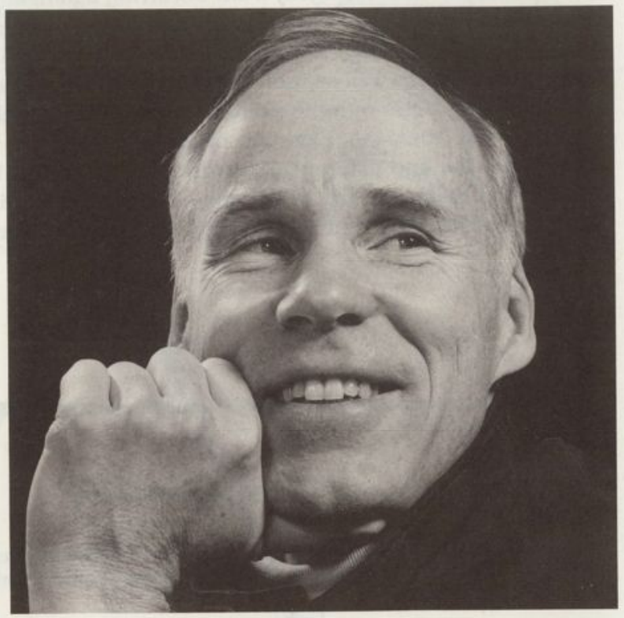
Chapter 5



Joe MacInnis, M.D.

Joe MacInnis: Under the Arctic Ice

Are you earnest? Seize this very minute!
What you can do—or dream you can—begin it!
Courage has genius, power and magic in it

Only engage and the mind grows heated,
Begin it—and the work will be completed.

— Goethe

Underwater documentaries got their biggest boost in the late 1960s, when diving filmmakers put themselves in odd subsea circumstances and recorded the outcome. It was before the days of high-priced Hollywood films such as *The Deep* and before high-tech television documentaries were regularly issued by the National Geographic Society or the Cousteau teams. In those days, the underwater filmmakers of the world assembled once a year at the Santa Monica International Underwater Film Festival.

Later, when underwater filmmaking commanded high prices from Hollywood, these annual gatherings ceased. No longer could anyone afford to make low-budget, self-financed films when high-paying movie producers combed the streets, paying fortunes for underwater film services. The adventurous photographers who showed up yearly in Santa Monica constituted the only pool of subsea filmmakers in the world.

These were rare days. Usually, after the showing, everyone involved gathered to discuss their dreams for the future. Al Giddings, who had drifted through fast-current reef passages in Tahiti to film sharks, quietly talked about plans to film a very deep breathhold dive by Frenchman Jacques Mayol. (Giddings later filmed the underwater segments of *The Deep* and other Hollywood epics.) Stan Waterman talked about leaving the east coast for a year to take his family to Tahiti. (His project eventually became a National Geographic special.) Dick Anderson wanted to make another film about diving for treasure or gold.

During one of these festivals, I met the exuberant Joe MacInnis, an underwater medical expert from Canada. Joe had an adventure planned that was to eclipse everyone else's.

He would be the first man to dive underneath the North Pole.

In those days Joe entered into the room bursting with secrets, and he liked to astound people. He once grabbed a large wooden saber from a hotel wall, brandishing it in the air as he launched into one of his tales. He was always in the middle of something—excited, enthusiastic, energetic, full of ideas. However, writing was one of his favorite activities—something, he said, that made "getting up at 6 a.m. worthwhile." In 1971 his poetry book, *Underwater Images,* was published in Canada. It was followed later by *Underwater Man,* a high-voltage chronicle of his underwater experiments and expeditions; but largely it was a poetic tribute to the sea. Many other books came after.

I learned that Joe was more than a dreamer; he was and is a serious doctor. As a world-recognized authority on hyperbaric medicine, he served as a medical consultant to several of Ed Link's saturation diving projects, notably *Deep Diver.* He also served as medical consultant to the U.S. Navy *Sealab* project.

As president of Undersea Research, Ltd. in Toronto, Joe has been the catalyst for developing Canada's manned underwater programs. In 1970 he designed and installed Canada's first underwater habitat in Tobermory Bay. The habitat *Sublimnos* provided scientists with a base where they could conduct underwater experiments, a project that sparked Canada's interest in her 150,000-mile coastline and continental shelf.

When Joe turned to the underwater Arctic, he turned the world's attention to one of the least known regions of the planet. In 1972 he designed and launched *Sub-Igloo,* a spherical plexiglass underwater station which he placed beneath the ice in Canada's Resolute Bay, 600 miles north of the Arctic Circle. There, where winter temperatures averaged 45° below zero, MacInnis and his team made excursions to study human and equipment performance, as well as Arctic marine life. The expedition was documented by both the National Film Board of Canada and *National Geographic Magazine.* Between 1970 and 1974, MacInnis made four expeditions to the site so that the seasonal differences could be monitored. During one of these trips, Joe became the first man to dive beneath the North Pole.

Joe said that as a child he was fascinated by water. A common theme among underwater adventurers is the compelling interest that takes precedence over the plotting or planning of a career.

"I grew up in Ontario, a place with a quarter of a million lakes, and you can't go a mile without falling into the water," he said. "Each summer we'd go to the lakes, summer camp or something, and I fell in love with aquatics. I had this

Courtesy of Joe MacInnis

Underwater partners, Dr. Joe MacInnis of Toronto, Ontario, and Remote Piloted Vehicle of Falmouth, Massachusetts. The vehicle, equipped with powerful lights and television still cameras, filmed H.M.S. Breadalbane, sunk in 330 feet of water.

psychic alliance with water and a real love for it. I am a strong believer that kids are natural explorers, and it was then very normal for me to look at water and wonder what was on the other side. Then came the face mask; it suddenly became a new window."

His first career decision came in his early teens. "I decided, naively, that I wanted to become an Olympic swimmer," Joe said. "I went to Florida to a college swim clinic. At the end of it someone said, 'Hey, let's go diving!' I dove off Fort Lauderdale's second reef and it was one of the most exciting days I've ever had in my life. I was completely entranced with the rhythms and colors. That kind of watershed event plays a critical role in our lives. I think probably less so when you get older, but when you are young and *tabula rasa,* those magnificent imprints

are really strong, as this was on me. It was a rather shallow dive, but still full of all the glories of color, fish and life. I knew then, and I was still in high school, that somehow I had to work in the sea, that the sea had all the ingredients for me: exploration, discovery, self-discovery, artistry, creativity."

Because of this fascination, Joe entered the field of medicine. "I went through medical school, not with the idea that I wanted to become the classic savior doctor, but that medicine offered the best insight, the best telescope, into what was to me the most fascinating element of the planet—man: this incredible creature with all his fears, joys, delights, euphorias and sadness. Medicine was, in fact, a road map. As I went through college I kept hearing the names Cousteau, Link and (George) Bond, especially toward the end of my medical years in the early 60s. I thought if I could just work with any of them, I could combine medicine, the sea, and man, and they would all fuse into a very tight radius. Glory of glories! It came to pass."

At the time no university offered a degree in diving medicine. Joe was not stymied by the fact that he had become interested in something no one had thought of before. He knew his destiny was tied to the sea and that he would tie this to his studies in medicine. It meant he would have to carve a path no one else had trod.

"I knew I would probably have to go out of Canada, because nothing was happening there," Joe said. "Everyone said, 'Hey, there is no way. A doctor in the sea? What are you going to do, operate on porpoises? Eye transplants on sharks?' There was nothing to justify man and the sea, so it meant creating one's own curricula. The only way to do that was to go to the ultimate university—the ocean."

In 1963 Joe graduated, unsure of what was going to happen. He went to a meeting of the Underwater Society of America in Philadelphia. Here, he met George Bond, a U.S. Navy captain who had pioneered saturation diving techniques, and who was, therefore, called the Father of Undersea Medicine. Bond was preparing for the first of the U.S. Navy's *Sealab* projects, in which divers would live in an underwater habitat for extended periods of time.

Joe recalled his approach to Bond.

"I went up to Bond and said, 'Look, I just graduated from medical school and I'm just starting my internship and I really desperately want to work in the ocean with man, as a physician.'

"He looked at me and said, 'Son, we just can't do it. As much as I'd like to have you come with us, it's a Navy program and you are a civilian and you're from Canada, so it just isn't going to work.'"

Joe wasn't one to stop at discouragement; in fact, discouragement propels him to try harder.

"I realized I didn't know a thing, but figured I'd better get my humble shoes on and work like mad," Joe said. "I knew that it was going to cost me money but I thought if I could hang in there with enthusiasm for about five years, ten years, whatever, I could make it. There was no one else, no other physician, who wanted to work full time at this thing like I did."

His next opportunity came with Ed Link, who was dreaming of constructing an oceanographic facility at Harbor Branch, Florida, where submersibles took divers to the ocean floor for deep-sea studies. In those days, the challenge was to keep man underwater for ever-increasing lengths of time.

"I couldn't bring anything to him except a lot of enthusiasm and a little bit of experience," Joe said. "I now know how small it was. I pursued him for three or four months. Every couple of days I'd phone or write or wire. He was involved in the review of the *Thresher* tragedy and he was virtually inaccessible. There was no way I could get close to this man. I finally decided I had to resolve this thing, so I phoned him and said, 'Look, I'm going to be in Washington tomorrow and I must see you for just 15 minutes. I want to come and work for you and I know you're terribly busy, but would you talk to me for 15 minutes?' He said that he would see me at 9 o'clock the next day.

"It was then 4:00 in the afternoon. The simplest thing would have been to take an airplane, but there wasn't one. Toronto to Washington was a distance, so I drove all night. At about 6:30 a.m. I was passing through Gettysburg and hit a deer. It wiped out my radiator and the front of the car, and I was standing in the road with deer all over the windshield. I was going to meet with Ed Link in a couple of hours and all around me was nothing but graveyard and fog. It was ominous. So, I pushed the deer off the road and shoved the car in a ditch and walked back to Gettysburg and rented a car at 9 o'clock. I phoned Ed Link and said, 'Mr. Link, you're not going to believe this, but I'm going to be a little late and here's why . . .' He laughed, and I saw him at 10:30."

Joe said that when he met Link, he "let fly five years of ambition."

"I guess we hit it off," he said. "I think he could feel the intensity; I was terribly excited. At that time, he was looking for a guy who could support his deep dive series, Man-in-Sea, phase II. Link said to me, 'There is one thing you must do. I'll put you on a Link Foundation Fellowship and I want you to go to work for Chris Lambertsen. He is the best in the world. I want you to spend some time in his laboratory and get some training and have him introduce you into diving medicine as we know it.' I think working with Chris Lambertsen was the most exciting intellectual experience I've ever had. Chris is truly a giant among men."

Under Lambertsen's direction, Joe was assigned to work with another subsea technician, Dr. James Dickson. He prepared for the deep dives of Man-in-Sea by "getting the analyzers ready and finding out from Jim what the problems were."

"We did some mice experiments which ended up in a series of dives to 4,000 feet, which, for mice in 1965, was pretty exciting," Joe said. "The two of them, Lambertsen and Dickson, guided me and showed me some of the hurdles. At that time they were just starting to get ready with their new 1,200-foot facility. It was very exciting, because it was my first introduction into real diving research."

Joe's first practical experience at sea came in March 1964, when Link began the first tests for Man-in-Sea, phase II. In this program, two divers, Jon Lindbergh and Robert Stenuit, dove to 432 feet for 49 hours. It was, at the time, the deepest, longest dive ever made by man.

Joe called this dive his "entrance into the serious game." As a doctor, his role was to provide medical life support for Lindbergh and Stenuit. He remembered the implications of the dive's success.

"That was the first real demonstration that man could saturate deep within the sea and could go to 400 feet plus. By coincidence, we just happened to rest the station at the average depth of the continental shelf—432 feet. This demonstrated that man had the physiological resources to live for short periods of time at the deep edges of the continental shelf. We knew that if he could do it for two days, then he could probably do it for 20 days. It was a very pivotal experience, because it brought together a lot of different technologies. It fused deep diving engineering, physiology and operations together for the very first time. It also helped spawn a lot of commercial diving companies. Link was then able to go to Union Carbide and say, 'Look what man can do. Let's start a company, an ocean systems company,' and for a while, Ocean Systems was the largest diving company in the world and certainly the most advanced from a research point of view. Then, others came strongly on the scene, such as Comex and Oceaneering."

Joe went to work as an undersea medical director for Ocean Systems, where he worked on ways to get man deeper for longer periods of time. Bond's discovery that a diver could stay in a submerged chamber indefinitely without getting the bends had had enormous impact. The age of saturation diving was begun.

"We had the most incredible 24- to 36-month period where we had the research dollars that we needed, and the expertise that we needed, and we started simulation dives," Joe said. "We did several hundred dives in that period, including 48 hours at 650 feet. We began the first really deep oxygen-helium dives when the other guys had no idea what was going on past 200 feet in terms of saturation diving."

From 1965 to 1968 Joe worked with Ocean Systems. He also continued work with Ed Link on the *Deep Diver* projects out of Harbor Branch. Cousteau, who had

Courtesy of Joe MacInnis

Joe MacInnis, Peter Benchley and Emery Kristof.

introduced the world to diving, had, by this time, shifted into the area of film and, by 1965, the French captain had almost disappeared from the deep-diving arena. Meanwhile, the U.S. Navy had launched its *Sealab* program, in which astronaut Scott Carpenter played a role as an aquanaut.

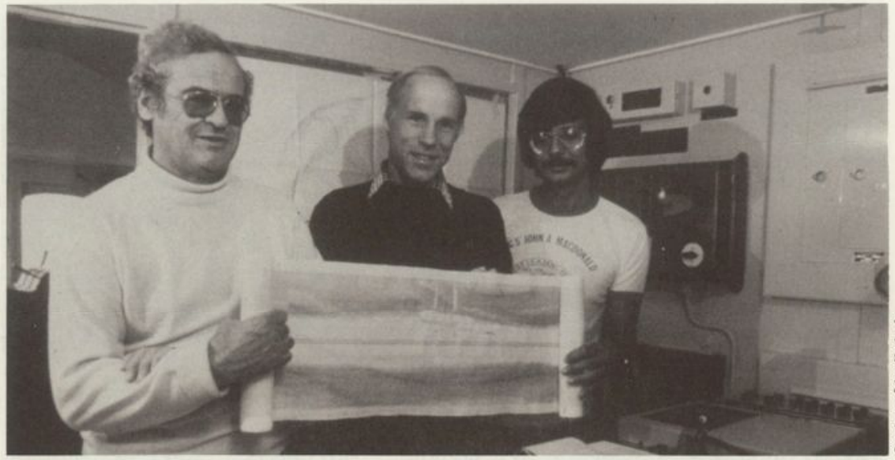
However, the real push for underwater man was coming from the oil and gas industry, now drilling farther and farther offshore for oil. By 1969 offshore diving companies like Comex and Oceaneering were "starting to thunder," according to Joe. By this time, however, Ocean Systems was quietly slowing down. When Link left the organization, Joe turned his attention to Canada's underwater program.

In 1970 Joe was invited to Ottawa to help the Canadian government review its undersea activities—the country's marine science, ocean industry, shipbuilding and law of the sea. He completely immersed himself in Canada's sea program and, in 1973, his country announced a national ocean policy.

In 1969 he came up with the idea of *Sublimnos.*

"I thought that Canada should do something, maybe modest, but something," Joe said. "I decided that we could have a spartan underwater station by getting a few nickels and dimes together, open it up to everybody for use in scientific work. But mainly *Sublimnos* would be a catalyst to other bigger things."

To finance *Sublimnos,* Joe founded Undersea Research Ltd., a nonprofit center for research and education. The first significant funds came from the National Geographic Society. During the first winter Joe and his team worked in



Courtesy of Joe MacInnis

1980: Discovery

Sublimnos, they realized that the Great Lakes were very similar to the Arctic in terms of ice and other conditions.

"So I thought, 'Why not go to the big arena of the future?' " Joe said.

He assembled his first Arctic expedition in 1970, in which he and a team of four divers stayed 12 days and made 30 dives to see what could be explored in this frigid, polar world.

"All I wanted to do was look at the Arctic, look at the problems of equipment and human performance," Joe recalls. "We also did brief biological and geological surveys and tried to clarify the value of divers for that sort of operation."

The Arctic was, he saw, in many ways like the rest of the ocean 20 years before; and he saw that this region of the world would soon be explored for its resources:

> "You could descend through the Arctic interface and down through the water column to the bottom, and make a checklist. Oil and gas, pipelines, subsea production platforms, pollution and baseline studies, and the hundred-plus jobs that commercial divers do. They would eventually do them all in the Arctic: dock repair, salvage, tying in a completion system, whatever. My feeling was to get man up there on a nonurgent basis before a crisis arrived so that we could get some idea of what the problems were."

Courtesy of Joe MacInnis

1981: Dr. Joe MacInnis, Northwest Passage

Joe conducted a series of expeditions to the Arctic to give his team an insight into operating conditions during summer, winter, spring and fall. Each expedition grew larger in complexity, in people, in number of dives and in objectives. He began with four divers and stayed about a week. On the last trip he stayed nearly two months with 50 divers who made almost 300 dives.

Sub-Igloo, an offshoot of *Sublimnos,* was launched in 1972. The divers swam into *Sub-Igloo,* flushed out the inside water and peered out through a plexiglass sphere into the surrounding water. Although Carleton Ray had studied marine mammals from a habitat beneath the Antarctic ice in 1964, his habitat, *Sub-Ice Observation Chamber,* did not require divers to enter the frigid waters. *Sub-Ice* used a ladder that went down a tube from the surface so that the scientists never got wet.

Joe thought of his manned underwater project as a "virtual eyeball in the sea". The whole idea of *Sub-Igloo* was to build a "relatively low cost, highly portable, diver-buildable, transparent sphere." *Sub-Igloo* was placed at 35 feet in Resolute Bay, 600 miles north of the Arctic Circle. In his book *Underwater Man* Joe describes that first dive made in the cold, midnight-black waters.

> It is time to go inside. I slip up through the hatch. My head breaks the surface. I remove my mask and hear the echo of my sigh. Cautiously I look around.

> The water level is just below my chin, and I see small cakes of ice floating away on the wind of my steamy breath. The walls of *Sub-Igloo* seem not to exist.
>
> I climb up on the bench and sit quietly. Three divers outside wave. One points beneath the bench. I lean over to look and see two small fish swimming there. I am in the Arctic's first undersea fishbowl. But the implications are larger than that.
>
> The cold, clear water around me, so long the hidden home of arctic mammals and fish, is allowing us to probe its mysteries. This new tool, though, must be used with reverence. Yesterday an old Eskimo came into our tent, looked down the dive hole and said, "You will not scare our seals away, will you?"[1]

On December 13, 1972 Joe wrote me a letter from inside *Sub-Igloo*. "Hello and warm cheers from near the North Pole," the note began. On the envelope was the notice that the letter had been dispatched from the Arctic Ocean Floor at Resolute Bay. Still ahead for Joe was the North Pole.

In April, 1974 the Canadian Department of National Defense flew Joe and his team from Resolute Bay to Thule, and then to the military base at Alert Bay as part of a search and rescue rehearsal. From there, the divers were flown by helicopter 450 miles to the North Pole. "When we landed at the Pole, seven pararescue men parachuted out of one of the airplanes—some carrying Canadian flags . . . ," Joe said. "Some rehearsal! I was so moved by it all, that I cried. We made our camp and spent three days."

On April 28th, Joe and his team made the first North Pole dive.

"We were the first to dive and film under the top of the world. At the time, it was definitely the highlight of all the diving I'd ever done."

But every adventure Joe has ever undertaken is simply another step forward from his previous work. Following his early Arctic explorations, he produced a television series for CBC called "The New Wave," ten programs in which cameras focused on "the entire gamut from ocean energy to the Great Lakes."

During this time, he continued to write. "Writing," he said, "is the fountainhead of all clear thought." Today, he is still writing and, at this point, working on a novel.

Joe took a break in 1976 to study and teach. That year he took his family to Cambridge, England, where he studied and lectured at the Scott Polar Research Institute.

Then followed the complicated series of expeditions to find and document HMS *Breadalbane*, a 19th-century British barque which sank in 1853 off Beechey Island in the Northwest Passage. The shipwreck, located 600 miles north of the

Courtesy of Joe MacInnis

1983: Dr. Joe MacInnis prepares to spend a day in the freezing temperatures of the Artic.

Arctic circle, was the northernmost shipwreck ever discovered on the sea floor. For years, *Breadalbane*'s gravesite remained impenetrable because of unusually heavy summer ice.

During these frustrating years, Joe occasionally sent letters to me about his disappointments. On November 22, 1979 he announced: "Another frustrating year in our search for HMS *Breadalbane*—whose bones still lie under the gloomy guardians of ice."

On April 16, 1981: "It's been a splendid year with the discovery of the HMS *Breadbox*. However, there was a bump in the road when we looked at the ice conditions and decided not to go this year. About 48 hours of depression and gnashing of teeth cured that. Next year for sure."

On May 20, 1982: "I've just come back from the high Arctic and a look at the ice over the *Breadalbane*. It was a fascinating trip that confirmed the reasons for postponing this year and also sparked an idea for solving the problem next year. . . . Instead of a D-8 Cat Train across the ice, we'll get a pair of Hercules, each carrying 40,000 pounds of gear, to fly it directly into the site. We're going to cut out an airstrip on the flat near-shore ice in Erebus Bay."

The next news I had of Joe and *Breadalbane* was with the July 1983 issue of *National Geographic*. On the magazine cover is a photo of a diver being lowered through a hole in the ice in a *Wasp* submersible. (*Wasp*, developed by engineer/designer Graham Hawkes, is a cross between a one-man submarine and a diving suit that allows a diver to go deep while remaining at surface pressure.) Inside the *National Geographic* report was a preview of the dives made on the *Breadalbane* by Joe and his team during 18 days in May, 1983.

That is the way with Joe—never giving up, despite the freezing odds. In 1986 he wrote that he had been working as a writer and consultant with Robert Ballard on the discovery of the *Titanic*, and had been involved with Mel Fisher's *Atocha* adventure as well.

In the meantime, he was travelling and lecturing all over the world. Currently he is planning another big Arctic project.

Joe's achievements are inspirational. Many of his difficult expeditions were accomplished on shoestring budgets. He said, "I never go for big dollar support. I don't believe that one should ask for it. I don't believe that one should go to Washington or Ottawa with a big tin cup in his hands. I think that if you have a viable idea with national implications, the first thing to do is see if it will stand on its own merit. We went to industry and we went to institutions and that's where we got the money. We didn't need or want much. In fact, we haven't had any government money for any of the Arctic expeditions except the last one. But we

got a lot of other support in terms of aircraft and equipment. I don't believe in the welfare state. Man must be productive if he is to remain free."

Notes

1. Joe MacInnis, *Underwater Man* (McClelland and Stewart, Ltd.: Toronto, 1974), pp. 141-142.

Suggested Reading

Joe MacInnis, *Underwater Man* (McClelland and Stewart, Ltd.: Toronto, 1974).
Joseph B. MacInnis, "Diving Beneath Arctic Ice" (*National Geographic Magazine*, August 1973).
Joseph B. MacInnis, "Exploring a 140-Year-Old Ship Under Arctic Ice" (*National Geographic Magazine*, July 1983).