prominent barometer directly at eye level. "The reason that's there is not to tell the weather; it's there to detect air leaks. Before you dive, you set it to the current barometric pressure. Then, when you close the hatch, it will indicate any air leaking from inside the sub. If you have a leak, it'll show up here as an increase in barometric pressure. Before you surface, you always want to check this," Smyth explains.

Air leakage is not the only challenge. Carbon dioxide poisoning, battery power failure and a lack of navigational aids — a regular compass or GPS won't work down here — can make operating a submarine seem like an extreme sport. Yet, despite this list, there have been very few personal submarine accidents and even fewer fatalities.

Two levers control buoyancy, filling a forward and rear cavity using bottled air. A third tank is under the driver's seat and acts much like a fish's swim bladder for fine-tuning buoyancy. Pedals control a live rudder (it's live because it has an electric thruster fitted to it) and two other battery-powered thrusters control the 2,500-pound sub's forward and reverse mobility. Smyth also has scuba gear for backup breathing in case of a system failure.

"I'm still new enough that every time I've been down, I've just been trying stuff out to see if it is working right," says Smyth, who spends about 20 minutes at the bottom at a time and has dived to a depth of 50 feet.

Personal submarine owners say they like to be open about their activities so they don't surprise or cause suspicion in the waters they frequent. "When I went to Florida, I had a Coast Guard helicopter hovering over the top of me after a little while," says Smyth. "But then they saw bright orange and white, and they knew I wasn't smuggling."

Smyth's sub is distinctly different from the kind used by Colombian drug traffickers, who have started using submersibles following tightened U.S. border security. Drug subs are not really submarines at all — they're boats that float just beneath the surface and use plastic pipes to connect the cabin with breathable air. Diesel-powered engines propel the 60-foot cocaine-carrying vessels at 11 knots. Often sheathed in fiberglass, they are impossible to detect using sonar. Smyth's sub has the opposite effect: "If you want to get attention, show up in a sub," he says. "And I think it's common sense not to go diving near a navy base."

Smyth says he has been fascinated by the underwater world since making an underwater sled as a teenager in Argentina and then seeing an ad for Kittredge's subs in *Skindiver* magazine. "It seemed outrageously wonderful," he says.

Today, personal submarine builders and their marketers are hoping you'll feel the same way as Smyth did. Dozens of web sites advertising the latest personal submarine innovations would have you thinking you're the last to get one. Prices range from the most affordable $150,000 single-seater Uboatworx C-Quester to a two-man Ocean Pearl by SEAmagine that will set you back $1.2 million. For $90 million, U.S. Submarines' Phoenix 1000, at 213 feet in length, offers 5,000 square feet of living space on four levels — although U.S. Submarines president Bruce Jones refused to say whether the luxurious sub has ever been built.

The sQuba, a James Bond-inspired Lotus Elise convertible submersible that debuted at Switzerland's Geneva Motor Show in March, epitomized the hype surrounding personal submarines, says SEAmagine Vice President Charles Kohnen, who adds that in some cases, submarine marketers are getting ahead of their manufacturers by advertising products that still have many kinks to work out. Price and delivery then become two big issues, he says.

Photos courtesy of PSUBS.org

PSUBS convention at Raystown Lake, PA. A look inside Smyth's submarine (Inset).

If you're thinking you might want to give a personal submarine a try, but don't quite have the $1.2 million needed to buy one, or you're not up to building your own (for about $20,000), you might consider signing up for submarine school. A three-day program in the Turks and Caicos Islands in the spring of 2009 costs $17,000 and is offered through Deepflight.com.

Kohnen describes the current trend for personal submarines as the second wave — the first being in Kittredge's days of the 1960s and '70s. Submarine research and development stalled in the 1980s and '90s when the military shifted its focus to computerized unmanned submersibles. Tourism submarines (in tropical waters worldwide, but would you believe also, a 22-passenger submarine at the West Edmonton Mall, Canada) have kept the industry viable, but the technology has not really advanced until recent years when large yacht owners started buying submersibles for their private use, he says.

Despite all the talk, only four megayachts have submersibles on board so far (although there are another handful on order), according to Kohnen. Sub ownership is often held secret under confidentiality agreements between builders and megayacht owners. Despite this, Microsoft co-founder Paul Allen is reported to have his own 60-foot sub (sleeps eight), which launches from the underbelly of his 414-foot megayacht *Octopus*. And Larry Ellison, co-founder and CEO of Oracle, is rumored to have a sub on board his 458-foot *Rising Sun*, but those in the know suspect this is little more than dock talk. The American Bureau of Shipping says it has only classified 37 vessels as A1 manned submersibles (home-builders typically do not pursue ABS classification). Besides issues of safety, operation and maintenance, some industry enthusiasts are skeptical of the personal sub on megayacht trend.

"I think people have this idea that they'll go down and see thousands of fish hovering around them and it's going to be as clear as day," says Jon Wallace, Personal Submersibles Organization co-founder. "People are going to be disappointed because there's really not that much to see down there — unless you're really into subs or scuba diving and you're targeting your mission to view a wreck or something specific."

Wallace, an avid scuba diver, says for him, the submarine attraction is simply for the thrill of it. He gets excited looking at a rock knowing he's the first human to lay eyes on it. "It's seeing things that nobody else has seen."

His organization attracts 50,000 visits to its web site Psubs.org each month. "There's a very high curiosity factor," he says. "But there's less of a dedication factor — 50,000 poke and look, but only 375 are on the mailing list, and of those, only about 15% are building or have a sub." Interestingly, not one of the 375 mailing list participants is female. The group is evenly comprised of three distinct groups: engineers — software, civil, and electrical; scuba divers and those curious about the technology. And they use their submarines for a variety of activities including treasure hunting, aiding in research and rescue operations. The group will host its annual convention in Rockland, ME, from August 1-3 to mark Kittredge's 90th birthday in his home state.

— By Jill Culora