handyman to rock-star status and drove home the value of an individual who can jury-rig a solution to almost any problem. Such skills are never more appreciated than on an ocean-crossing sailboat, where sailors, like the crew of a space station, are truly on their own. An ability to diagnose problems and come up with viable solutions even when the right parts aren't readily available will always be worth its weight in gold.

To be truly ready to head to sea, a crew needs to be able either to cope with mechanical/electrical breakdowns or do without the convenience provided by the malfunctioning system. Fixing breakdowns requires membership in the tinkerer's guild, a cult of do-it-yourselfers who can step in and turn the lights back on or fix an autopilot that has gone on strike. They know how to substitute a string of light bulbs for a 12-volt DC voltage regulator, use hose clamps to help splint a broken reaching strut, or mix a batch of epoxy to rebuild a broken fuel filter housing. MacGyver is always welcome on a boat.

Ingenuity comes not from clairvoyance but from technical knowledge. Sailors who understand Ohm's Law, Peukert's equation, and other basics of DC circuitry are more likely to figure out how to get the power back on. Solutions to problems arising offshore stem from the collective knowledge of the crew.

Forehandedness

Every capable mariner thinks ahead and stays mindful of the changing conditions likely to influence what's happening aboard a small craft. The concept of forehandedness applies to implementing changes demanded by a new landfall or the influence of a new weather system. Experienced cruisers get so accustomed to sifting data on charts and in the *Sailing Directions* and cruising guides about the waters ahead that they can experience a déjà-vu feeling on reaching landfall. This anticipatory awareness helps temper the unexpected and often leads a crew to note an adverse change well before it can cause a problem.

Planning ahead entails developing a detailed approach to a passage or a boat project, but it also requires remaining flexible enough to handle the unexpected. There's always more shoal water ahead than we expected, figuratively as well as literally. That's why it's important to cultivate the mental agility to cope with new situations and arising challenges, a skill perhaps even more important than planning ahead. As an insightful flag-rank military officer once said, "The best of battle plans seldom withstands the first volley." What separates success from failure is often how well the skipper and crew respond to changing circumstances.

MY EVOLUTION AS CREW
Lenore Naranjo

Ralph and I, together with our children, were sailing along the Coromandel Peninsula in the Hauraki Gulf of New Zealand, having left Auckland to head for Great Barrier Island. The weather had turned black and nasty. We had tucked in a reef, sent the kids below, and put in the hatchboards as we watched a wall of black clouds roll our way. A half mile to windward, a 100-foot fishing trawler was hit by a gust and heeled to its rail. Ralph was on the helm, concentrating on the wind line and already easing the sheet. I realized that the weather would be upon us in a matter of seconds and it was time to drop the mainsail rather than add a deeper reef. As I headed to the mast, *Wind Shadow* was knocked down so far that at one point the mainsail and spreader tips were in the water. Holding onto the gooseneck with one hand, I released the halyard brake with the other and clawed down the stubborn mainsail. Gusts of about 50 knots momentarily turned the surface of the sea white, but with the mainsail down and only the small staysail set, we recovered.

Onboard agility played a key role in my ability to respond to the squall. Time underway in tropical trade-wind conditions had familiarized me with the boat's motion and rigging, so I was able to accomplish that task without much forethought. I think it's vital to develop a strong sense of "boat" and all things affecting its motion. Fortunately, this incident was an exception rather than the rule, but long-term shorthanded cruisers can't afford a habit of waiting with sails up for a downburst to hit.

Toward the end of a long passage, we always felt joy when we saw flocks of seabirds heading home for the night and we knew landfall was not far off. We'd always compete to see who could be first to shout out, "Land Ho." It was glorious to see that little bit of green on the horizon and to know that all our sextant sights and plots on the chart had led us to our destination.

Our little hard-bottomed dinghy took us on some amazing rowing and fishing expeditions, too. We became accustomed to donning snorkeling gear, leaping over the side after a cursory look to see who, or what, was about, and spending an hour looking at beautiful fish and reefs.

It took time for me to evolve into a skilled, productive, and beneficial part of our shorthanded crew, but my strong desire to see new places and share them with the children bolstered my ability to put up with occasional hard times. Along with this sense of adventure, however, came the responsibility of lessening the risks. At times this meant reefing early, and at other times it meant knowing the political and security atmosphere of our destinations. In addition, I learned to feel pending weather changes and heed the portents of a rolling shelf cloud. *(continued next page)*

MY EVOLUTION AS CREW, CONTINUED

So many things helped me meet the challenges of open-ocean sailing and the cruising life, from becoming a boat-agile sailor, discovering and honing my sense of adventure, to enjoying the small pleasures along the way. The following thoughts underscore what Ralph has written in this book:

Sailing skills go way beyond sail hoisting, trimming, and tacking. This book points out the importance of close-quarters boat-handling skills, handyman abilities, and above all the need to quickly reach the right decision in varied situations. This ability to decide on the fly is one of the most important skills to develop in the transition from crew to watch captain and to skipper.

Handling a fully crewed race boat is different from handling a midsize cruising boat. Doublehanders have more in common with singlehanders than with eight or ten crew aboard a 44-foot race boat.

Although many new vessels are designed for less agile, less knowledgeable sailors, that doesn't negate the importance of traditional boat-handling and seamanship skills. This know-how will come in handy when the power quits or the bow thruster sucks up a spring line.

GPS, chartplotters, AIS, satellite phones, power winches, and so forth can create a false sense of empowerment. Learning to sail without the gadgets is like putting a little extra cash in your savings account. A rally to the Caribbean has its place, but crews must realize that once they set sail, they're on their own.

Spending time at sea and living aboard often begins with the pure pleasure of regular weekend getaways.

Practicing crew-overboard drills, firefighting, damage control, and other emergency procedures will drive home their step-by-step procedures and help you recall what to do when it really becomes a necessity. But it's even more important to practice the methods and behaviors that prevent the need for such interventions.

Aboard a shorthanded cruising boat, skipper and crew become sailing master, navigator, bosun, carpenter, cook, and doctor. The roles are blurred, so willingly learn them all.

More than one person in the crew should be familiar with vital equipment and procedures, especially setting/dousing sails, operating the engine, controlling the self-steering, and using radios and emergency signaling equipment, as well as being able to navigate as needed.

Good leadership begins with a crew's and skipper's respect for each other.

Early on, Lenore Naranjo kindled a prudent sense of adventure, first on small voyages and inland explorations and later with more distant horizons. As a teacher, she homeschooled our children aboard and turned each landfall into a social studies lesson. Somehow life aboard was as cohesive as the life our family experienced ashore. Without such a partnership, we can't call any cruise truly complete.

Going Along, Getting Along

The modern recreational vessel might get a nod of approval from B.F. Skinner, the father of operant conditioning, which refers to how a stimulus produces a response. The renowned Skinner likely would have loved watching the crew of a sailboat handle heavy weather. Nautical stimulus-response reactions to the passage of a cold front, though more complex than a lab rat pushing a lever to get a food pellet, certainly involve conditioning. Viewed through Skinner's lens, the act of shortening sail to lessen heel, decrease the violent motion of the vessel, and improve crew morale becomes a predictable response.

In addition to being an effective teaching tool, a boat underway also acts as a social platform. With exquisite Shakespearean detail, human interactions play out on a close-quarters stage. We can't ignore this human dynamic, because it's a critical piece of the seamanship equation; how a crew gets along with one another can be as important as how they handle sail changes. Close proximity, the potential for adverse weather, and the need for a cohesive crew make ocean passagemaking a splendid test of human dynamics.

To gain as much as possible from the experience and to contribute to shipboard harmony, every crewmember must adapt as well as possible to onboard routines. The zen of being at peace on board starts with finding value in how you handle the routine.

The experience you gain from day sails or ocean crossings alike reinforces the value of routine, and you'll soon merge your individual identity with the act of being underway. This is quite different from a feeling like "I'd like to own that boat." Ownership and its material status are only a small part of the equation, but the desire to be aboard a vessel and underway is a much more durable impulse.

The experience of being under sail—flinging the water aside in purposeful forward motion—sets the hook for some, while others are drawn to the broader dimensions of cruising. Many are content with simply arriving at the boat and enjoying a weekend away

from daily land routines. Time on the water always offers a sense of autonomy, a brief or prolonged break from the mainstream. Whatever the prize, we need to value the component parts of the experience: a sense of exploration, the opportunities of friendship, an appreciation of nature, and a love of tinkering with all the boat gear. Crewmembers soon recognize what makes their small-craft experience so important.

Those who have spent decades sailing with a wide variety of crew tend to remember most fondly those shipmates who showed up for their watches 5 minutes early, who volunteered for any miserable job, and perhaps most of all, who had a sense of humor that could turn a mean, gray day at sea into something to laugh about. The title "good shipmate" is the *cum laude* of crew distinction, and it's a title earned one watch at a time.

Frank Worsley acknowledged the kind of crew shipmates remember fondly. In the midst of a spume-blowing gale in the icy Southern Ocean, a sailor named McCarthy turned the helm of the 22-foot longboat *James Caird* over to skipper Frank Worsley, exclaiming, "It's a fine day, sir."

One of the key roles of the crew on watch involves making sure the off-watch crew are able to get some sleep. Poor course keeping and sail handling can work against that goal, as can a loud, raucous crew yakking it up in the cockpit at 0300. The loud clack of a harness tether hook being dropped and dragged along the deck is another sign of seafaring thoughtlessness, often completely missed by the crew on watch.

Small gestures are appreciated by shipmates, and considerate behavior can become contagious. Questions like "Can I get you something from the galley while I'm below?" or "Shall I bring up your foul weather jacket?" are a shipboard courtesy that lifts morale. The able seaman of old abided by the hand, reef, and steer code, but today's nonindentured, nonshanghaied crews appreciate some fun and reward in a small-vessel passage.

ATTRIBUTES OF A GOOD SKIPPER

Most well-run sailboats function in an egalitarian fashion, but despite the first-name familiarity of a friendly crew, only one person fills the undisputed role of skipper, even though on most boats the skipper also doubles as one of the crew. Skippers have the added responsibility of making tough calls when challenges arise. If a skipper acts too much like a crewmember, there is a risk of vacillation in the face of adversity, resulting in a collective deer-in-the-headlights response that immobilizes and may endanger the crew.

The importance of who's in command isn't a vestige left over from Admiral Nelson's quarterdeck. It's a paramount issue, as the captain's role is as important aboard a 40-foot sailboat as any naval warship. Competence and decision-making capacity trump gender, age, and shoreside acclaim.

Daysailors can enjoy an afternoon sail with no command structure whatsoever, and some cruising couples prefer co-skippering. However, in an extreme situation, this laissez-faire command tends to break down at exactly the time when leadership is paramount and quick, effective decision making is the difference between safety and danger. Nothing is surprising about the value of good leadership; the challenge lies in developing the capacity and improving our ability to perform under stressful conditions.

Competent skippers, like crew, need an able seaman's keen ability to hand, reef, and steer. They also cultivate an ability to fathom what lies ahead, a trait even more valued in skippers; forehandedness makes a good skipper even better. Since a sailing vessel transiting a large body of water always runs the risk of being caught at sea by heavy weather, anticipating what's ahead and knowing how to handle it remain key traits of skilled skippers.

Some sailors of tall ships have described their lives before the mast as "long spans of monotony punctuated by moments of chaos." Those moments of chaos proved the worth of captains, but they had to demonstrate their abilities in routine times too, keeping their crew, if not happy, at least engaged in the job at hand. The same principle holds true today, but instead of the goal of getting grain to market ahead of other ships, the recreational sailor tries to savor the experience of being at sea, so the skipper's

role includes enhancing conditions for all on board. Skippers who fail to engage the crew, regardless of their seamanship competence, are soon polishing their skills as singlehanders.

A common interest is the best mortar to cement the commitment of a crew. We've seen performance-oriented skippers pointed toward Bermuda leaping over two waves and then diving under the third; these skippers benefit from a boatful of type A personalities eager to finish first. A cruiser with less penchant for blunt trauma and more interest in enjoying the port visit at the end of the passage appreciates a little less drama and a lot less pounding. A family that enjoys playing in the water and gunkholing from one cove to the next may have much fonder memories of a summer cruise than those who sail five times as far in the same time. Some cruisers won't leave port without fishing gear, and others carry along a sailboard or small kayak, and these peripheral interests can make life aboard more enjoyable.

The Skipper as Comprehensivist

On several occasions in this book I refer to R. Buckminster Fuller, "the poet of technology." Known as Bucky to those who followed his work and thinking, this designer, architect, mathematician, and author is best known for his enduring concern for the future of humankind. But to sailors around the world, his headstone inscription, "Call me trim tab," summarizes his ideas in words sailors can appreciate: a little nudge in just the right place can steer a large rudder to change the course of the *Queen Mary*. Metaphorically speaking, the skipper's role, like a trim tab's, is pivotal for leveraging the most positive attributes of a vessel.

In 1968, Bucky and yacht designer Charlie Morgan decided that the new Morgan 30 Fuller had commissioned should be sold to someone else. Instead, Bucky would commit to one of the new keel/centerboard 41-footers that Morgan had just started to build. He named the vessel *Intuition,* and scattered throughout Bucky's written work we see allusions to voyaging and to sailing's influence on humanity.

One of Bucky's unwavering themes was an ongoing condemnation of superspecialization in graduate-level education and life. He believed an overly narrow focus turns the best and brightest into myopic, detail-oriented experts who know much about little. He remedied this educational/occupational dilemma with a system in which the pinnacle of education and life experience lies in becoming a "comprehensivist"—a scholar/implementer who knows a lot about many different subjects. One can argue about the practicality of this thinking applied to life generally, but when it comes to the seafaring word, Bucky's approach is an ideal roadmap to crew competence in general and skipper competence in particular. Fuller's own love of sailing may have influenced his outlook.

A proficient skipper must be as multifaceted as possible, not just in breadth of knowledge but also in the kind of wisdom that's acted out on the pitching deck of a vessel at sea. Those who spend significant time at sea come to know its ways, developing a feel for the portents of wind, sea, cloud cover, barometric changes, and vessel dynamics. Such "tells" help validate weather forecasts and hint at the changes that may lie ahead.

Chief Cook and Bottle Washer

Onboard routine includes myriad tasks. The U.S. Navy breaks the mariner's skill set into its most basic components, labeling each task a personal qualification skill (PQS). The objective of detailing specific skills is being able to move sailors and officers from ship to ship without disruption. At least in theory, any officer or enlisted crew can fill a job slot carrying the same rating. In wartime, when casualties are a factor, it is vital to replace the fallen and essential to clearly understand a crewmember's capability. Likewise, the U.S. Coast Guard and merchant marine follow a highly prescriptive curriculum for training personnel. This results in a good fit between a crewmember's or officer's rating and his or her capacity to fill a specific billet.

The less structured world of a cruising boat requires a less fine-grained division of responsibilities, and for that we can look to the Royal Navy that ruled the oceans two centuries ago. The British saw four key roles as essential aboard their ships: master, bosun, carpenter, and cook. Those job responsibilities are still relevant today. Fortunate skippers can delegate them, but with fewer crew skippers must carry out the tasks themselves. On a shorthanded boat the skipper may fill two, three, or even all four roles.

Traditionally, the bosun and carpenter managed vessel upkeep and maintenance. The bosun was the epicenter of marlinspike seamanship and rigging, while the carpenter dealt with the ship's hull, decks, spars, and ancillary small boats. On smaller vessels today, all crewmembers are part bosun and have talents ranging from that of rigger to painter and plastics expert. Commonly, though, the owner/skipper has the role of chief bosun, capable of do-it-yourself efforts that can keep the vessel in good operational and cosmetic order.

Today's practiced bosuns know how paints and plastic resins behave. They can stitch a sail or execute a fiberglass repair away from a full-service shipyard. And when it comes to jury-rigging a replacement for

a broken part, the bosun's input into creative design and fabrication can prove quite insightful.

You're on your own when home waters fade astern, and the most memorable cruising often occurs away from the yachting infrastructure of boatyards, marinas, and anchorages. The more self-sufficient the crew, the more likely you'll ably cope with whatever situation arises. As one Viking voice advised in an early saga, "Tar the seams well, bring sturdy gear, and make your ship pleasant for the crew." This wisdom is as useful today as it was over a thousand years ago.

In the Age of Sail, the bosun and carpenter kept the ship afloat and moving, while the cook kept the crew going. Cookie was essential, despite the less-than-appealing fare he might serve up. Cooks are as essential today as they ever were. Since the crew were not hijacked aboard by a press gang and are probably accustomed to good food ashore, cooks are now judged by higher standards. Even if crew rotate through the cook's role, never lose sight of its significance.

Voyagers cherish routines including food, conversation, and a ritual toast at landfall. Crew morale can wax and wane in direct proportion to what happens in the galley, and the sensory appeal of good soup and baking bread can't be overstated. In all but the worst conditions, sailors value mealtime, and the art of sea cuisine includes matching sea state with what the cook can reasonably prepare and the crew can reasonably keep in their stomachs.

Medical Officers. In the past, Cookie might also serve as steward, responsible not only for preparing meals but for distributing them to the crew. In extreme situations, cooks might also fill in as medical officers—let's give silent thanks that we're not shipping under those conditions! While serious medical problems are an exception rather than the rule on board today, shorthanded sailors need a game plan to deal with the unlikely. One of the crew needs first aid skills, along with adequate supplies in the medical kit to cover possible though unlikely scenarios; that same crew should also monitor the inventory in the medical kit. The farther from medical care a voyage plan takes you, the more intensive should be the medical training and the larger the inventory of supplies. Also have plans for emergency communications and possible medical evacuation. Skippers are responsible for making sure this medical role is covered and the medical kit well stocked, even if they don't fill the role themselves.

Ship's Master. The ship's master, the most visible role, is the last of the four vital traditional shipboard roles. In addition to running the show and being accountable for the ups and downs of whatever happens on board, the master served as the final decision maker in all matters of navigation and vessel safety. He commanded the deck crew and, along with the mates who assisted on larger vessels, guided the seamen who sailed the ship.

Aboard racing sailboats today, the afterguard comprises the decision-making portion of the crew. The larger the vessel, the more players are involved; consensus building becomes an art form when the owner and skipper (not always the same person) are joined in the afterguard by a sailing master, a watch captain, and a navigator/tactician. On doublehanded cruising boats this administrative overlay is replaced with a streamlined hierarchy—a breath of fresh air. With the skipper as owner, master, and navigator, consensus becomes easier even if multitasking gets harder.

Navigator

The navigator (or multitasking skipper-navigator-cook-deckhand) shoulders the responsibility for safe navigation, using the latest electronic navigational equipment plus traditional piloting. We must fix our position, but we also must ponder our projected course options, considering weather data and surface current set and drift along with the future position of the vessel. Part astronomer, part meteorologist, and part oracle, the navigator second-guesses the future. While the digital era has freed navigators from pencil calculations and walking dividers across a paper chart, it has also replaced stubborn sextant shots with hunting for web downloads and weather fax broadcasts, which often are as hard to acquire as an accurate reading of the lower limb of the moon on an overcast evening. (See Chapter 8 for a full discussion of Navigation.)

Knowing your position is necessary for staying out of trouble, and "knowing" requires more than a circle-surrounded dot plotted on a paper chart or a blinking symbol on the screen. The navigator bridges the simulated position on paper or digital display with the actual surroundings. What counts is the real world of water depths, clearances above the masthead, proximity to a lee shore, and the constraints of fixed and moving objects; thus, a navigator's true job involves using both equipment and the senses when attending to the surroundings.

In addition, navigators maintain an active dialogue with each watch, placing a high priority on avoiding collision. A good working knowledge of the International Rules of the Road is a vital qualification for a navigator—and for any experienced mariner. (Chapter 9 covers the Rules of the Road.)

Today's communication options link the navigator to a wider array of assets than ever before. The VHF, MF, and HF radio frequency bands, as well as higher-frequency satellite linking systems, offer data

A good navigator regularly shoots bearings and plots a traditional fix even though a digital display pinpoints the vessel's location. It's easy to compare a bearing-compass reading with an electronic bearing readout on a multi-function display; setting the reading format to "magnetic" simplifies the process.

downlinks that can deliver weather information, engine failure analysis, or even specific medical advice. It's vital to understand what each system offers in terms of your specific cruise plans, safety requirements, and general communication. This knowledge helps you pick the best option for a given cruise and budget. While it's important to have reliable communication equipment, it's even more important that more than one crewmember is familiar with and able to operate the equipment. (See Chapter 14, Communications.)

Engineer

The need for an engineer aboard keeps growing as the systems on an average 40-footer grow increasingly complex. The marine industry strives for reliable turnkey operations, but installing complex systems in hot, damp, confined spaces keeps that goal elusive. An engineer can prevent a system catastrophe from dampening the cruising experience, and when such a catastrophe happens anyway, the engineer may be able to fix it. All amateur engineers need a familiarity with the most important hardware on board, starting with the engine(s). The engineer must be able to at least troubleshoot the peripheral equipment that engine operation relies upon: water pump, fuel filters, starter, alternator(s), heat exchanger, exhaust system, and other peripherals.

Engineers should know Ohm's law and how a DC electrical system functions. As sail and powerboats have grown more and more mechanically and electrically dominated, so have the electrical systems that energize these components. Troubleshooting a high-voltage AC electrical system, in contrast, may be beyond the skill level of the skipper or crew. In addition, the uninformed shouldn't poke around in the AC system, which, more easily than the DC system, can kill you.

Of course, it's paramount to understand the fundamentals of how DC current gets to navigation instruments, running lights, the fuel lift pump, and other essential equipment. You can probably do without a microwave oven. But if the batteries are not charging and you have backed yourself into a corner, by going 100% digital, the charts you need exist only when electrons energize an MFD screen. This is why you'd better be able to replace an ailing alternator or voltage regulator and it makes sense to carry a backup portfolio of paper charts.

More often than not on shorthanded boats, the skipper serves as the engineer. In any case, a serious cruiser needs someone on board who either already is familiar with mechanical/electrical systems or can quickly learn them. These systems include the engine, drive train, control systems, generator, DC system, and an array of subsystems such as the refrigeration, watermaker, autopilot, and digital charting equipment.

Knowledge Is Safety

The word "autonomy" best describes a key trait the skipper attempts to develop. Autonomy means an internalized state of operational independence not reliant on shoreside consultants to tell you what turn the weather will take, for example. You or a crewmember knows how to download a weather fax, track barometric readings, and note changes in wind and cloud cover. In short, you've spent enough time observing weather systems and have studied forecast interpretation enough to understand the implications of fronts and moving air masses. Knowledge is power, and self-reliance is at the heart of skipper competence—and knowledge helps you develop confidence in your autonomy.

Unlike many other nations, the U.S. doesn't burden small-craft skippers with excessive regulatory

Paul and Dawn Miller race and cruise a well-tended classic wooden Herreshoff Rosinante, appreciating the feel of tradition. Paul is a professor of naval architecture and a materials specialist with a fondness for a neatly spiled plank.

mandates. Formal training and licensing remain options, not requirements. In contrast to flying or driving, recreational boaters in the U.S. can educate themselves, train their crew, and be tested by the operational demands of the waters sailed.

Whatever its downside, linking freedom and personal responsibility fosters an ethos of self-sufficiency. This pays off when conditions deteriorate when you are alone at sea. Having consultants to guide you through tough decision-making situations might make sense in a boardroom, but it's not the best option for those headed offshore. If the vessel is too complex for those aboard to thoroughly understand, it's better to postpone your departure, hire a professional skipper or engineer, or trade down for a vessel you can understand, handle, and maintain.

In the last couple of decades we've seen a trend in two-person crews purchasing oversized vessels. Yacht brokers are telling green sailors—with straight-faced assurance—that a bow thruster, pod drive, and a call ahead to the dockmaster will enable a neophyte crew to handle a 55-footer. Part of developing competence, however, involves knowing our limitations. Letting a salesman with minimal experience at sea define our ability is as problematic as assuming that a towing service will always be on hand to clear up the shortfalls.

When the crew is prepared for what lies ahead, the right sails are on board, and the navigator looks at the horizon as well as at equipment, the voyage is more likely to be safe and successful. Many of the recent sailing accidents resulting in loss of life have involved flawed navigation decisions and inattentive watchkeeping.

The Skipper as Leader

The cerebral side of being a good skipper goes beyond the need to navigate and understand the implications of a weather map filled with stacked isobars. It even transcends being a MacGyveresque mechanical, electrical, and plumbing guru and troubleshooter extraordinaire. The final challenge for any skipper is the transition involved in becoming a leader.

Effective leadership begins with the crew's respect for the captain's competence. Crews of all sizes must have faith in their captain's ability to make sensible decisions. While all crewmembers want the skipper to consider thoughts and interests, the overall well-being of the vessel and crew is even more important than individual interests. Regardless of differences in preferences or interests, all is forgiven if the crew trusts the captain to choose the best options for the current and near-term situations.

Communication

The contribution of an effective crew is greater than the sum of what the individuals offer, and good leadership elicits the most desirable outcome. Two-way communication is a primary aspect of leadership. In an urgent situation, the right decision needs to be made, and it must be passed along to all crew as succinctly as possible. This is not the time to hold court on the efficacy of the decision, because prompt implementation is often critical. This is why a good leader knows when to be a consensus builder and when a dictatorial approach is necessary. Really great skippers have a knack for making the right snap decisions, but they can also dialog with shipmates and genuinely take their input to heart. Few captains of larger crews have more expertise than the sum total of others on board, but they know how to leverage the knowledge of others to collectively solve or prevent problems. They also understand that some crew members need to be encouraged to speak out while others don't.

Communication when the wind is howling and everyone is engaged in efforts to keep things under control is most effective based on these principles:

- Eliminate distracting (nonessential) side conversations.
- If assigned a task, repeat it for confirmation.
- If you observe something astray or a pending problem, tell the watch captain or skipper and make sure they acknowledge they understand what you're saying.
- When reefing or going through a heavy weather sail change, a quick description in advance of "who does what" is often worth the time.

Good communication also gives the skipper a feel for the crew's well-being, as enjoyment of being at sea should be a major part of the cruising experience. The first few days at sea is often an adjustment: some are feeling seasick, others miss those left astern, and the skipper is managing the transition to an engaging onboard routine. Adding new crew to the mix can raise some challenges, and a skipper who can resolve issues early is more likely to maintain harmony. Getting along with crew while exerting leadership when handling heavy weather can be challenging, but preventing a mutiny is just as important as keeping the mainsail in one piece.

The Skipper's Briefing

Have a safety briefing each time you prepare to leave the dock or anchorage, ideally when the whole crew is on board but before easing the docklines. This predeparture summary can be as short or as detailed as conditions warrant. For an afternoon sail, it may include only the location of PFDs and fire extinguishers, a quick mention of crew-overboard recovery procedures, and comments on the route or destination, the weather conditions expected, and any concerns. The briefing begins an operational dialogue among all on board and encourages the crew to engage in the planning process.

Longer passages naturally warrant greater detail. The skipper can kick things off by checking PFDs and stating the boat policy for when to wear them, including how and when watchstanders should be clipped in with a harness. Skippers make the call about when crew must wear PFDs, but they also encourage crewmembers to wear a PFD whenever they choose. This is a good time to remind shipmates about checking the gas cylinders and auto-inflation bobbins in their inflatable PFDs.

Skippers should point out the location of all COB rescue equipment and familiarize each crew with engine starting procedures, VHF and other communications equipment, and emergency signaling beacons. It's also wise to go over the gear inventory and show where you stow flares and other distress signals. If appropriate do a step-by-step abandon-ship drill that includes how the life raft would be deployed. In short, part of the skipper's role is to maintain an ongoing training routine that the crew enjoys and from which they derive useful knowledge. This process allows skippers to share their specialized knowledge with others in the crew.

The Skipper's Routines

On any boat, it's handy to adhere to a single approach for making up cleats, coiling lines, stowing gear in

lockers, and organizing the toolbox. This isn't an obsession with uniformity but a shipboard routine that prepares everyone on board for an efficient response to a reefing challenge, mechanical repair, or any situation in which a line or specific screwdriver is needed in a hurry. For example, consider a violent squall that blows through at 0300 on a moonless night. The first gusts lay the boat over, and the crew's reefing efficiency gets its best test. Whether you're slab reefing or rolling the sail into the mast or boom, the process works best if everyone knows exactly how the lines were coiled and where to reach for the right winch handle. Doing things the same way each time is the best way to garner such familiarity.

You can explain to crewmembers that their own approaches may be just as good as yours—perhaps even better—but you have adopted your set routines to make it easier for the crew to work together. Of course, if a better solution is offered, the skipper shouldn't disregard it just to stay with the familiar way. Test out the new and better approach, and if all goes well, then adapt it to fit your preferred routine.

Skippers can best familiarize crew with their routines and preferences during a time of calm sailing, to develop a mutually embraced approach to key tasks. This might include details such as your method of coiling a halyard tail, for example. Conventional coil-

One of the best ways to learn any nautical skill is to be taught by an experienced sailor on a passage in which the skill could really count. Lashing and hand sewing skills may be a vestige of the 1800s, but they still come in handy today.

Good teamwork is all about knowing how your shipmates will respond in specific sailing situations and making sure you're holding up your end of the bargain. Competent skippers ensure that information flows in both directions, and they make sure the entire crew is attuned to their roles as well as the bigger picture. Crossing shipping lanes at dusk is a time for extra awareness.

ing of a long, two-part mainsail halyard can introduce hockles because each loop requires placing a twist in the line. An alternative is to fake the line in a figure eight rather than circular coil. In this approach each twist lies the opposing direction, and each turn cancels the line-snarling effect of its partner. When the halyard is released, the line is far more likely to run free rather than snarl in a ball and end up 10 feet above the deck with the mainsail flogging like a wet terrier. This one task demonstrates the value of using a single, crew-wide approach for handling lines—whether running rigging or docklines—and makes a drama-free response to a midnight emergency more likely.

The Skipper's Human-Resource Responsibilities

When the basics of staying afloat and heading in the right direction are under control, the skipper can

SEASICKNESS

Seasickness is a big challenge for many sailors, and inevitably conditions occur in which most sailors may become susceptible. Ideally, everyone aboard recognizes their susceptibility to motion sickness and can find ways to lessen the impact. One of the most widely accepted ways to lessen the effect is to take the helm and watch the horizon, with just enough cursory glances to the compass or digital readout to hold a good course. This combination of fresh air and sustained focus on the horizon often has a calming effect. An alert skipper can use this remedy for queasy crew.

Seasickness begins in the semicircular canals of the inner ear, a biological accelerometer that registers the roll, pitch, yaw, heave, and surge of the vessel as relative motion and inclination. Meanwhile, if the eyes are looking around the cabin and seeing fewer signs of motion than the inner ear is registering, confused signals are sent to the brain, triggering a stimulus to the vagas nerve that causes the stomach to react. A drug that elicited the same feeling might be the optimum diet pill, but the patient would quickly begin to suffer from dehydration, and that's exactly what those who succumb to seasickness must be concerned about.

Many sufferers find water less than palatable, especially if it tastes of the tank and is not charcoal filtered. Those who have suffered past bouts of seasickness often have preferred treatments, and many claim that ginger ale is more likely than water to stay in their stomach. Others prefer cabin biscuits, saltines, and ginger snaps as staple foods for the first couple of days at sea.

Some medications may prevent seasickness altogether. For example, meclizine tablets (in brand names such as Bonine and Dramamine) have for decades been readily available in virtually all drugstores. Some individuals become drowsy, however, and others experience no effect at all. Overall, the side effects are less bothersome than those produced by most other prescription products.

Prescription scopolamine patches are a wonder drug for many seasickness-prone sailors. However, a few unlucky souls suffer challenging side effects, including hallucinations and psychotic symptoms. Therefore, before using this patch therapy on board, it's common sense to try it when you're able to handle the side effects—and if you experience them, never use the drug again.

Some sailors try products like Stugeron (an antihistamine) that are not FDA approved, to battle the effects of seasickness; it acts to relieve nausea, vomiting, headaches, and so forth, rather than to prevent seasickness. The availability of the drug varies from country to country; in Mexico, for example, a person can purchase Stugeron over the counter in 25, 75, or 150 mg tablets, although serious problems can occur when taken in 75 and 150 mg doses. In larger doses, prescription Stugeron is FDA approved to treat the side effects of other diseases, generally those that that produce symptoms of imbalance and vertigo. The list of unintended consequences shows us exactly why sailors should be cautious in using the drug. The side effects include jaundice, gastro-intestinal issues, impaired judgment, dry mouth, and relaxed arteries. People with Parkinson's disease, liver problems, and a host of other health problems should not take this drug.

Regardless of these difficulties, the drug has been around since the 1970s, and the FDA has approved the primary ingredient, cinnarizine, for uses other than seasickness. The FAA prohibits airline pilots from taking the drug because of its potential to impair decision making. For the same reason, sailors should also be cautious.

If you decide you need to medicate seasickness, do so in conjunction with your physician, and make sure you consider any preexisting condition that precludes using any of the aforementioned drugs. On a passage I made from Bermuda to the U.S., the skipper had purchased Stugeron over the counter and told the crew that the only reason the FDA had yet to approve the drug was that "the drug company did not want to bother paying for the testing." He encouraged the crew of seven to take the pills, and six did; of those six, three became seasick. The best practice is to encourage each crew to develop a means of preventing or coping with *mal de mer* during shorter passages before letting it become a problem on a longer voyage.

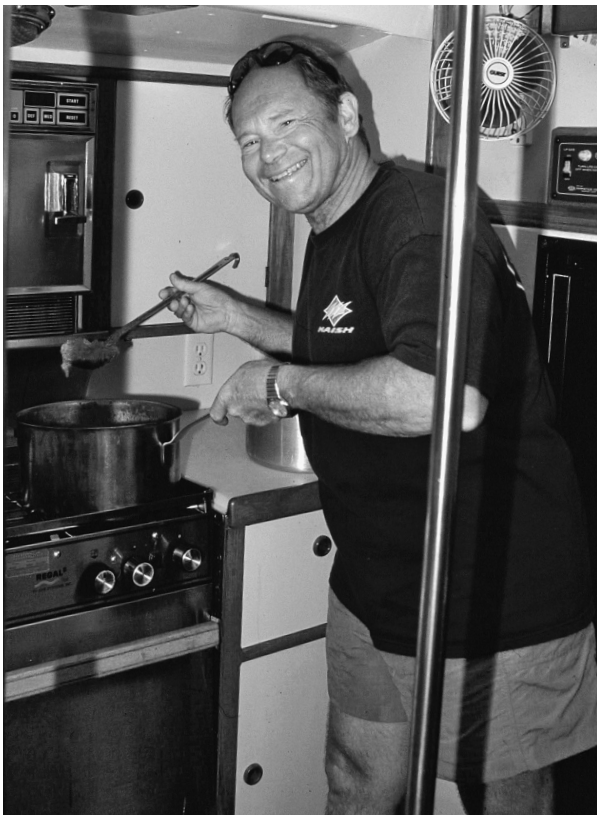
turn to crew health, welfare, and morale. A long-term group of shipmates is advantageous because it allows team building to evolve over time. Every crew, regardless of size, has wide-ranging sets of skills, both physical and cerebral. By getting to know each person on board, a skipper has a better chance to match jobs with skills and proclivities. We've already discussed the job descriptions. Fortunate is the skipper who has these crew to whom to delegate tasks:

- An agile, fit foredeck crewmember ready to go up the mast.
- A sailing master to lead in reefing, setting, and dousing sail.
- A navigator to track progress, lay out routes, and monitor the weather.
- An engineer to fix what breaks.
- A chef who enjoys feeding the crew.
- A bosun who maintains the boat in port and jury-rigs it offshore.

Whether you're sailing with a full crew complement or doublehanding with your spouse, part of the skipper's leadership role involves setting up opportunities for each crewmember to excel.

Conditions at sea vary, and mood changes in those aboard often mirror the pendulum-like swings between calms and gales. Therefore, skippers should be alert for both weather and mood shifts and do their best to draw out those affected or to lighten the general mood. Baked bread, baked potatoes, and tasty soups and stews can be a morale booster, as are cookies from a special box or tin. Cold night watches can be especially debilitating, and in addition to assigning shorter night watches, capable skippers keep a close eye out for signs of hypothermia.

Sometimes what looks like moodiness is in fact incipient seasickness. Little tricks like tucking in a reef to reduce speed and motion before meals often result in a crew that feels more like eating and might help them keep their meals where they belong. During predeparture provisioning, good skippers should ask about crewmembers' food preferences and use this to establish palatable menus and make life easier for the cook(s). Responding to seasickness with ginger ale, saltines, and ginger snaps plus quick deck-to-rack (berth) transitions can help the stricken (see the Seasickness sidebar).



Even this culinary impaired author has a chance to gain compliments at sea. Feeding a hungry crew has a reward all its own. Keeping the crew well fed enhances readiness. (Courtesy Lenore Naranjo)

WHAT CRUISERS CAN LEARN FROM RACERS

Competitive offshore sailors have earned a reputation as die-hards and are often stereotyped as type A personalities, ready to test their skills against each other as well as the sea itself. Many nonracers wonder what the lure of the sport is all about. One answer is the desire to achieve and elevate performance by challenging others with similar skills. It's all a part of human nature.

It's often said that when two sailboats are near each other, it's a race. Even in more passive souls, we see a competitive spirit alive and well. At sea, we can shape this competitive trait into a 24/7 expression of teamwork and seamanship. Offshore racing is a logical extension of inshore racing, and for those not prone to seasickness, the sport has much to offer.

Offshore racing merges a sailboat and the crew in a manner that's hard to duplicate ashore. A 24-hour motor race is viewed as an ordeal, but a five-day jaunt to Bermuda ranks as another run-of-the-mill offshore race. Transoceanic sailors sprint for days on end, and Volvo Ocean Race crews endure a mountaineer's privation with a race car driver's need for focused attention. In short, whether you sail a coastal overnight race or in an ocean-crossing event, the commitment to team building and vessel readi-

ness is in many ways unmatched by other forms of sailing.

When it comes to developing seamanship, we acquire skills at all levels of sailboat racing, from the smallest of one-design dinghies through the most esoteric of monohull and multihull classes. The International Sailing Federation (ISAF) is the controlling body of the competitive sport worldwide, and the national organization in the United States is US Sailing. Run by sailors, this grassroots organization dovetails the global big picture with specific domestic needs of the sport. Self-regulation and safety training are part of the mix, and membership in US Sailing requires only a modest annual fee.

From a seamanship perspective, one-design racing is analogous to working out in a gym with a wide array of fitness equipment and a bevy of personal trainers. Dinghy and one-design racing generates a noticeable uptick in sail-handling skills, an important benefit. This boot camp for boat agility is hard to beat, and ocean racers and cruisers with some one-design racing in their sailing resumes usually benefit significantly.

Differences exist between the seamanship honed sailing around the buoys in short-course racing and

Inshore big-boat racing hones skills that benefit racers and cruisers alike. As John Bonds once put it, "Sailboat racing is like war without the guns." Agility on deck, quick sail changes, and acclimation to the boat's motion pay off whether you're racing or cruising.

Around-the-world racers are a breed unto themselves, learning early that if you don't finish you can't win; these boats (a Volvo 60 is shown here) are well engineered and versatile in a variety of weather conditions.

the kind called for during a lengthy offshore race. For starters, an ocean race more closely resembles a marathon than a sprint, and the crew has to finish the race in order to win. In countless cases, driving a vessel too hard in heavy conditions has caused gear failure that turned an in-the-money performance into a did-not-finish (DNF) outcome.

The decision-making part of seamanship involves knowing both when to dial back and when to add more sail. The full-sail-all-the-time character of dinghy sailing is tough to replicate offshore. An ocean racer quickly realizes that reducing sail area can often actually result in better boat speed. When a cruising sailor goes racing, the lessons include a better feel for the fine line separating speed from calamity and an improved ability to coax more speed from a given sail area. Experiencing the all-hands fire drill of a nasty knockdown helps a normally shorthanded cruiser understand what to avoid.

We also see a distinct value in developing a feel for how much energy you need to harness to attain the final half knot of hull speed. Acquiring on-the-edge performance feedback builds your sea sense to the point where you can *feel* when it's time to reduce sail ahead of a broach rather than after it has occurred. Racing also teaches you how to better handle light-air conditions, thus reducing the hours spent running the diesel.

For racers and cruisers alike, one of the big fringe benefits involves how the most skilled crewmembers handle their specialty jobs. For example, a highly skilled bowman has an intuitive feel for vessel roll and uses the induced moment of inertia to unload a pole just before switching spinnaker guys or clipping in or out of a dip-pole jibe. This kinesthetic awareness of boat motion and energy flow is akin to how a figure skater harnesses the energy of his partner's movement to help lift her into the air.

Momentary increases and decreases in the kinetic energy transferred through a genoa sheet cycles in cadence with the roll of the vessel, and by staying in phase with decreasing loads, a savvy trimmer can adjust the car position much more easily. Similarly you can put to good use the peaks and valleys associated with roll and spinnaker-induced energy. This type of on-off cycling of loading occurs in all sails and can be used to advantage to slide sheet leads on tracks, to take up on a loose halyard, or simply as an aid to hoist a sail hand over hand. *(continued page 73)*

Sail changes on a race boat are never savored. The pace of the race carries through during a headsail change, and the better the crew learn their jobs, the faster sail swapping becomes. Repetition is the best teacher, and new crew need to learn the new boat's layout and idiosyncrasies.

The Melges 24 puts crew agility and stamina to the test; crew weight adds to the righting moment whenever maneuvers or sail changes aren't in play. When it comes to developing boat agility, sport-boat racing is even better than going to the gym. In the racing community, as with the entire sailing community, there is quite a bit of debate over the need to wear a PFD—a really good idea in colder water.

HANDS-ON SAFETY TRAINING OPPORTUNITIES

In recent years sailors talked so much about hands-on safety-at-sea training that the waterfront pros at the U.S. Merchant Marine Academy at Kings Point, New York, and the U.S. Naval Academy now provide such training. SUNY Maritime and the Storm Trysail Club have also been leaders in on-the-water training.

Both service academies have harnessed a new rendition of safety training to benefit their midshipmen as well as the boating public at large. Their efforts to network with local sailing communities and enlist the help of experts from the marine trades have created what US Sailing refers to as a "best-of-both-worlds training experience."

These two-day events provide auditorium lectures and small-group hands-on learning experiences. They include on-the-water crew-overboard rescue drills, damage control, firefighting, in-water life raft and PFD training, safety gear testing, and flare deployment. Kings Point hosted the first of these ISAF-approved, US Sailing–sanctioned events over 35 years ago. (See Chapter 13 for more detailed coverage of these topics.)

Crew-Overboard Recovery

The underway crew-overboard (COB) recovery exercise aboard Farr 39s and J/105s was perhaps the most daunting portion of that first training event. Each boat had a skilled Kings Point Sailing Team skipper, a training coordinator, and an eager crew of seminar participants facing an early spring easterly. Most crew stepping aboard were strangers to one another and to the skipper/instructor. Many had never before sailed either a Farr 40 or a J/105, and some definitely stretched the limits of their skills in the gusty 20-knot conditions that typify Long Island Sound's fickle early April weather. The water was a hypothermia-provoking 52°F.

Safety boats followed the fleet, and the caliber of the Kings Point staff assigned to each group and boat allowed for vigorous training in real-world, "live-fire" conditions. The drills began under full sail and spinnaker, and participants got to see that the harder a vessel is driven, the more threatening and potentially hazardous a crew-overboard incident becomes. Fast boats quickly separate from victims, and if a quick-stop maneuver is not executed immediately, a real need arises for an effective, reliable position-marking method such as the electronic MOB button on a VHF or GPS receiver. The recorded coordinates should also be written in the log just in case the electronic function is accidentally erased.

Adjusting to the changing weather and crew skills provided a lesson in itself. The Kings Point organizers understood the significance of cold water, gusty

Participants in an ISAF-approved safety-at-sea seminar held at the Merchant Marine Academy, Kings Point, receive hands-on training in setting storm sails, crew overboard recovery techniques, and numerous other emergency drills.

HANDS-ON SAFETY TRAINING OPPORTUNITIES, CONTINUED

pre-cold front conditions, and crews who had never sailed together. They effectively exercised their plans to ratchet back sail area as wind velocity warranted, going from full to reefed sails and eventually to storm sails as conditions deteriorated. This type of hands-on training with capable sailors is immensely valuable, but it's also a serious challenge for event organizers, who are responsible for setting up learning situations with an acceptable risk but not excess hazard. A by-product of this session was a clear understanding of the essential role of training to prevent COB incidents.

Those practicing COB recoveries also learned how important communication can be among crewmembers. Their new-to-the-boat, new-to-each-other status reinforced the value of developing crew cohesiveness and keeping a nucleus of regulars together so that you can effectively mentor new crew. The importance of leadership and the skipper's role also played out as each recovery maneuver was implemented. Most crews greatly improved their performance after only a small amount of practice; attendees then returned home with the idea that the same would hold true aboard their own boats.

Firefighting

The facial expressions on program attendees as they faced down and extinguished a small fire in a metal bucket drove home a fear of flames. Each person had a chance to put out a small blaze with a short-lived dry chemical extinguisher, and by the end of that experience each understood why it's essential to get the fire out quickly. They likely also understood the importance of making sure that fuel, electrical ignition sources, and even oxygen are removed from the conflagration. Once a fire gets out of hand, confronting it with a small dry chemical extinguisher is like hunting big game with a single-shot .22 caliber rifle.

Abandon-Ship Drill

Jumping into a swimming pool fully clothed and wearing a PFD doesn't produce the same anxiety as abandoning your boat in the middle of the night in a storm-tossed sea, but you can simulate reality enough at least to gain a good idea about how the gear works. All boaters should have the chance to test their PFD in benign conditions and discover firsthand what it takes to transition from a sinking or burning vessel to a cramped but floating life raft. For example, those jumping in with inflatable PFDs discovered that manually pulling the inflation tab causes the PFD to fill instantaneously. This eliminates the need to wait for automatic inflation, which can often take 10 seconds or more.

Because climbing into a life raft while wearing clothes and a PFD can be challenging, new raft regulations mandate a boarding assist to help get tired, sick, or injured crew into the raft more easily. Kings Point program participants also had a chance to use the line and webbing on the bottom of a raft to help right it when capsized. They had time to get a feel for the cramped conditions in *(continued next page)*

The proper use of a dry chemical fire extinguisher includes pointing the nozzle at the base of the flames and sweeping the discharge across the base of the flames. Due to limited volume, the extinguisher operation is measured in seconds, so it's vital to deploy this tool early and use it accurately.

It's more difficult to board a life raft wearing a PFD, but the value of wearing a life jacket outweighs its impact on mobility. Boarding ladders, small boarding ramps built into the raft, and a strong crew already in the raft can assist others. Note the value of high-reflectance SOLAS-grade tape on the raft, foul-weather gear, and inflatable life jackets.

HANDS-ON SAFETY TRAINING OPPORTUNITIES, CONTINUED

a filled-to-capacity raft, allowing them to see why long-distance sailors often opt for a raft with more capacity than their crew size.

Troubleshooting and Damage Control

With three of the nation's top technical experts on hand to describe and demonstrate what to do in emergencies, participants were guaranteed a special learning experience. America's Cup boatbuilder Eric Goetz, mechanical and electrical expert Steve D'Antonio, and ocean racer/boatyard manager Mike Keyworth were all on hand at this training event. These individuals collectively brought more nautical savvy to the forefront than I've seen at any other safety-at-sea presentation.

Each expert detailed and demonstrated how to cope with damage resulting from hull penetration, elaborated on jury rigging after a dismasting, and delved into specifics about handling the loss of a rudder. For example, Steve focused on downflooding associated with through-hull and valve failures and problems caused by electrical malfunctions, including fires stemming from incorrectly wired high-current, low-voltage electrical systems.

Distress Signaling

Henry Marx of Landfall Navigation was on hand with a full load of safety gear. Each group viewing his display had a chance to inspect and evaluate the latest technology in safety and signaling equipment. Discussion topics included personal EPIRBs (emergency position-indicating radio beacons), laser illuminators, hand-powered watermakers, waterproof lights, and VHF radios. Each attendee went home with a clear understanding of what should be kept in a well-stocked abandon-ship bag.

For over a century, pyrotechnics have been a mainstay of distress signaling, and despite the huge strides made in electronic communications flares remain a mandatory part of a vessel's safety gear. Because they believed watching a flare's deployment is nowhere near as effective as learning to deploy a signal yourself, the training team set up a hands-on flare-firing station at the downwind end of a pier. They manned it with a group of safety experts who talked each participant though the nuances of a safe launch.

In the overcast conditions the daylight-visible

Damage control training includes learning to patch holes in the hull with both internal and external coverings, as shown on the stern of this sailboat. Attendees at this seminar also learned how to jury-rig after a dismasting, using smaller sails, a spinnaker pole, and the mast stub to effect a viable solution.

HANDS-ON SAFETY TRAINING OPPORTUNITIES, CONTINUED

pyrotechnics appeared even brighter, and during each launch the participants became aware of the heat and slag expelled from the burning pyrotechnic. They also saw that a SOLAS-grade (i.e., approved by the International Convention for the Safety of Life at Sea) parachute rocket flew higher, burned brighter, and lasted longer than other USCG-approved versions of the same signaling device. The event built a keen awareness of the hazards associated with flares and the need to handle these devices with special care.

Underway Safety Training: Risks and Rewards

"Operational risk management" is a buzz phrase among safety types. It's usually associated with how close to the edge a training program should venture before the possible downside eclipses the gains made on the upside. For example, Navy SEAL training includes live rounds and near-drowning experiences, but recreational sailors need less reality and more security in their learn-by-doing experiences. The Kings Point crew kicked off their first-of-its-kind underway safety-at-sea training session at a level of challenge they were ready to modify if needed. Overall, only one minor injury occurred—not perfect, but pretty good.

Only a few days after that event, a UK hands-on training session resulted in a tragic injury. When a trainee was deploying a white handheld pyrotechnic signal, the entire flare exploded at once, seriously injuring the trainee's hand in the blast. Even worse, the flare tube itself penetrated the trainee's abdomen.

Some say we can cover more information with a traditional lecture, and that may be true in some situations. However, if we want to develop physical abilities, then we're far more likely to accomplish that if we include a physical training component in the process. Educators have long understood the value of combining lecture with laboratory experiences, and when it comes to safety at sea and how best to train sailors, there's definitely good reason to blend physics with physical education.

Handheld flares are always held downwind in a life raft. Burning hot slag dripping onto an inflated raft tube will melt through the fabric and create an even more desperate situation. Bright SOLAS flares will gain the attention of those in the area, but the burn of all flares is relatively short, so their use needs to be well timed.

Another learning experience offered by sea time on a race boat involves fine-tuning how to get around a three-dimensionally gyrating deck and cabin. By the time they join a race boat crew, many cruisers already have well-seasoned sea legs. But the true test of boat agility comes when the vessel is pounding to windward, heeled 20 degrees, and climbing over and crashing through an unending parade of waves. Forethought and forehandedness come into play then, as do jacklines and harnesses. As one sailing friend said, "Any fool can strap on a harness and clip to a jackline, but it's a skilled crew that can still carry on the work at the mast and on the foredeck while dragging a tail."

Experiencing rough going aboard a sound race boat handled by a skilled crew is one of the best ways to learn by doing. No matter how many times you go through training in contrived, hands-on, flatwater learning sessions, it lacks the real-world challenges of coping with heavy weather at sea. It's hard to tell someone how to ride a bike, for example, and it's just as hard to describe reefing. Yes, we can outline the basic steps and students can memorize them, but going through the process in a light wind on a flat sea is the right way to introduce the concept. To develop true proficiency, however, there's nothing like getting a chance to use those skills on a wet, windswept deck in a rolling seaway at 0300 while the boat's motion and the energy traveling from sails to sheets complicate each step in the process.

Offshore Race Training

The offshore racing interests guided by ISAF have set in place a set of rules that range from equipment specifications to safety training mandates. These self-imposed requirements and feedback from disasters like the 1979 Fastnet Race and the 1998 Sydney to Hobart Race have led to a combination of lectures and hands-on training designed to prepare sailors to cope with emergencies at sea as well as preventing them in the first place.

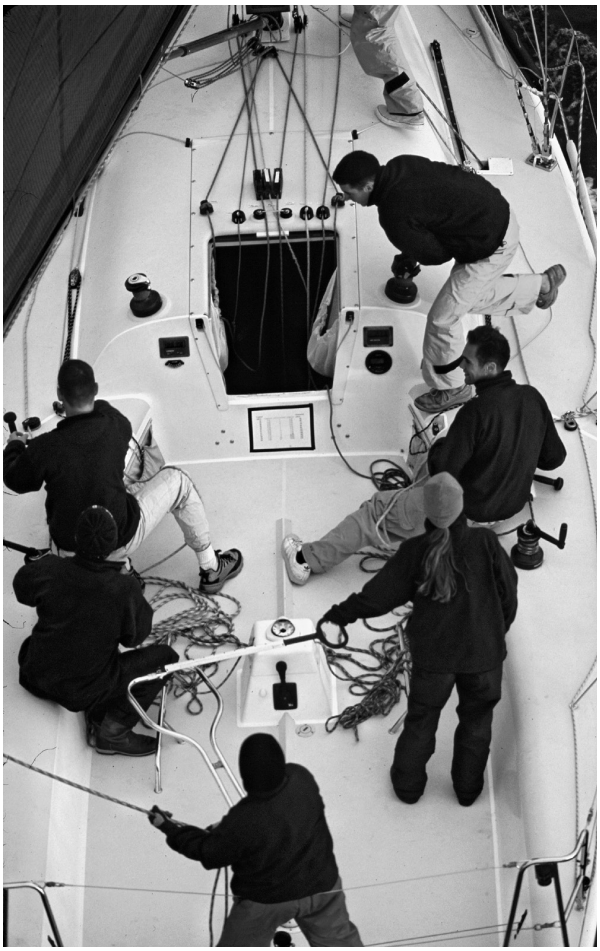
US SAILING SAFETY AT SEA CURRICULUM

Classroom Training

Care and maintenance of safety equipment
Storm sails
Damage control and repair
Heavy-weather crew routines, boat handling, drogues
Crew-overboard prevention and recovery
Rendering assistance to other craft
Hypothermia prevention and treatment
Search-and-rescue organization and methods
Weather forecasting

Hands-on Training

Life rafts and life jackets
Fire precautions and use of fire extinguishers
Communications equipment (VHF, GMDSS, satellite communications, etc.)
Pyrotechnics and EPIRBs



Agile crewmembers move like cats, neither tripping over lines nor wasting steps when moving from here to there. Fore-and-aft trim is a big deal on light, fine-bowed race boats with a well-trained crew. The crew know what changes should be made as the breeze builds or drops and where weight should be distributed on every point of sail.

The US Sailing-sponsored Safety at Sea Seminar Program, linked to the ISAF-endorsed curriculum, focuses on the needs of various categories of racing aboard fully crewed sailboats. The curriculum is comprehensive, as shown at left, including both classroom and hands-on experiences.

The sidebar (Hands-on Safety Training Opportunities) offers more detail on safety training opportunities. If you can't attend one of these formal trainings, make sure you and your crew are trained on all these topics informally if you are planning on sailing offshore.

From a racer's perspective, as rigorous and compelling as the ISAF curriculum is, it's not the last word for a shorthanded cruiser. The operational routine aboard a cruising vessel is anything but a sprint from A to B followed by an airline ride back home. Cruisers, who tend to be much longer-term residents of their vessels and the sea, increase their exposure to the elements over time. Cruisers also seldom push their vessels to the extent that racing sailors do, and they usually spend far more time at anchor than under sail. Thus, it's no surprise that one size of sail training doesn't fit all sailors.

Among the topics missing in the ISAF training are handling heavy weather with an in-mast furling sail plan (see Chapter 7), anchoring in gale-force conditions (see Chapter 6), dinghy handling and stowage, and singlehanded crew-overboard recoveries. For example, when compared to its usefulness for a full racing crew, the quick-stop crew-overboard recovery maneuver (see Chapter 13) is much less valuable to a doublehander who instantaneously becomes a singlehander.

We also need to consider issues involving emergency maneuvering under power, safety and system awareness, and the implications of long-term weather patterns for planning passages (see Chapter 10). The ISAF curriculum also doesn't address watchkeeping (see Chapter 1), the Navigation Rules (see Chapter 9), and other important safety topics.

In short, cruisers need to rethink the issue of safety at sea and arrive at a set of training priorities suitable to the type of sailing they're most involved with. Racing compared to cruising is in some ways analogous to differences between sprinters and distance runners: their workout routines may have some similarities, but their needs are quite different.

Whether racing or cruising, a skipper and crew learn to interface with their boat through evolving seamanship. Boat handling is an ongoing field test that validates skills, helps hone new ones, and informs which areas require more practice. The next chapter highlights key boat-handling skills and charts a course that will help you acquire what is necessary.