

# International Journal of Naval History

Volume 1 Number 1

April 2002

## **Dangerous Crossings: The First Modern Polar Expedition, 1925<sup>1</sup>**

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### **Introduction**

The U.S. exploration of the northern most regions of the world in 1925 was mounted by three extraordinary individuals: Donald B. MacMillan, a colleague of Robert Peary's and a renowned polar explorer; Eugene F. McDonald, Jr., the man responsible for Zenith Radio Corporation's prominence in the radio industry and himself an explorer; and, Richard E. Byrd, a young naval aviator set on making a name for himself as an explorer. All three held the rank of Lieutenant Commander. Their combined efforts led to the Navy co-sponsored expedition's success as the first modern expedition to the Arctic: it was the first time that both aviation and shortwave radio were used in systematic exploration. The accomplishments of the expedition, the details of which have been long suppressed due to impact on the Billy Mitchell court-martial trial, significantly changed the future of exploration and long-range communication. Considered one of the most heroic non-combat missions in the annals of naval aviation, the expedition included the overflight of some thirty thousand square miles of the High Arctic in open-cockpit, near-prototype Loening amphibian biplanes.

### **Radio and Aviation**

MacMillan became one of the first explorers to use radio in the Arctic during his 1923–1924 Arctic Expedition. Although helpful for receiving, its use was limited for transmission because of the long wavelength frequencies used at the time. By the 1925 expedition, however, shortwave radio was being used, allowing communication both night and day over transcontinental distances with shortwave frequencies around 7 MHz or around 14 MHz. The implications of reliable long distance communications, even in daylight, were not lost either on the U.S. Navy or on Arctic explorers.

The first five years after World War I also witnessed rapid developments in aviation. Arctic explorers had long dreamed of using aircraft to explore the vast expanses of both Polar Regions. The Arctic Sea, with large areas of wind and tide-driven ice floes, frequently with pressure ridges reaching 30 feet in height, seemed particularly amenable to exploration by air. Balloon flights were attempted as early as 1897 and fixed-wing aircraft were in use experimentally in Spitzbergen, Northern Canada, and Alaska by the winter of 1924–1925. The only questions that remained were which expedition would prove the use of aviation in the High Arctic and whether the craft used would be fixed wing or dirigible. MacMillan thus developed four main objectives for the 1925

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expedition: 1) Utilize aircraft to prove the usefulness of heavier-than-air flying machines in Arctic exploration; 2) In conjunction with the Navy, utilize the new Zenith shortwave radios to prove the usefulness of these devices for reliable long distance communication in the Arctic and in ship-to-ship and ship-to-base communications over long and short distances. The usefulness of new battery-powered shortwave “trans-mitters,” which well known engineer John Reinartz and Zenith had designed for the aircraft of this expedition, were also to be proved; 3) Extend knowledge of Arctic birds and fish under the guidance of Dr. Walter N. Koelz, the expedition’s naturalist; and, 4) Gather further magnetic, tidal and meteorological data necessary for navigation in the Arctic regions.

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The over-arching goal of the expedition was, however, the exploration of the last unexplored region of the Northern Hemisphere, the 3 million square mile area lying between the north coast of Alaska and the North Pole. In the 1920s some scientific evidence and much speculation indicated that this vast unexplored area contained a large land mass. Even in 1925, it was not difficult to visualize how the world strategic balance might have shifted in favor of the discovering nation, had there, in fact, been a lost polar continent in that large area of unexplored territory.

## Early Planning

Our research has clearly documented that the concept for the 1925 expedition originated in discussions between MacMillan and McDonald in the fall of 1924.<sup>2</sup> Several exchanges among Navy Secretary Curtis Wilber, McDonald, and MacMillan resulted in the crystallization of the idea by early February. By mid-February, McDonald and MacMillan had changed the concept of the expedition from a dirigible based one to one using fixed wing aircraft.<sup>3</sup> The prototype Loening amphibian was selected by McDonald and MacMillan and the considerable political clout of McDonald, working through his friend President Calvin Coolidge, resulted in the first three planes produced being taken from the Army and awarded to the Navy for the expedition.<sup>4</sup> Secretary Wilber had not initially supported taking aircraft north, but soon warmed to the expedition and gave it his full support.

Lt. Commander Richard Evelyn Byrd, USN (Ret), had been attempting to develop an Arctic expedition of his own in the late winter of 1924. His expedition, based on a TC-type dirigible airship, was floundering because of inability to raise funds.<sup>5</sup> Evidence indicates that Byrd was telling half-truths and outright lies in his attempts to obtain supplies and funding.<sup>6</sup> Byrd attended a briefing with McDonald and MacMillan, his first, in Wilber’s office on 28 March and by the end of the same day, had submitted to Wilber a new Byrd Expedition plan based on fixed wing aircraft. From this point on, Byrd claimed that the expedition had been stolen from him by McDonald and MacMillan;<sup>7</sup>

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irrefutable evidence documents that the expedition was conceived and planned months earlier by the two Macs. Byrd's specious claims have been accepted, however, and today most Arctic history texts credit Byrd with planning the 1925 expedition.

## The Navy Arctic Unit

McDonald was made second-in-command of the expedition and placed in command of the *Peary*, a steam-powered yacht purchased by McDonald and modified to carry the three Loenings. MacMillan's Arctic schooner, the *Bowdoin*, was the second ship in the expedition. Secretary Wilbur created a new temporary unit, the Navy Arctic Unit, and placed Lt. Commander Byrd in command. In April, Admiral W. A. Moffett, Chief of the Bureau of Aeronautics, determined that the personnel to serve under Lt. Cmdr. Byrd in the Arctic Aviation Unit should be selected from volunteers, due to the potentially hazardous nature of flight in the Far North. A request for volunteers was issued to all Navy air stations and squadrons. Within days there were over sixty volunteer officers and men to fill the seven remaining slots. After some deliberation, Moffett selected: Lt. M. A. Schur, a highly respected flyer and Navy racing pilot, Chief Boatswain Earle E. Reber, also a well respected Navy racing pilot, and five other non-commissioned naval personnel.<sup>8</sup> The group was headquartered at the Naval Aircraft Factory, then a part of the Philadelphia Navy Yard.

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In mid-May, pilots Schur and Reber were authorized to proceed to the Loening factory in New York City to accept the first two production Loening amphibians, numbered NA-1 and NA-2, and to fly them to the Naval Aircraft Factory at the Philadelphia Navy Yard. The next four weeks were a blur of plane modification. Reber paused long enough to return to New York to accept the third Loening, NA-3, and fly her back to Philadelphia. After the Loenings had been modified, the Unit then flew all three Loenings to the Charles River and Boston Navy Yard where, in a final frantic 36 hours, they were disassembled and loaded on the afterdeck of the *Peary* for the voyage North.

## On the Way North

After a tumultuous send off from Boston on 17 June 1925 and another from MacMillan's home port of Wiscasset, Maine, on 20 June, the *Peary* and the *Bowdoin* made their way east and north in fair-to-poor weather, pausing several days in North Sydney, Nova Scotia, for provisions, and to weld steel plates over the forecastle portholes of the *Peary* as further protection from the ice fields. On the second day out of Wiscasset, Byrd was nearly electrocuted by a radio transmission cable.<sup>9</sup> The expedition then passed west of Newfoundland, crossed to the Labrador coast and paused for several days each in Battle Harbor, Hopedale, and finally, Jack Lane's Bay. The *Peary* ran hard aground near

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Hopedale and after determining there had been no damage, McDonald did not report the incident to Navy officials for fear they would halt the expedition.<sup>10</sup>

On July 9–10, the expedition journeyed north to Windy Tickle at the mouth of Jack Lane's Bay, soon to be their departure point for the hazardous crossing of Davis Strait to Greenland. While at Windy Tickle, they made the first of a number of "broadcasts to the world" over the powerful transmitter on board the *Peary*.

## Godhavn, Coal, and Bureaucracy

The *Peary* arrived in Englishmen's Bay at Godhavn, Greenland, on 16 July 1925, seven days ahead of the *Bowdoin*, which had fallen behind to careen and replace a damaged propeller. Upon *Peary's* arrival, the Governor of North Greenland and the local doctor came aboard, and although they spoke little English, McDonald was able to make clear that the *Peary* was part of the MacMillan Expedition. An extended discussion revealed that there was a quarantine on the village due to whooping cough (no one could go ashore), and the *Peary* would not be able to obtain its much-needed supply of coal. The governor explained that a ship had called recently, taken aboard most of the coal available, and that there was not enough coal in Godhavn for the coming winter.

Lt. Commander McDonald began at once to solve the problem by making maximum use of both diplomacy and shortwave radio. At some point on the seventh day stuck in Godhavn harbor, it became clear to McDonald that Governor Rosendahl could supply coal, or at least permission to mine it at nearby Umanak, if only the Danish government gave its permission—and that could be gotten via their Embassy in Washington. It was not possible, of course, to contact the Embassy with the local longwave transmitter until nightfall, and nightfall was several months hence! McDonald contacted the Danish Embassy in Washington using the shortwave equipment of the *Peary*. The message was received by a young ham in Washington who relayed it to the Embassy and permission was received within hours.<sup>11</sup> This incident, by itself, demonstrated the vast superiority of shipboard communications *using the shortwave spectrum* over both the long and medium wave spectrums then in standard use.

## On to Etah

As soon as the coal was loaded, the *Peary* put on steam to catch up with the *Bowdoin*, already well up the coast, heading for the village of South Upernivik. MacMillan had taken the *Bowdoin* north soon after the *Peary* left Godhavn, knowing that the more powerful engines of the *Peary* would enable her to catch up. MacMillan, McDonald and Byrd were very anxious to reach Etah by 1 August. MacMillan knew that the three-week-long "summer season" at Etah and nearby Smith Sound usually began on 1 August; they

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needed every minute of those three weeks if the goals of the expedition were to be achieved before the ice closed back in for the year.

The expedition arrived at Etah on 1 August and began the long and arduous process of unloading the aircraft and re-assembling them on the rocky shale of the only sliver of beach in Etah fiord. The fuselages were floated ashore one at a time and the wing sets were then assembled and attached. The back-breaking difficulties of this work in 30-degree sea water is not even remarked upon in the private papers of these men, although Lt. Schur lost two toes from each foot and others must have suffered similarly.

Late on 3 August, Lt. Schur took NA-2, the first Loening assembled, up for a 30-minute test flight. Thus, Lt. M. A. Schur, USN, became the first American pilot to fly in the Far North and the first person in the world to overfly the ice cap of Greenland.<sup>12</sup>

The following day other exploration flights confirmed MacMillan's and the flyers' worst fears: the coldest winter and spring on record meant that there was much less open water in the area for amphibious landing than expected. Further, everyone had underestimated the extent of pressure ridges in the ice fields. The specially fabricated aluminum skis for the Loenings would be useless when faced with these often 30-foot high ridges.

It was very clear to the aviators that, on flights away from the open water of Smith Sound, severe engine trouble with the newly inverted Liberty engines or any other major problems with the new Loenings would mean certain death for the flyers involved. There were no safe landing areas. In fact, the conditions were so much more hazardous than expected that Lt. Comdr. Byrd called a meeting of the aircrew and told them that, though he would continue with air operations, all others were excused and would only fly as absolute volunteers. It is a great credit to all concerned that air operations were continued by all hands and, though not all goals were accomplished, significant research and exploration was carried out. The weather continued to be very uncooperative. Byrd later reported to Secretary Wilbur that of the next 15 days, only 3 3/4 offered even marginal flying conditions.

## Radio Activity at the Top of the World

The first of a series of broadcasts was arranged when WAP (the *Peary*) notified Zenith, the press, and the amateur community on 30 July that the first broadcast from the Far North would take place on Saturday night, 1 August. For radio fans, however, the most memorable radio events of the 1925 Expedition were the next two radio broadcasts made from the *Peary* during the three weeks at anchor in Etah fiord. The first of these broadcasts occurred on the evening of 12 August and was noted in MacMillan's diary<sup>13</sup> as "our Broadcast to America." MacMillan listed the program as: "1) Accordion played by Bromfield and Gayer, 2) Music of the Eskimo by Myself (MacMillan), 3) General

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introduction and remarks by McDonald, 4) Singing by Eskimos and beating of Kilante via Eskimo drum.” McDonald also conducted daily business transactions with Zenith in Chicago over WAP and sent daily reports to The National Geographic Society, the expedition’s co-sponsor.

## Air Operations

After a number of short flights for radio and navigation checks, actual exploration began on 8 August with flights to Cape Sabine and Cape Isabella. In addition to the lack of landing places, mist and low cloud decks masked much of the rugged topography. The planes were grounded 12–13 August because of gales and flew again 14–16 August in an attempt to establish a forward base. Although the forward base was eventually established, it was established on the ice; upon return of the aircraft, all of the supplies had disappeared. The aircraft were grounded again 17–20 August by gales.

On 20 August, MacMillan, noting that Etah fiord itself was beginning to freeze over at night, decided to terminate the air operations entirely and return south, while that was still possible. The flyers protested and were eventually allowed two more days of air operations while the remainder of the expedition packed equipment. On the 21st, while the other planes were being disassembled and loaded aboard the *Peary*, Byrd, Bennett, and Francis flew Loening NA-1 about 50 miles down the coast and established a camp on a beach near the Smith Sound community of Igloodahounay. The next day, they flew far into the interior of Greenland and confirmed that, away from the coast, the ice cap was smooth and featureless and appeared to crest at about 11,000 feet elevation in the center of the island. In recording that flight in his official report,<sup>14</sup> for the first time Byrd mentioned the extreme discomfort of flying at altitude in the High Arctic in an open cockpit. That flight and one short hop the next day closed the air operations of the Navy Arctic Unit.

## The Trip South

The expedition left Etah on 22 August, just ahead of the freezing of Etah fiord. The *Peary* arrived at Godthaab Harbor on 6 August and anchored for ten days of rest, relaxation and re-provisioning. On 14 September, the *Bowdoin* arrived in Godthaab, having been delayed both by the hospitality and by a storm in the town of Sukkertoppen, further up the coast.

## Across to Labrador and Home

Crossing Davis Strait to Labrador at this season in any year is dangerous. In 1925, it was downright perilous. By mid-September, what was to be an active hurricane season was well underway and the remnants of several were to plague the expedition as it fought its

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way west and south toward home. One major storm caught the badly overloaded *Peary* crossing Davis Strait and she “heeled over like a schooner in a blow,” thanks primarily to the Loenings secured high on the aft deck. Due to the curtailed flight schedule in the north, she was also still carrying a large deck load of Navy aviation gasoline. After finally reaching Battle Harbor, Labrador, Commander McDonald reluctantly off-loaded the aviation gas, with full documentation for Navy Secretary Wilbur.

MacMillan and the *Bowdoin* party had an even more perilous crossing of Davis Strait into the teeth of a dying hurricane. Further, for reasons he never explained, Radio Operator Reinartz ceased keeping the thrice a day radio schedule between the *Bowdoin* and the *Peary* for over 48 hours during the crossing. McDonald and the *Peary* radio operators were not unduly worried when Reinartz missed the first scheduled contact, thinking that the *Bowdoin*’s wire radio antenna may have parted in the storm, as had the *Peary*’s twice during their crossing. But after missing three scheduled contacts in a row, the *Peary* had to assume that the *Bowdoin* was lost. A day later, with still no response to the *Peary*’s now hourly calling, the ship was preparing to sail out into the storm to search for the *Bowdoin* when Reinartz casually radioed that *Bowdoin* was across and safe, far to the north above Jack Lane’s Bay. Reinartz was later relieved of duty for this and other problems.<sup>15</sup>

Late on the afternoon of 9 October, the *Bowdoin* and *Peary* arrived at Monhegan Island, a few miles offshore from South Booth Bay Harbor, Maine.

## Conclusions

**Radio:** The science and technology of radio had matured significantly in the years between the 1923 and 1925 MacMillan expeditions. The ability of powerful shortwave equipment like that on board the two MacMillan ships to communicate almost at will over planetary distances, day or night, was a real breakthrough in the history of both exploration and communications. Even had the expedition turned back after the coaling incident at Godhavn, Greenland, the fact that McDonald and Byrd could easily communicate with MacMillan, almost 1,000 miles away in Hopedale, Labrador, and with the Navy and The National Geographic Society 2,300 miles to the south, would have revolutionized polar exploration. The fact that both ships, while on the north coast of Greenland in broad daylight, communicated with the U.S. Fleet, then in New Zealand, and with radio amateurs in southern Australia, played a significant role in the Navy’s decision to adopt shortwave radio for fleet communications.

**Aviation:** The Naval Arctic Unit, operating under extremely hazardous conditions, without adequate support and with aircraft which proved to be inherently unsuited to the task, managed to build a solid foundation of aeronautical experience in the Far North. Using three planes of a totally new type, these conspicuously brave aviators flew more

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than six thousand miles, five thousand of which were flights from Etah on work central to the mission. From the air, they viewed more than thirty thousand square miles of terrain, a large part of which was inaccessible to foot travel and thus never before seen by humans. The inverted position of the Liberty engines on the Loenings obviously caused oiling problems and the information gained on this expedition was used to improve future models. The foundations laid by the Naval Arctic Unit aviators continued to pay large dividends in World War II and in Operation Deep Freeze on the Greenland Ice Cap some thirty years later.

**Byrd:** Byrd, soon to be world renowned as a polar explorer, applied the lessons of the MacMillan expedition almost immediately. Within a year, he adopted funding and the radio public relations strategies pioneered by McDonald and used both as the foundation for his unquestionably major contributions to polar exploration. It is also interesting to note that Byrd never again flew in Polar Regions in either open-cockpit or single engine aircraft.

**Court-Martial of Col. Billy Mitchell:** The Court-Martial of Col. Billy Mitchell convened soon after the expedition returned from the Far North. The expedition was a major area of contention in the trial and the Navy suppressed most of its details. With considerable maneuvering, the Navy limited testimony to that of Lt. Commander Byrd and Gilbert Loening. The trial transcript reveals that Byrd committed perjury, not about the details of the expedition, but about his own (non) role in planning the 1925 MacMillan Arctic Expedition.<sup>16</sup>

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<sup>1</sup>Considerable documentation of the entire 1925 expedition is found in the text and endnotes of John Bryant and Harold Cones, *Dangerous Crossings, The First Modern Expedition, 1925* (Annapolis: Naval Institute Press, 2000).

<sup>2</sup>Series of letters between MacMillan and McDonald in the private files of Eugene F. McDonald, Jr. Zenith Radio Corporation Archives.

<sup>3</sup>MacMillan to Moffett, series of letters beginning 5 October, 1924, found in RG 72, Records of the Bureau of Aeronautics, Records of Division and Offices within the Bureau of Aeronautics, Office Services Division, Administrative Services, General Correspondence, A-11 (1) Vol.1, Box 788-89, Entry 62. U.S. National Archives. These records contain much of the planning official correspondence for the expedition. The letter containing plans for fixed wing aircraft was written on McDonald's personal stationary.

<sup>4</sup>McDonald Files, Zenith Radio Corporation Archives.



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<sup>5</sup>Byrd to R. A. Bartlett, c/o Explorers Club, New York, 24 February 1925, found in R. A. Bartlett papers, Hawthorne-Longfellow Library, Bowdoin College.

<sup>6</sup>Correspondence between Byrd and R. B. Fosdick, among others, claiming support that did not exist. Byrd Archives, Ohio State University Libraries.

<sup>7</sup>Byrd to Bartlett, 30 March 1925. Byrd Archives, Ohio State University Libraries. The archives contain letters to others with the same claim.

<sup>8</sup>Harold Cones and John Bryant, *Zenith Radio, The Early Years: 1919–1935* (Atglen, PA: Schiffer Publishing, Ltd, 1997), 70.

<sup>9</sup>Personal log of Richard E. Byrd. Byrd Archives, Ohio State University Libraries.

<sup>10</sup>McDonald Files, Zenith Radio Corporation Archives.

<sup>11</sup>Radiogram copies, McDonald Files, Zenith Radio Corporation Archives.

<sup>12</sup>Personal log of (then) Lt. (j.g) M. A. Schur. Schur family; also National Geographic Society Archives, National Geographic Society, Washington, DC.

<sup>13</sup>Personal diary of Donald B. MacMillan for the 1925 Expedition, Peary-MacMillan Arctic Museum Library, Bowdoin College, Brunswick, ME.

<sup>14</sup>Lt. Cmdr. R. E. Byrd, *Report of Activities of Naval Aviation Unit Assigned to MacMillan Arctic Expedition*. Copies located in the U.S. Archives, the Byrd Archives and the Peary-MacMillan Arctic Museum Library.

<sup>15</sup>Memo exchanges between McDonald and MacMillan. McDonald Files, Zenith Radio Corporation Archives. McDonald and MacMillan decided to never make their reasons public.

<sup>16</sup>Byrd's testimony is found on pages 2103–81 of the official transcript. Special Collection of the Libraries at the U.S. Air Force Academy, Colorado Springs, CO; also the National Museum of Naval Aviation, Pensacola, FL.