

Wings over the Arctic

BY WILLIAM A. BURNHAM

Today is September 1, and my son Kurt and I have just returned to Uummannaq in West Greenland. It is our second visit to this small remote island this season and winter is fast approaching. It is no longer possible to continue our research as the birds have finished nesting and most have already begun their migration south. If we are lucky and the weather holds, we may be able to complete our voyage to our research station at Thule.

I have made numerous forays to this part of the Arctic since 1972, when I first came to search for peregrine falcons in the Søndre Strømfjord area. At that time, biologists had predicted the bird's extinction throughout North America. However, a couple of early band recoveries and autumn migrations of peregrines along the eastern beach fronts of the U.S. suggested that, in fact, a substantial number of these falcons might exist in West Greenland. Bill Mattox, founder of the Greenland Peregrine Falcon Survey, and his associate, Dick Graham, invited me to the the world's largest island to assist with their initial surveys. Although we did note a few pairs, their populations have actually increased in recent years with the banning of the use of DDT, first in Canada and later in the United States. Today, well over a thousand pairs of peregrines annually breed in Greenland.

At Bill Mattox's request, The Peregrine Fund, of which I am now president, took over his project in 1998. Our organization, which has provided the primary private-sector leadership for recovery of the peregrine in the United States, works globally to stem the extinction of raptor species.

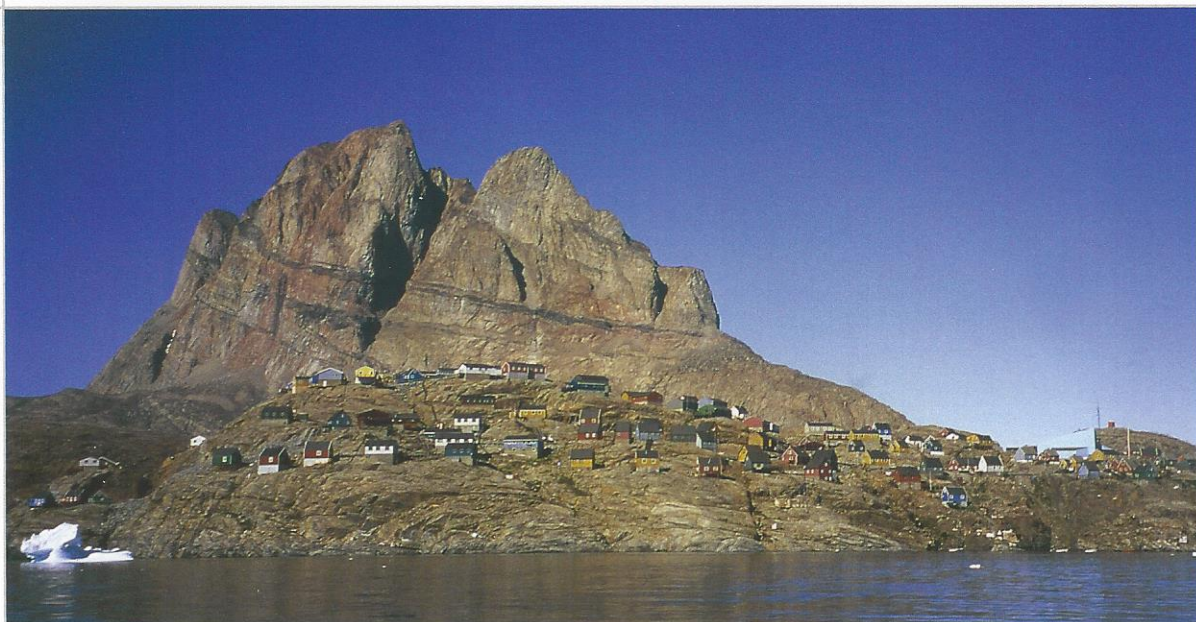
For this expedition, we shipped a boat from Schenectady, New York, to Søndre Strømfjord in the belly of a 109th Air National Guard Hercules equipped with skis. A U.S. military base until September 1992, Søndre Strømfjord, has since been ceded to the governments of Denmark and Greenland, who have changed its name to Kangerlussuaq, however, little beyond the port's name has changed over the decades. The Guard, which trains on the Greenland Icecap, agreed to transport our boat as far as Kangerlussuaq as part of a training mission. It was up to us to get the vessel to Thule.

Documenting changes in Greenland's extraordinary bird populations



Ice-choked shores herald winter's arrival in Greenland. Photograph courtesy Jack Stephens. Inset: A quick stop at a Greenlandic village on our journey north to Thule. Photograph courtesy Kurt K. Burnham.





The town of Uummannaq, left, clings to its namesake island. In the wake of an arctic storm, boats toss in the ice and heavy surf. Photographs courtesy Kurt K. Burnham. An immature male Gyrfalcon stands watch atop a rock.. Photograph courtesy Cal Sandfort.

We jockey for the best spot to anchor out of the

From Kangerlussuaq, our plan was to sail our 7.75-meter, welded-aluminum Safeboat to our research base at Thule, where it will remain for future survey work in North Greenland. We have worked and traveled in North Greenland studying falcons and their environment since 1994 using heavy duty inflatable boats, but they had limited range and use in the frequently rough seas full of pack ice and icebergs. The Safeboat is a big step up in safety and operational range because of its larger size, heavy duty construction, and the amount of fuel it can carry.

Although it is roughly 1,300 kilometers as a falcon flies, the distance between Kangerlussuaq and Thule is more than three times that by boat, paralleling the uneven, fjord-splintered coastline of West, then North Greenland. The voyage would afford us an opportunity to record numerous nesting grounds and resurvey 210 sites in the Uummannaq District that were noted nearly a century ago by Alfred Bertelsen, a Danish medical doctor, who had documented nesting falcons and other birds. A resident of Uummannaq and a bird lover, he recorded information on avian populations as he traveled through the district—noting some 30 gyrfalcon eyries between 70°03' and 72°03' N latitude. He published the results of his findings—the locations and population estimates of various seabirds, waterfowl, gulls, and other species—in 1921. For this expedition, the resurveying of the Bertelsen sites was the highest research priority. It is of scientific and conservation value because the previous information allows us to detect change in bird population numbers and species present over time.

Having departed Kangerlussuaq on June 29, we were midway through our field season when our expedition was thwarted by a failed outboard motor. Over the course of several weeks, Kurt Burnham, Tom Cade, Jack Stephens, Tim Gallagher, and I had surveyed nearly all of the rugged ice-free coastline in the Uummannaq District, including 207 of the Bertelsen sites, when one of the boat's two four-stroke Yamaha outboards developed chronic problems. Each time we thought the engine was fixed, it failed again. Tied up in coves protected



from the sea or bouncing about on waves in the open ocean, we spent hours struggling to fix the motor in-between calls on a satellite telephone to the manufacturer. Finally, on July 23, we had no choice but dry dock the boat, return home to buy a replacement motor, and to find a way to get it and us back to Uummannaq in time to deliver the craft to Thule before the region iced up.

Despite our "outboard issues," the season had been productive with regard to our survey of the Bertelsen sites. Except on the fringe areas that few humans frequent, we found almost no birds remaining among the species that are commonly utilized by humans. All the thick-billed murres are gone, as are most of the razorbills, eider ducks, and black-legged kittiwakes. Nesting cliffs where Bertelsen had recorded 500,000 pairs of murres and 100,000 kittiwakes are now devoid of all bird life. The cliffs are still stained from seabird excrement, and ancient grass-covered kittiwake nests remain, but otherwise there is no sign of the hundreds of thousands of birds that once flourished there. Islands where eider ducks nested by the hundreds only hold free-ranging packs of sled dogs. Even in the most remote areas few of these bird species remain.

We found only seven occupied gyrfalcon nest sites, and only three of these were at Bertelsen's locations. The few active falcon sites we located were near heathlands, and as with the



wind and path of icebergs.

other potentially vulnerable species, are far from the centers of human activity. They are probably near the heathlands because of potential prey, particularly ptarmigan. None of the eyries Bertelsen reported in or near seabird colonies were occupied. That should not be surprising since the seabirds are gone.

Birds remaining are mostly northern fulmars, glaucous and Iceland gulls, black guillemots, and northern ravens. Fulmars appear to have flourished, probably because they are not consumed by humans and the waste dumped into the sea from the local fishing industry provides a great deal of readily accessible food. Guillemots are abundant but not as numerous as Bertelsen had reported. This species does not nest in large colonies as do murres, or on open ledges, but instead in protected cracks and holes on cliffs, making them hard targets. The incredible scenic beauty of the area is unchanged, but certainly poorer by the absence of more than a million birds, which once nested there. How would Bertelsen feel if he were still alive, and what will future biologists find when they follow his, and now our, path through Uummannaq District and time?

Upon our return with our new outboard, the midnight sun no longer shines and standing freshwater is skimmed with ice each morning. Time is short to travel the remaining several hundred kilometers to Thule.

The Uummannaq region is incredibly scenic with many high rugged peaks, glaciers, deep fjords, and icebergs. Some 2,700 Greenlanders live here within eight communities. The main occupations are hunting and fishing in this remote area that can only be reached by helicopter, boat, or dogsled during winter.

Within two days, the new motor is in and running, the boat has been re-packed, and we are preparing to leave when boats begin piling into the harbor ahead of the arriving arctic storm with rain, snow, and, most problematic, high winds. Harbor workers stretch a buoyed cable across the mouth of Uummannaq Harbor to keep out the larger icebergs as we and other boat owners jockey for what we believe to be the best

spots to anchor out of the wind and path of icebergs. The smaller bergs (growlers), weighing only a few thousand pounds, are already passing through the cable and floating shoreward like enemy frigates. Boat owners must keep around-the-clock vigils to prevent the wind-driven ice from damaging or destroying their vessels. We are not exempt and move the boat twice to let large growlers by. It is impossible to move totally clear as the harbor is increasingly jammed with jagged ice and more boats. One of the larger boats breaks free of its moorings and ends up on the rocks while a dozen men try to push and pull it to safety and finally succeed.

After three long days and nights, the wind begins to die down. A brief phone call to our colleague and weather forecaster at Thule Air Base, Jack Stephens, confirms from satellite images that the storm is moving out of our area. Jack says we should be able to depart by late afternoon. We can not lose another day despite the fact that waves, ice, and tethered boats continue to knock our boat about. No more delays are acceptable; we pull anchor and carefully motor out of the harbor through a maze of boats, lines, and ice.

On the heels of the storm, our bow breaks through continual rows of on-coming white-capped waves, their remains splashing along the boat sides and spray drenching anything unprotected in the open boat. We stand behind the windshield and steering console. A continual stream of water runs past our feet and out the aft drain holes. According to the GPS, we have logged 3,766 kilometers since leaving Kangerlussuaq at the beginning of the expedition. As we leave the protection of Uummannaq, the size of the waves increases, as does the wind's force. We have two choices—return to the safety of the island and harbor to wait another day or follow the lingering storm along the unforgiving cliff-lined coast to the north. Geysers of sea water shoot dozens of meters above their tops into the gray sky in the distance as larger waves strike the caverned sides of icebergs. Both motors are running well, we have more than 200 gallons of fuel on board, and the boat was built to handle rougher seas than these. We choose to proceed.

Uummannaq and the other coastal islands are now well behind us and the wind is backing. With no barriers between us and Baffin Bay, the white-capped waves are replaced with large open ocean rollers. When we are in the trough the wave sides well above even our two-meter-long radio antenna attached to the windshield. It is as if we are in canyons of water. The boat motors strain as we climb up the waves, then race as we sled down the other side. The view from the wave tops of ice, deadly shores, and endless water is sobering. The sky is an eerie gray and waves of dirty foam blanket the ocean. The foam is a reminder of the beating the distant black cliffs endured from the departing storm. Maybe we should have stayed in Uummannaq as Jack had advised. Although never having experienced it, the feeling is as if we were in the eye of a hurricane, waiting for what is to come from over the horizon.

Fortunately, nothing bad arrives, but twilight is near as the first fjord in hours breaks the rocky coastline. Our ability to see 24 hours a day, as we did during the summer months, no longer exists, and our boat does not have lights or radar. We head into the fjord to find a safe anchorage, where we will be protected from waves and wind and go ashore to spend the

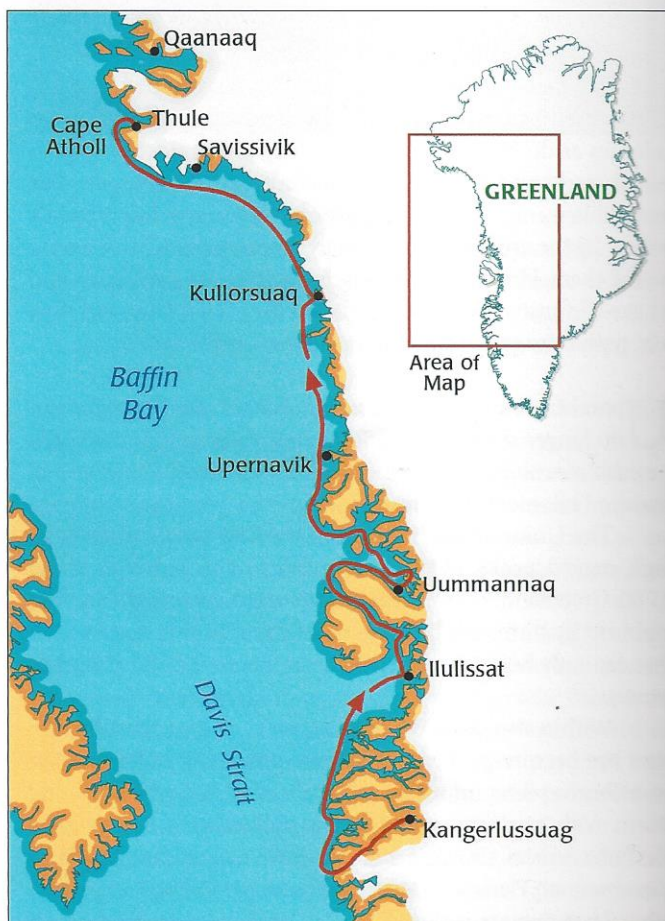


The huts are first come, first served with no limit

night. It begins to rain, and the dark clouds float above our heads. As we enter the fjord, on the back side of a spit of land, a hunting cabin appears in the dim light and we head for it. In many areas of Greenland there are huts sited at strategic locations for use in winter by hunters or others traveling by dogsled. Most are small, with low ceilings, and are dirty. Their entryways are often piled with trash and seal parts, every surface covered with soot from lamps and burning seal blubber. A single sleeping and sitting plank usually takes up much of the space and some type of a table or counter exists for cooking. These huts are first come first served, but with no limit on the number of occupants.

Tonight we are alone. Having anchored the boat and rowed to shore in the small inflatable, we discover we have no lantern, flashlights, or even candles. We never planned to be in Greenland this late in the year. The rain is coming down hard. Not having to set up a tent and having even a crude hut to sleep in is a welcome luxury. Matches, then the flame from our stove burner, are sufficient light for a cold snack and a cup of hot chocolate enhanced with a good shot of Bailey's. The boat safe, a roof over our heads, our stomachs full with food and drink, and now tucked into our sleeping bags, we notice the rain is coming down still harder, and we can hear it beat down on the roof. But we have no worries.

Just as we begin to doze off, a stream of water suddenly pours in from the ceiling onto my bag. The roof leaks, and evidently when a large enough puddle forms somewhere in the ceiling, it suddenly dumps, producing a small river. Just a meter or so away Kurt laughs, missed completely by the deluge. The



Map courtesy Matt Kanla

water runs off me and the shelf and onto the floor to disappear through one of the many holes. Still not wanting to set up a tent, especially since I would have to get it from the boat, I move my pad to the greasy floor and again crawl into my bag. No sooner do my bare feet hit its bottom than a new water stream appears, again above me. Further guffaws and Kurt offers me his sleeping pad, which I put over my bag to shed the water. As I listen to the steady drip of water splashing onto the pad, sleep comes quickly.

Raising my arm I can now almost see the face of my wristwatch without the help of the fluorescent marks indicating the hour. Time to get going as we have a long day ahead. Outside and inside the rain has stopped, but low clouds remain and patches of fog cover parts of the shoreline and sea. No time for breakfast; just load and go. Next stop Upernavik.

The sea is calm and the storm system is now all but gone. Patches of blue sky and sunshine appear through the fog and haze—a very welcome sight. We have an approximate longitude and latitude for Upernavik for our GPS plus a hand map of the coast showing the town. We should be there in a couple of hours. We need to refuel and buy flashlights and candles. If they have a bakery, a Danish pastry or two would also be in order; maybe even a loaf of raisin bread.

Motoring into new harbors with such a unique boat always collects onlookers. Upernavik is no exception. We manage to

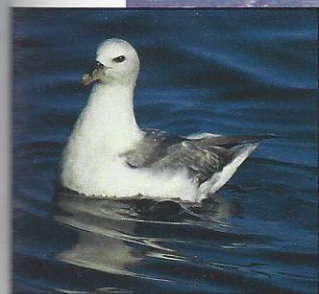
water. Upernavik is no exception.

Walking in the direction people pointed we ask others we pass the same question and thus are guided along the streets and paths to the fuel depot. It has just opened and there are several vehicles plus wheelbarrows full of containers and people carrying gas jugs or cans by hand. Unless we can borrow someone's vehicle it will be a difficult haul. Nearby, a Dane is just getting out of a small, well-used truck and after a short discussion generously offers us its use. Only in Greenland.

The boat is re-fueled within the hour and we return the truck. Refusing our offer of money, he instead offers us coffee. We soon learn our benefactor is responsible for the commercial fishing in the area. He explains that the fishing boats from Upernavik and other towns in West Greenland are having to travel greater distances to catch enough fish to make fishing profitable. The fish size and numbers continue to decline. The rate of fishing is apparently not sustainable. Changing the subject to seabirds and hearing what we found in Uummannaq, he explains that it is difficult to enforce fish and wildlife laws in Greenland because the game wardens usually live in the communities they are supposed to police. Enforcement actions are inevitably hard on them, their families, and their fellow citizens. He reminds us of the importance of social interactions in small communities, and particularly during the long dark winters.

The Pilersuisoq store in Upernavik is well stocked and

on the number of occupants.

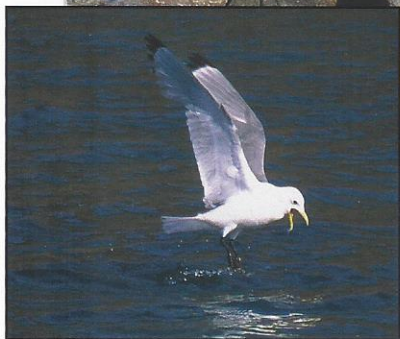
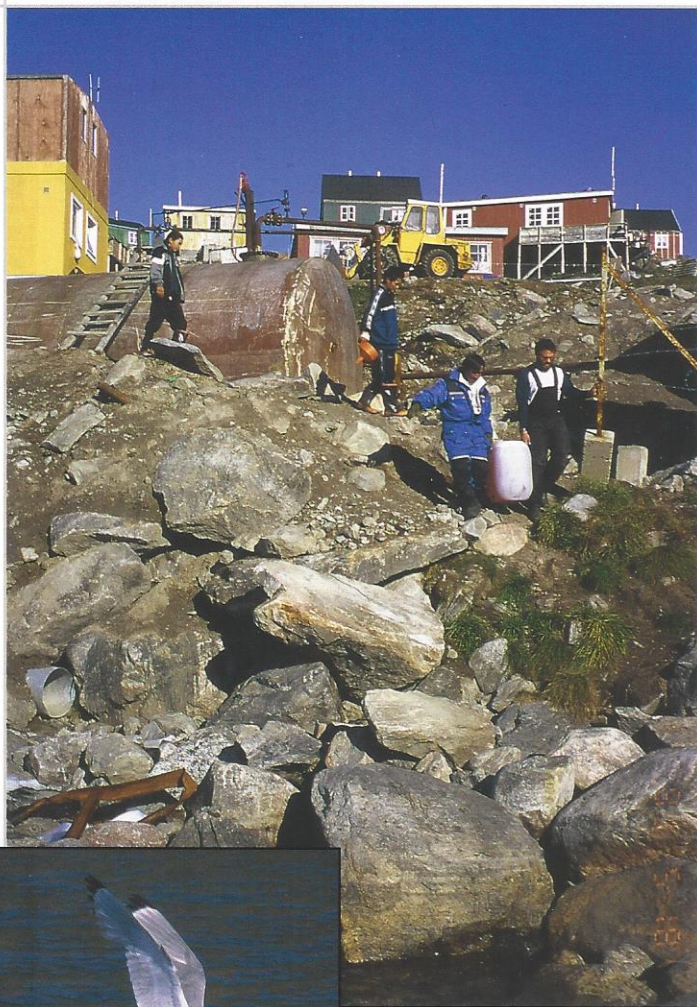


Travel in a straight line, facing page, is often complicated by ice. Photograph courtesy Kurt K. Burnham. Isolated travelers' cabins, above, dot the Greenland coast. Photograph courtesy Jack Stephens. The northern fulmar, inset, is one of the few remaining species in the area. Photograph courtesy Kurt K. Burnham.

nose the bow between other boats and tie against a crude pier. Above the vertical wooden planks there is a flat spot on which we can set the jugs for gasoline transfer to the boat. Now we just need to locate the fuel and hope the station is open this morning. As we ask onlookers for "benzene," all point in the same direction. Although most travel in Greenland is by motorboat, for some reason all but the largest towns have the fueling locations well away from the

has everything, including a bakery. Heading for the bakery, a Danish friend who formerly lived in Qaanaaq, North Greenland, finds us. Word does travel fast. He kindly invites us to his home for coffee and asks would we consider spending the night, then we could have a tour of the town, including an airport now under construction atop what was a small mountain above the town. This Danish contractor had blasted the mountain's high points off to fill the lows.

A short runway and passenger building are nearly ready for use. Small airports are being constructed in several of the larger communities for Greenland Air, which is shifting from Sikorsky S-61 helicopter service to using the more economical



For us to refuel in Kullorsuaq, we must haul our gas tank up a steep hillside, negotiating a rickety wood ladder and numerous boulders. With local help hauling the 35-kg gasoline jugs, fueling is quick. Photograph courtesy William A. Burnham. A black-legged kittiwake searches for food in the icy waters off Greenland. Photograph courtesy Kurt K. Burnham.

De Havilland Dash-7.

Before we finish our coffee a knock comes at the door; the visitor is a councilman from Kullorsuaq. Upernavik is the governmental center of the district and there has been a meeting. He understands we are traveling north and wonders if he may catch a ride home as there is no helicopter service there for several days. We ask about boat fuel at Kullorsuaq, and he assures us it will be available even though tomorrow is Saturday. Plans change, we agree to spend the night, and he will be at our boat (no need to explain

which one or where, obviously) at 7:00 A.M.

The town is picturesque with houses painted many bright colors and constructed on the uneven rock hillsides overlooking the sea, giving the community a stair-step appearance. Along with visiting the new airport we also go to the graveyard where Navarana, the wife of famed arctic explorer and author Peter Freuchen, is buried. She died on the Fifth Thule Expedition (1921–1924). After her death the priest would not let her be buried in the graveyard because she was

Greenlandic and not a church member. Therefore, in the dark of night her husband, with four friends, sneaked into the graveyard and buried her in secret. Next to the graveyard is the museum which is, unfortunately, closed.

Also nearby is the town's "landfill" at the edge of the sea cliffs. It contains a small mountain of yellow plastic bags, now used to line buckets, which also dot the area and sea below the cliffs. There are no sewers in Upernavik or many other towns in Greenland and toilets have a bucket inside that is regularly dumped into a "honey truck," which visits each home and business. The refuse is then transferred to the ocean. With the small populations this system has worked well, but the plastic bags are not biodegradable and are creating new challenges.

We have a spaghetti dinner with the Dane and his family, then check on the boat a final time before bed.

The small harbor is in the mountain's shadow, and the boat is covered with a skim of frost and ice. Before the windshield is scraped and the motors warmed, our councilman arrives wearing a snowmobile suit, carrying a cardboard box and well-used suitcase. All aboard, I coil and stow the ropes as Kurt takes us out. Leaving the shadow, the sun's warmth is inviting. The sea is calm, and a beautiful day awaits with incredible scenery in every direction. We estimate seven hours to Kullorsuaq. What a great day to be alive. According to the GPS we have covered some 4,110 kilometers and it is 7:00 A.M.

Kullorsuaq is a small community of about 250 people at the south edge of Melville Bay. A huge monolith, the Devil's Thumb for which the town takes its name, extends from the island where the village sits. Just when you think you have seen the most beautiful place in Greenland, there is yet another, even more spectacular sight. Our boat and the arrival home of the councilman combine to create a local event, and men and children gather, smiles and laughter abound. Kurt pulls alongside a small battered concrete pier next to a couple of smaller boats, being careful to miss a stringer of dead ring seals. Coffee is offered, but we explain time is short and we wish to cross Melville Bay before dark. The councilman heads off to get the fuel tank unlocked and points out the location. The tank is on the hillside and requires carrying the containers up, then down a rickety wood ladder and through and over the boulders on the steep slope above the water. With local help hauling the 35-kg gasoline jugs, fueling is quick, considering the situation. Handshakes and thanks all around, and we are off. Our GPS is showing 4,323 km covered and it's 3:00 P.M.

The next settlement is Savissivik which marks the northern edge of Melville Bay, now known as Qimussersarsuaq, a straight-line distance of some 275 km. This is the longest stretch of open water of our trip and with the icecap directly reaching the sea along almost the entire coast, there are very few places to escape a storm and no help if trouble occurs. We have a calm sea, bluer than blue skies, only icebergs on the horizon, not miles of pack ice to block our path as could exist, 250 gallons of fuel, and both motors are operating well. The Devil's Thumb diminishes in size, then disappears as we motor north-northwest while finishing the last of our Danish pastries from Upernavik. We should reach Savissivik after midnight. That will mean traveling the last hours in the dark. At least we now have flashlights.

The immensity of the bay humbles us as we push through the small rolling swells of crystal clear water. From time to time seals dot the water at a distance, then pop up nearby for a closer look at the intruder. Otherwise the only signs of life are the occasional dovekie or murre on its way south. Willie Nelson sings the "Red Headed Stranger" on the CD player. Moving further from land the swells diminish in size; then the sea becomes flat. At the half-way point across the bay, considering the remaining fuel and the calm seas, we decide to bypass Savissivik and alter course toward what we believe should be the location for the tip of the York Peninsula, the site of the monument built by the National Geographic Society to honor Robert Peary. There is a protected bay there where we have camped before.

Not a great deal has changed in North Greenland since Peary, Rasmussen, Freuchen, and other earlier explorers were here. We are passing by and seeing the same sights. Savissivik was where Peary retrieved the meteors now in New York's American Museum of Natural History. The meteors' depressions and drag marks still show where they once rested and then were dragged to the boat. These bays, points, islands, and peninsulas we are passing bear explorers' names as well as those given even earlier by the Inuit. I wonder what this High Arctic region will be like in another few decades or centuries.

This time of year in the High Arctic the sun remains near the horizon throughout the day. As we travel northwest it seems to be moving with us. Any minute I keep expecting it to settle from the reddish sky into the iceberg-spotted ocean, but it does not. The warmth of the sun mostly gone, now the temperature is below freezing with a chill factor probably near -18 C. We take turns sleeping on a pad laid out of the wind against the boat transom, but sleep is turbulent. Even though we are wearing our warmest clothes and are covered with a sleeping bag, after an hour or so we awaken shivering.

There is a lot of time to think while driving the boat, but one must also keep a watchful eye for ice, particularly the clear ice that is hard to see but capable of wrecking a boat. The heavy duty welded aluminum boat was constructed especially for our use in the severe High Arctic environment of North Greenland, a region where blizzards and hurricane force winds may occur any month. Some years the pack ice may not break up enough for boats to travel in certain areas.

Despite one's concentration, the mind does eventually wander, particularly in quiet seas. Kurt, asleep now, was 16 when I first brought him to Greenland in 1991 to help with the peregrine work in Kangerlussuaq. He has returned to Greenland every year since. Like me, he caught Arctic fever, I guess. Largely independent of Mattox, Kurt and I began working in North Greenland in 1993, establishing the High Arctic Institute at Thule Air Base in 1997 to facilitate research in the region. After completing his bachelor's degree in biology, Kurt assumed more responsibility for the work in Greenland and now, while pursuing his doctorate in ornithology at Oxford, he manages all our research in Greenland. Kurt and Greenland are alike in many ways, both maturing and trying to decide what they wish to become and how to get there.

The sun is now gone and I see the outline of the York Peninsula on the darkening horizon. The glacier just before the

peninsula is very active and there is always a strong current. We can anticipate a river of icebergs flowing from the bay past the point, although it is too far yet to see. Passing through there in the dark will be a challenge.

It is completely dark now and towering ghosts of sculptured ice jump toward the bow from the dense fog, then with my turning the wheel, disappear into the night as we pass. Floating through but not past the gray shroud of fog, the boat is blanketed, causing a thickening skin of ice to grow on all surfaces. The windshield was the first to ice-over, requiring me to stand aside to see at all while steering with an outstretched arm. Now I am back behind the opaque windshield. With Kurt perched on the bow, he calls back directions and gives early warning of ice. His hushed voice punctuates the monotonous growl of the outboard motors, which are just providing steerage at their lowest revolutions. We sail toward True North, zigzagging through the eerie gloom. Magnetic North lies somewhere to the west. The greenish glow from the GPS screen shows the direction we follow. It is very slow, cold going.

An hour passes, then two, and the darkness is decreasing, but the fog remains. I can now see beyond the bow a few yards, and Kurt returns to the back of the boat. His beard, eyebrows, and lashes are covered with ice, as are his hooded jacket and wind pants. Although his face is red from the cold there are no white patches suggesting frostbite. He pounds his hands together and waves his arms while jumping up and down to increase blood circulation and warmth. A sudden break in the fog shows the opening to the bay below the Peary Monument. We will not stop before Thule. We are only about 160 km from our goal, and from here on the territory is known to us as we have traveled it several times before.

The fog remains the entire length of the peninsula, but the density gradually decreases, and we increase speed with the improved vision. Each break in the fog provides a snapshot of a familiar landmark, brightening our spirits. We speak of a hot breakfast and warm bed awaiting us at Thule, the topic avoided until now, not wanting to jinx our steady progress. At Cape Atholl, we turn the final geographic corner and with it the blue sky wins out over the fog. Pushing both throttles forward and motors to near maximum RPM, we make the final run. Nothing can stop us now. Kurt takes the controls and sends seawater spraying, making several "S" turns since a victory roll is undesirable in a boat.

As we step ashore with the rope it is 6:34 A.M., Sunday, September 4. We have logged 4,767 km. Kurt wakes Jack Stephens with a phone call from the small harbor. Minutes later, Jack arrives with a happy face and a truck. We will unload the boat later, after breakfast and a nap. As I look over my shoulder while driving away, the boat seems at home, gently rocking with the ocean movement, just resting and waiting for the adventures of tomorrow. ■

WILLIAM A. BURNHAM, PH.D., a specialist in the conservation of birds of prey and author of numerous publications on the subject, has devoted much of his time to raptor ecology, captive propagation, and endangered species restoration around the globe. After joining *The Peregrine Fund* in 1974 to develop the *Peregrine Falcon* restoration program in the western U.S., he was elected its president and chief executive in 1986, a post he continues to hold today.