

OBITUARY

ALFRED FAURE, French administrator on the staff of TAAF, died after a long and painful illness on 17 October 1968, at the age of 43. His speciality was the establishment and organization of Southern Hemisphere meteorological stations and their links with the world meteorological network. In 1949, when he was aged only twenty, he took part in the expedition to Ile Amsterdam which set up "Camp Heurtin", later known as La Roche-Gordon. In 1960 he was appointed chef de district in Terre Adélie. He will probably be remembered most for his work in founding what came to be known as Port Alfred on Ile de la Possession, Iles Crozet. In 1962-63 he was responsible for the construction of the provisional installations there, and in the following summer he supervised the construction of the first téléphérique from the shore to the station site on the plateau above. During the winter of 1964 he supervised the construction of the new station buildings.

PAUL ALLMAN SIPLE, the American Antarctic explorer and geographer, died on 25 November 1968. He took part in six major Antarctic expeditions and became a foremost authority on the geography of that continent, on the principles governing the adaptation of man to life in cold regions, and on polar logistics.

Siple was born at Montpelier, Ohio, on 18 December 1908. His boyhood in Erie, Pennsylvania, centred around Scouting; he had earned 59 merit badges when he was selected from the 826 000 Boy Scouts in the United States to accompany Commander Richard E. Byrd's first Antarctic expedition of 1928-30. Like James Marr, who joined Sir Ernest Shackleton's *Quest* expedition as a Scout in 1921-22, he subsequently obtained a University Degree and took up polar exploration and research as a professional career for the rest of his life. In this he was the first American pioneer.

When the expedition sailed in 1928, Siple was nineteen years old; he had just completed his first year at Allegheny College, Meadville, Pennsylvania, working for his BS in science, with biology and geology as major subjects. This year marked the beginning of a long friendship with Byrd, who recorded that Siple always carried out thoroughly and conscientiously whatever task was assigned to him. It was a good initial training for his Antarctic career, for he had to learn everything the hard way—from the mysteries of seamanship on the *City of New York* to household chores at "Little America" and the care and training of dog teams which were finally taken on exploratory sledge journeys by someone else. As taxidermist to the expedition, he had the seemingly endless winter task of skinning penguins and other birds for the American Museum of Natural History, later to be described by R. C. Murphy in his *Oceanic birds of South America* (New York, 1936). The main opportunity for biological observations did not come until the second summer, when he recorded the growth rates of marked Weddell Seal pups on the fast ice of the

Bay of Whales. One of the tasks which Byrd gave him was to bring back some live Emperor Penguins for zoos in the United States. Despite his unremitting care the birds all died from eating unsuitable food or were allowed to escape by unsympathetic seamen who wanted to use their pool as a swimming place when the ship reached the tropics. He was beginning to learn many things; not least the art of winning the support of other men for his projects.

Back from this first adventure, Siple re-entered Allegheny College as a sophomore. He was fully occupied with academic work to make up for the year in the Antarctic, writing his first book, *A Boy Scout with Byrd* (New York and London, 1931) and lecturing to scouts and other audiences. In 1932 he took his BS; then travelled for a year in Europe, North Africa and the Middle East, before returning to the Antarctic with Admiral Byrd's second expedition in 1933-35.

For six months before they sailed, Siple worked as personal aide to the Admiral, helping with the preparations; a job which was more than usually complicated during this period of economic depression. However, this time there was no South Pole flight to dominate all other enterprises. A much fuller scientific programme was organized. The main exploit of the first winter was Byrd's lone six-month stay at "Bolling Advance Weather Base", 190 km from the sea on the featureless Ross Ice Shelf. This was the first inland site to be occupied in Antarctica and at that time the world's most southern weather station. To anticipate Siple's application of these experiences at the South Pole station twenty years later, it is interesting to recall now that he had been entrusted with the task of studying and collecting together all the equipment and stores for this project; he also played a major part in the establishment of the station. The plans of the expedition called for air reconnaissance and ground exploration of the eastern margin of Ross Ice Shelf and its hinterland. As a reward for his work on the Advance Base, Siple was given the leadership of a four-man "Marie Byrd Land Party", which spent the second summer sledging with dog teams into the mountainous coastal region sighted from the air in 1929. He was navigator for this investigation of the northwestern part of the Ford Ranges and made a large botanical collection, while Alton Wade studied the geology.

Once again it fell to Siple to make another attempt to bring back living penguins to the Northern Hemisphere. A huge ice box was built for them aboard the *Jacob Ruppert*. Despite many deaths due to mycosis, ten Emperor Penguins eventually reached the United States alive, the first to be seen outside the Antarctic; but within a month these also had died of the same disease.

Siple recorded his own impressions of this expedition in another book, *Scout to explorer. Back with Byrd to the Antarctic* (New York, 1936). The chief scientific results of his sledge journey were the descriptions of mosses and lichens, including a great many new species, published in the *Annals of the Missouri Botanical Garden* (Vol 25, 1938). With Alton Lindsey, he wrote a report on their ornithological observations for the *Auk* (Vol 54, 1937), and with Chester A. Darling, a report on bacteriological investigations of snow and ice for the *Journal of Bacteriology* (Vol 42, 1941).



Paul Allmann Siple 1908-68

Looking back now in the light of hindsight at these first two expeditions, it is impossible not to wonder at the extraordinary risks which were constantly taken without fatal consequences. Home again, Siple decided that he wanted to be a geographer and enrolled as a graduate student at Clark University in Worcester, Massachusetts. Three years later his thesis on "Adaptation of the explorer to the climate of Antarctica" won him a Ph.D. In 1936 he married Ruth Johannesmayer. Their honeymoon, she recalls, was spent at a geography seminar at Syracuse, N.Y. She always entered into his enthusiasms for things Antarctic and never made difficulties about his lengthy absences.

When Congress appropriated funds for the United States Antarctic Service Expedition, 1939-41 (originally intended as the beginning of a permanent government-sponsored colonization run by the Department of the Interior, but interrupted by the war), Admiral Byrd made Siple responsible for the logistics of the whole operation. Since his last expedition, politics had come to the Antarctic. President Roosevelt's instructions included not only a clear mandate for the establishment of permanent settlements, but also an extensive programme of air exploration and a specific mission for members of the Service to "take any appropriate steps such as dropping written claims from airplanes, depositing such writings in cairns, et cetera, which might assist in supporting a sovereignty claim by the United States Government". For the first time Siple was now part of a United States Government Antarctic Expedition. Gone were the free and easy ways of private enterprise. As Chief Supply Officer, he quickly found that all ordering had to be done "through channels". He knew what was needed but could not buy equipment directly. Purchases had to be made through exacting bidding processes which often did not bring what was needed. These cumbersome procedures at times drove him frantic. He had to contend with the forces of bureaucracy which the Department of the Interior knew so well how to deploy with devastating effect; also with the determination of some senior officers in the Navy Department to thwart Admiral Byrd. As a close associate of the Admiral, Siple also became a target. But he was not responsible for the almost unbelievably stupid official Orders which so nearly caused all the civilian scientists to resign during the outward voyage.

Siple was leader and geographer of "West Base", or "Little America III", situated close to the site of Admiral Byrd's two earlier bases. From here, a series of exploration journeys by ground parties, supplemented by air reconnaissance, brought back a rich harvest of information about the eastern part of Ross Ice Shelf and Rockefeller Plateau. During the summers, Siple was concerned mainly with mapping and glaciology; he acted as navigator for all the exploratory flights. Approximately 2 600 oblique photographs were taken, affording continuous records to right and left of the aircraft track over most of the flight legs. In winter, he followed up his previous experiences in the Antarctic which had aroused his interest in the capabilities and limitations of specially designed clothing. Perhaps there is no place on earth where men can be so acutely aware of the need for a suitable scale to express sensible temperatures. With Charles Passel, Siple took up the pioneer work initiated by Sir Leonard Hill with the katathermometer in about 1919. Subsequent research on the atmospheric cooling power, especially at the John B. Pierce

Hygiene Laboratories in New Haven, Connecticut, and by Thomas Bedford in England, had developed Hill's ideas for temperate and tropical climates but not for cold environments. Siple and Passel determined the cooling rate at "Little America III" by the length of time required for a measured quantity of water to freeze and give off its latent heat of fusion. Correlations were made between these cooling rates and states of human comfort. Suitable answers to the question of relative comfort sensations had long been sought by climatologists, meteorologists and physiologists. The many variables precluded an easily comprehensible scale for use by the average man. With the idea of simplification in mind, Siple had produced in 1939 a scale specifically designed for Antarctic comparisons. This was called "wind chill index"; and was derived from multiplying sub-freezing temperatures by wind velocity. It had the obvious disadvantage of breaking down when temperatures rose above freezing, and high wind velocities exaggerated the scale, but despite these defects it was found useful. During the 1939-41 expedition and the two following years he developed this idea further and applied it to clothing problems. Wind chill came to be defined as the rate at which heat is removed per hr per sq m of surface exposed to the atmosphere. The units were adjusted to allow correlation of heat loss with the customary values used by physiologists to express human heat production and food requirements.

The reports of the 1939-41 expedition (published, in part, in the *Proceedings of the American Philosophical Society*, Vol 89, 1945), contained three contributions by Siple: "Geographical exploration from Little America III . . .", "Measurements of dry atmospheric cooling in sub-freezing temperatures," and "General principles governing selection of clothing for cold climates". The last of these had been prepared in 1941 and was at that time given a limited distribution for the use of the US Army Quartermaster Corps.

After the United States Antarctic Service Expedition had been recalled to the United States in 1941, Siple began to work up his results for publication. However, the Japanese attack on Pearl Harbor interrupted this work in December 1941: at first Siple was employed by the War Department as a civilian expert on the design of cold climate clothing and equipment. From July 1942 until August 1946 he worked, with the rank of Major, in the Research and Development Branch of the Office of the Quartermaster General in Washington. Between August and November 1943 I was fortunate to work with this organization, which at that time possessed two Sections, one for Observation and the other for Tests. The Observation Section was divided into units dealing with arctic, jungle, desert, etc. The Test Section, headed by Siple, undertook tests in the field, in various laboratories and in the hot and cold chambers at Lawrence, Massachusetts. Another unit in the Test Section studied world climatology in relation to clothing requirements. As can be imagined, the staff included a remarkable gathering of men with specialized polar experience. It was my good fortune to join them for a short period and to exchange ideas about American and British wartime cold climate clothing and equipment. It was typical of Siple that he allowed me absolutely free access to the mines of information in the files of this organization and to obtain an excellent idea of the work going on. He was chiefly concerned with three

types of investigation: First, shop tests to determine whether an article, often designed in the Branch, was up to some specified standard. These tests were usually made by trained inspectors in factories as a check on the quality or design of manufacture. Second, laboratory experiments devised to determine new principles. The scientists concerned were informed of the problem to be solved, but were given considerable freedom in arranging the details of their work. The results were a starting point for design or a basis for choice. Third, and most important, there were field trials in which items were tried out by troops in the field. These trials were conducted by military personnel and resulted in a judgement of the practical usefulness of the items.

One of Siple's special interests at this time was his Climatic Research Unit, which produced in 1944 the first *Atlas of climate and clothing*, followed by a more detailed series of similar regional studies. Maps were drawn to guide the Quartermaster Corps in supplying equipment and clothing for all parts of the world. For the first time, this was put on a sound scientific basis by the co-operation of climatologists, physiologists and engineers. At that time it constituted a new approach to the problem of army supply. The *Combat clothing almanac. Japan* (US War Department, 1945) is a good example of how it became possible to list in a relatively simple way the clothing assemblies needed in relation to the monthly climatic conditions of a given operations area. Siple deserved the main credit for this important work. In fact, it all stemmed directly from his pre-war studies. Critics who deplored the oversimplified physical and mathematical basis of wind chill tables had to admit that they could provide no better practical solution for the rapid supply of clothing to huge numbers of men operating in a wide variety of climates. Siple also made many contributions to the design of clothing, in particular, many will remember his controversial but effective vapour-barrier boots. The principle of vapour-proof barriers for footwear was jointly conceived by Siple and H. C. Bazett early in 1944 and was subsequently patented. This idea met with determined opposition from the US Marine Corps and other organizations. Its adoption was delayed for nearly seven years while Siple fought a "one-man crusade" against established ideas.

Discharged from the Quartermaster General's Office as a Lieutenant Colonel, in 1946, he joined the Army General Staff as military geographer and scientific adviser in the Office of the Chief of Research and Development, but he had hardly settled down to family life with his wife and three daughters in Arlington, Virginia, before he was off to the Antarctic again; this time as the Army's Senior Representative with the Navy's 1946-47 cold-weather-training exercise, Operation "Highjump". Admiral Byrd was officer in overall command. The plan was to attack the Antarctic on three fronts. Two naval task groups, each with a seaplane tender, encircled the 26 000 km coastline of Antarctica. A third central group operated from the Bay of Whales with ski-equipped aircraft. All the appropriate resources and techniques developed during the Second World War were brought into play during this gigantic expedition—by far the largest that had ever visited the Antarctic. The first icebreakers smashed their way through the southern pack ice, making way for aircraft carriers bearing Douglas landplanes fitted with wheel-skis and jato

bottles. At this time the first helicopters also arrived in Antarctica. The aircraft were to make reconnaissance flights inland and take trimetrogon photographs of as much unknown country as possible. As a contemporary review of the official documentary film about this expedition justly recorded: "From the start the Antarctic never had a chance!" But nor did the scientists get their chance. The harnessing of these forces was not to come for another ten years, when others, in particular Professor L. M. Gould, were able to bridge the gap between operational command and Antarctic scientific requirements.

In this massive three-pronged campaign, Siple joined the central group at "Little America IV". By now he knew much more about the problems of Antarctic geography than any of his companions. It must have been a strange experience, for he was faced with the beginning of that first brief period in American Antarctic exploration when the extremely efficient logistic support of the armed services far outran the abilities of the scientists to harness it for their purposes. "Highjump" was primarily a naval training exercise. No provision was ever made for working up the results into a form suitable for publication. The discoveries photographed from the air could not be plotted on maps in the absence of any ground control, astronomical fixes or precise methods of air navigation. Twenty years later, geographers (including Siple) were still trying to deduce where some of these aircraft went. The proposed "Highjump II" never left the ground. Set for 1949-50, political considerations brought about its sudden demise. President Truman was then engaged in an unrelated squabble with Admiral Byrd's brother, Senator Harry E. Byrd of Virginia.

In October 1955 the United States Government set up the "United States Antarctic Programs" (USAP) to co-ordinate and organize operations in the Antarctic and advise the government on policy. Admiral Byrd was given the title of Officer in Command, while Admiral George Dufek commanded Task Force 43 for what became known as Operation "Deep Freeze I", 1955-56. There were 1 800 men, three icebreakers, two cargo ships, one oiler and nineteen aircraft to be organized, and a great array of bizarre projects to be quashed. This major effort inaugurated a new era for the logistic support of science, eclipsed only by space projects. Miracles of air reconnaissance were performed and the foundations were laid for the United States contribution to the International Geophysical Year of 1956-57. Siple again took part; this time as Director of Scientific Projects. During the early stages of planning he had to share a desk, without even a telephone, with two other men at the Headquarters of Task Force 43 in the decrepit old Post Office Building in Washington. When President Eisenhower appointed Admiral Byrd as Officer in Command of USAP, Siple became the Admiral's Deputy and was able to use his office in the same building. I remember his rueful comment that it was nice not to have to conduct business walking up and down the passages.

Admiral Dufek's immediate objective was to establish "beachheads" for the major assault in the following season. His construction crews set up installations for wintering parties of 93 men at Hut Point, McMurdo Sound, and 73 men at "Little America V". The men at Hut Point constructed a 2 000 m air strip to take aircraft flying from New Zealand and from which

other US Antarctic bases could be supplied. All this was ready when the first aircraft of Operation "Deep Freeze II" arrived in October 1956 to inaugurate the IGY.

When the plans for the IGY were being discussed in Washington, Admiral Byrd pressed his former protégé hard and successfully for the South Pole command. Even without this support, it must have been obvious that no-one was better fitted by character, inclination and background for this assignment. But Siple's close and continuing friendship with Byrd, who was now forced by ill-health to stay at home in Boston, had sometimes been a mixed blessing. The senior officers of Task Force 43 in 1955-56 had found the aging admiral a difficult man to deal with: Byrd was still in overall command, although no longer on the active list, and he had many powerful friends in Congress. As a loyal "Byrd man", Siple inevitably inherited some of these antagonisms. However, his common-sense and long experience prevailed in the difficult circumstances of trying to serve two masters who frequently had strongly differing attitudes. The idea of a split command arose from Admiral Dufek's insistence that navy men could take orders only from naval officers and not from a civilian scientist. It was no new idea. British Antarctic expeditions had been faced with the same acute problems in the days of Halley (1698) and Scott (1900). This problem of command relationships has since been evolving; each year's experience contributing to its solution.

When the great test of his leadership came, Siple carried it off with conspicuous success and with the fullest logistic support of the naval authorities. The South Pole "Amundsen-Scott" station was constructed by a team of US Navy Seabees. Siple, then 48 years old, was appointed leader of the team of civilian scientists who spent the first winter at the South Pole, in 1956-57. There were eighteen men: nine scientists and nine navy men. Siple was scientific leader and John Tuck, then 24 years old, was in charge of the military support contingent. Between them, these two men achieved a co-ordinated programme which must always shine as a major landmark in Antarctic history. Enormous practical difficulties were overcome. Success in this case was due chiefly to the personal qualities of these two men, who fully understood each other. As the senior leader, Siple brought to this partnership an experience and understanding of human relationships which surmounted all the difficulties. His warm sense of humour, coupled with the fact that he was always approachable without risk of rebuff, ensured success.

Back in Washington once more, he finished another book, *90° South: the story of the American South Pole conquest* (New York, 1959). This starts with a very readable and useful account of the historical background. One cannot help being impressed by how much of this essentially American story after 1928 was also Siple autobiography—something in which he, personally, had played a leading part for forty years. This last book is of much greater historical interest than his earlier ones because it gives a fairly uninhibited account of some aspects of United States government policy and the relations between Antarctic "veterans" and "initiates"; also the very curious story about how the United States Government found themselves committed to a station at the South Pole at the CSAGI meeting in Paris in July 1955.

The Army General Staff had given him leave of absence for his last two visits to the Antarctic, but otherwise all his post-war appointments continued to challenge his special abilities. In many combat zones the environment had been shown to cause more casualties to men and equipment than enemy action. The United States had still not yet been able to undertake military operations in a winter climate without staggering casualties. It was Siple's assignment to search for solutions to these problems. To an outside observer, it often seemed that the greatest difficulties lay more in the resistance to new ideas in the Pentagon than in the extremes of global climate. While a tropical war was in progress, cold weather research got scant support.

Siple received many honours, including the four Congressional Antarctic Medals (1930, 1937, 1946 and 1957), the Legion of Merit Award (1946), David Livingstone Centenary Medal of the American Geographical Society (1958), Hubbard Medal of the National Geographic Society (1958), Patron's Medal of the Royal Geographical Society (1958) and Hans Egede Medal of the Kongelig Dansk Geografisk Selskab (1960).

At various times he was President of the American Polar Society, the Association of American Geographers and the Antarctic Society. He was also a member of numerous inter-departmental government advisory boards and commissions. To all of these, he brought his special knowledge with a dry humour which those who attended will not forget.

During a very active life, Siple experienced a development of thought about Antarctic politics in which many of his friends in other countries also participated in their various ways. It was a period of increasing national rivalry in which one of the chief motives for Antarctic exploration was to establish grounds for asserting or denying claims to territorial sovereignty. The active pursuit of these national aims often seemed to threaten personal friendships. In 1928-30 Siple was delighted and amused by a member of his first expedition who had the Union Jack tattooed on the soles of his feet for the sheer joy of stamping hard as he walked (he told me this himself). Perhaps this story about Charlie McGuinness was fiction, like most of his other adventures with Count von Luckner. But it all fitted with the general picture. In later years Siple was one of those who made substantial contributions to the many international agreements which superseded this attitude and eventually led through the IGY to the Antarctic Treaty of 1959.

In 1963, Siple was given leave of absence from his appointment as scientific adviser to the Army's Chief of Research and Development to go to Canberra on a State Department assignment as the first United States Scientific Attaché to Australia and New Zealand. In June 1966, while in Wellington, he suffered a stroke which left him partially paralysed. After some months treatment he recovered enough to return to Washington in January 1967 and take up his earlier appointment again. With the loyal help of numerous friends, and above all, that of his wife, he was able to overcome the painful handicap of a useless left arm and leg and get to his desk at the Army Research Office for a few hours each day. No notice of his achievements should omit some record of the courage and determination with which he had to adjust to this new situation.

During these final months of inactivity he must often have reflected upon the astonishing changes in polar logistics and research he had witnessed during the past 40 years: the contrast between the sailing ship and sledge dogs of 1928 and the icebreakers and mechanical land vehicles of 1968; blubber stoves and kerosine lamps giving place to nuclear reactors and electric power; cold uncomfortable huts replaced by large air-conditioned buildings; the struggles of dog transport compared with the routine air support of well-provisioned field parties in the remotest localities; the advances in food and clothing; the enormously improved opportunities and techniques for scientific research—to mention only a few. Paul Siple was one of the few who devoted their whole lives to bringing about these changes. Brian Roberts.

HANS WINGE SØRENSEN, last of the great figures of the Norwegian Antarctic whaling era, died on 25 October 1968 as the era itself was drawing to its close. He survived his old partner Lars Christensen* by some three years.

Sørensen was born in Sandefjord on 21 September 1890 and remained closely connected with the town all his life. After training at a business college he entered Aktieselskabet "Ørnen" in 1909, the firm through which Chr Christensen had gained a foothold in Antarctic whaling for Norway in 1905. From then, until illness forced his retirement in 1964, he remained closely associated with Christensen and Thor Dahl interests. In 1917 he became sub-manager of Vera Fedtrafineri A/S, a company developing a process for the hardening of whale oil, of which Lars Christensen, Chr Christensen's son, was manager. The two men thereafter remained close friends and business associates for some fifty years, the activities of the one complementing those of the other. In 1920, Sørensen became part owner and a director of Lars Christensen A/S and when that company was taken over two years later by A/S Thor Dahl, he and Lars Christensen became joint Managing Directors, a situation which continued to the profit of all concerned until 1964. He was also General Manager and a director of the three associated companies of A/S Thor Dahl: Bryde og (now Thor) Dahls Hvalfangerselskap A/S, Arktieselskabet "Ørnen" and A/S Odd, all three originally whaling companies but branching into general shipping after 1930. During Lars Christensen's frequent and prolonged journeys to the Antarctic and elsewhere, Sørensen remained at Sandefjord, responsible for their ever-expanding empire.

Like Christensen, he was deeply involved in the development and well-being of the Norwegian whaling industry, serving, at one time or another as a member of the Board, and as Chairman, of Hvalfangerforeningen, De Norske Hvalfangstselskapers Forbund (Norges Hvalfangstforbund since 1953), Hvalfangernes Assuranceforening and Hvalfangstens Arbeidsgiverforening.

He also played a spirited part in international whaling politics between the two World Wars and a decisive one in the re-establishment and protection of Norwegian Antarctic whaling after the Second World War. It was to attend conferences in 1944 with the Norwegian Government-in-exile in London on Norwegian whaling after the war, that he and P. G. Melsom twice made

* *Polar Record*, Vol 13, No 84, 1966, p 353-55.

small-boat journeys from Sandefjord to Koster, in Sweden, under the noses of the German occupying authorities.

Joh N. Tønnessen wrote of him “The story of Norwegian whaling would have been a lot poorer without a man of such exuberant vitality and such a many-sided and unusual personality as Winge Sørensen”.

ERRATA

	<i>Polar Record</i> , Vol 14, No 92, 1969
Page 644, line 29	<i>For £9 million read \$9 million</i>
Page 686, line 43	<i>For aris read Paris</i>
Page 689, line 15	<i>For 1967 read 1937</i>
Page 757, line 25	<i>For Lobadon read Lobodon</i>