

A history of South African involvement in Antarctica and at the Prince Edward Islands

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South Africa's involvement with Antarctica and the sub-Antarctic Prince Edward Islands is reviewed from the early days of exploration to the current day. Emphasis is placed on little-known but interesting events as well as the major activities and achievements of these years.

Suid-Afrika se betrokkeheid by Antarktika en die sub-Antarktiese Prins Edward-eilande, vanaf die vroeë dae van verkenning tot vandag, word in oënskou geneem. Klem word gelê op interessante gebeure waarvan min bekend is asook die belangrikste aktiwiteite en prestasies van hierdie tydperk.

INTRODUCTION

South Africa's involvement with the Antarctic continent and the sub-Antarctic Prince Edward Islands can be said to have commenced with the first explorations of the southern seas. This early involvement was indirect in nature and was primarily due to the position of the Cape of Good Hope and its importance as a stopping point for many of the early voyages of discovery. Later, Cape Town was a major port for many southern sealing and whaling expeditions and to a number of the 'heroic age' expeditions to the Antarctic continent. Only after the Second World War did South Africa become formally involved when it established a station on the Prince Edward Islands in the southern Indian Ocean, which it has occupied continuously since then for weather observations and as a research station. Formal involvement on the Antarctic continent commenced in 1959 with the first South African National Antarctic Expedition, and is still continuing. The history of the South African National Antarctic Programme (SANAP) is treated here by placing emphasis on little-known but interesting events, as well as on the major activities and achievements of the years.

History cannot be approached in a value-free manner. Perceptions of the past are coloured by one's own experiences and beliefs. Further, a historical study should be not only to gain an understanding of the past but also to suggest directions for the future. The history of South African Antarctic activities given

below is therefore one seen through the eyes of its authors. The suggestions for the future prompted by this study are given as thoughts for discussion, not as prescriptions.

Discovery of the Prince Edward Islands: the period 1663 to 1773

South of Cape Agulhas at the southern tip of Africa lies nothing but the Southern Ocean and few sub-Antarctic islands until the Antarctic continent is reached. When European explorers first sailed around the South African coastline in the fifteenth century, naming Cape Agulhas for its needle-like rocks, it was not *Terra Australis Incognita* for which they searched but the opening of trade routes to Asia. Not until two hundred years after the naming of Cape Agulhas did a Dutch East Indiaman of the Vereenigde Oostindische Compagnie, the 1 210-ton *Maerseveen*, commanded by Barent Barentszoon Lam (or Ham) on its second voyage to Batavia, leave the Cape of Good Hope on 14 February 1663 and travel off course into the Southern Ocean, discovering two islands at 41° S on 4 March. The more northerly island was named Dena, the southerly one *Maerseveen* (Leupe 1868; Van Bruijn *et al.* 1979). In March 1699, the Dutch Governor at the Cape of Good Hope, Wilhelm A van der Stel, sent the galleon *Wesel*, commanded by Philip ter Kuys (or ter Kuijs), to investigate Dena and *Maerseveen* and to report on their supposed timber resources (Leupe 1868). The *Wesel* was unsuccessful in its search and the islands slipped back into obscurity.

A hundred years passed before Dena and *Maerseveen* were rediscovered, in quite a different position, by the French naval officer, M M Marion du Fresne of the frigates *Le Mascarin* and *Marquis de Castries*, on 13 January 1772, after sailing from the Cape of Good Hope. He gave the islands the names Ile de l'Espérance (now Marion Island) and Ile de la Caverne (Prince Edward Island), after initially thinking he had discovered the southern continent and naming his first sighting Terre d'Espérance (Roth 1891). Prince Edward Island was circumnavigated and a large cave and a multitude of white spots looking like flocks of sheep in the distance were noted (Roth 1891). These must have been incubating wandering albatrosses (*Diomedea exulans*) and thus were the subject of the first observation of the islands' biota. Du Fresne made no landing after his vessels collided (losing masts and several hen coops) while searching for an anchorage. He continued eastwards, discovering three days later what are now the Iles Crozet, named after Du Fresne's second-in-command, Julien M Crozet.

Captain James Cook, on his second voyage of exploration, visited Cape Town with the *Resolution* and *Adventure* in 1775, where he obtained information of Du Fresne's island discoveries from Crozet, who was also visiting the Cape. Cook had searched for Dena and *Maerseveen* without success during this voyage (Beaglehole 1961). On his third voyage, provided with Crozet's chart, Cook left the Cape with the *Resolution* and *Discovery* on 30 November 1776 and succeeded in reaching Du Fresne's first

island discoveries on 12 December (Beaglehole 1967). Crozet's chart did not give the names bestowed by Du Fresne, so Cook called them the Prince Edward Islands, after the then nine-year-old fourth son of the British King who later, as the Duke of Kent, was father of Queen Victoria. Like Du Fresne before him, Cook made no landing.

Contrary to practically all 20th century accounts (e.g. Marsh 1948), Cook did not give individual names to the two islands. In fact, the name Marion Island was used by him in the combination Marion and Crozet Islands to refer to the modern-day Iles Crozet, which were also discovered by Du Fresne, and not to the present-day Marion Island (Beaglehole 1967; see also Péron 1824). Because of this long-lasting and pervasive error, it is worthwhile quoting from Cook's original account, since it is hardly an easily accessible publication: "As they have no names on the French chart of the Southern Hemisphere, communicated to me by Captain Crozet in 1775, I shall distinguish the two we now saw, by calling them Prince Edward's Islands, after his Majesty's fourth son, and the other four, by the names of Marion's and Crozet's Islands, to commemorate their discoverers" (Cook 1785).

Not until the middle of the 19th century is the name Marion Island first recorded as being used by sealers for the larger of the two Prince Edward Islands. It is unclear how this transfer of the name came about, but early sealers were notoriously vague about naming which islands they visited, giving ample scope for confusion.

Sealing at the Prince Edward Islands: the period 1800 to 1932

The explorations of Cook and others of the Southern Ocean led to the development of the southern sealing industry. The Prince Edward Islands were not spared and by 1810 their fur seals had been all but exterminated (Richards 1992). Given that the first known approach by a sealer to the Prince Edward Islands was by the French vessel *Sally*, commanded by Pierre F Péron on 10 February 1800 (Péron 1824), and that the first recorded landing was in either December 1803 or January 1804 from the *Catherine* commanded by Henry Fanning who left a shore-sealing crew before sailing for Iles Crozet (Fanning 1833), this was a short period of exploitation indeed. Details of sealing vessels that have visited the Prince Edward Islands are given by Cooper & Avery (1986), Graham (1989), Headland (1989) and Richards (1992).

It is unfortunate that, unlike all the other sub-Antarctic islands, the name of the first vessel to land at the Prince Edward Islands is unknown: it was apparently not the *Catherine*, since Fanning makes no claim to be the first ashore (Fanning 1833; Richards 1992) and the *Sally* did not make a landing because of rough seas (Péron 1824). The date 1805, said to be engraved on a rock in Cave Bay on Prince Edward Island (Marsh 1948), does not solve the problem.

On 21 and 22 April 1840, HMS *Erebus* and *Terror* of Captain James Clark Ross' expedition sailed past the Prince Edward Islands on the way to his famous discoveries in Antarctica. No landing was made due to bad weather, but soundings and dredging were made from the *Erebus*. The dredge brought up "between thirty and forty different types of marine animals, corralines, flustrae and sponges" (Ross 1847). Ross Rocks off Prince Edward Island and Capes Crozier and Hooker on Marion Island (named after the Captain of the *Terror* and the botanist of the expedition,

respectively) commemorate the visit (Ross 1847). South African involvement with this expedition was limited, as with Du Fresne and Cook before, to a call at Cape Town.

The first women to visit the Prince Edward Islands could have been the wives of Captain Gurdon L Allyn and his mate Pinkham of the clipper bark *Nathaniel S Perkins* during December 1852 (Allyn 1879; Cooper 1987). The *Nathaniel S Perkins* took elephant seals but it seems unlikely that the women went ashore. There is no record of who was the first woman to step ashore, but this may not have happened until many years later (Cooper 1986a, b).

Sealing and whaling vessels from France, England, the Cape Colony and the United States visited the Prince Edward Islands after 1810, but generally took few fur seals and concentrated on elephant sealing (Cooper & Avery 1986; Graham 1989; Headland 1989; Richards 1992). Elephant sealing soon also became uneconomic as the numbers of animals were reduced. In 1908 Dr William B Newton was awarded a 21-year lease by the British Government to exploit guano deposits that were believed to occur on the Prince Edward Islands for an annual fee of 25 pounds, but the concession was not taken up (Headland 1989; Scott Polar Research Institute (SPRI) archives).

Sporadic attempts to restart sealing activities occurred until the 1930s, when the South African-based Kerguelen Sealing and Whaling Company (a subsidiary of Irvin & Johnson) sent sealers to the Prince Edward Islands and to other sub-Antarctic islands in the Indian Ocean (Cooper & Avery 1986; Graham 1989; Headland 1989; Richards 1992; minute books of the Kerguelen Sealing and Whaling Company). One of its vessels, the ex-mystery Q-ship *Kildalkey*, is commemorated by the name Kildalkey Bay on Marion Island. Many of the historical remains on the Prince Edward Islands are thought to date from this period (Cooper & Avery 1986; Graham 1989). In 1926 the British Government had given the Kerguelen Sealing and Whaling Company a ten-year lease to exploit whales, seals, guano and minerals at the Prince Edward Islands (at 100 pounds a year). The lease was terminated, at the request of the company, in 1934 (Headland 1989). An interesting South African connection is that in 1929 the *Kildalkey* visited sub-Antarctic Heard Island, where Lieutenant-Commander Quentin H Bullard formally raised the Union Jack on behalf of the British Government (Headland 1989). Bullard is commemorated by Bullard Beach on Marion Island, site of a huge colony of macaroni penguins (*Eudyptes chrysolophus*).

Several shipwrecks have occurred at Marion and Prince Edward Islands (Marsh 1948), some of which have been hardly documented (Cooper & Avery 1986). A fascinating account of shore sealing and its privations on Marion Island in the early 19th century is given by William D Phelps, writing under the pseudonym Webfoot (1871).

During the sealing period, the Prince Edward Islands were visited on 26 December 1873 by HMS *Challenger*, a British scientific research vessel, and biological and geological observations and collections were made ashore. Offshore Boot Rock was named (e.g. Spry 1876; Moseley 1879). A survey was also undertaken by Captain George S Nares R N, resulting in the first chart for the islands (illustrated in Marsh 1948). The *Challenger* had previously called at Simon's Town in the Cape. This was not the first scientific endeavour ashore: Richard Harris of the sealer *Betsy and Sophia* observed and collected sea birds during a stay in 1830/31 (Hutton 1865; Savours 1961).

The Second World War and the annexation of the Prince Edward Islands: the period 1939 to 1948

On 23 January 1939, the little-known French scientific expedition of the *Bougainville* briefly visited Marion Island on its way to the French sub-Antarctic islands. A small amount of collecting and photography was undertaken (Jeannel 1941).

During the early part of the Second World War, German warships wreaked havoc among southern whaling fleets (summarised in Headland 1989). Some used the Isles Kerguelen as a base for these raids. In December 1939, a British submarine, HMS *Olympus*, visited the Prince Edward Islands, where anchorages were examined for signs of the enemy, but without affecting a landing, and some necessary repairs were made in the lee of Marion Island (Jones 1981; Halpern 1986). In October 1940, the British cruiser HMS *Neptune*, operating under the code-name Sule Skaer, also examined the coastlines of the Prince Edward Islands, apparently without landing (Gibbs 1945; Halpern 1986). No signs were found and there is no good evidence that German commerce raiders ever landed at the Prince Edward Islands although they may have sailed by (Braumann 1982; Cooper 1986c; Headland 1989; *contra* Marsh 1948).

Following on the above events, and the resurgence of whaling expeditions to the Southern Ocean, including expeditions by the Soviet Union, the post-war strategic value of the Prince Edward Islands was realised. In 1947, the South African frigate HMSAS *Transvaal* commanded by Lieutenant-Commander John Fairbairn sailed from Simon's Town under strict security and the code name Operation Snoektown to occupy the islands. This was duly done on 29 December 1947 on Marion Island and on 4 January 1948 on Prince Edward Island and subsequently officially proclaimed in a South African *Government Gazette Extraordinary* of 30 January 1948 (as detailed and illustrated by Marsh 1948). The South African Parliament passed the Prince Edward Islands Act (Act 48 of 1948) that came into force on 7 October 1948. A formal exchange of letters with the British Government followed in 1949 and 1950, confirming transfer of the islands from His Majesty's Government in the United Kingdom to His Majesty's Government in the Union of South Africa (Anon 1951). South Africa's formal involvement "down south" can be said to date from this acquisition.

The voyage of the *Transvaal* placed an occupying party ashore on Marion Island at Gunners Point in Transvaal Cove. This party was replaced by the first meteorological team in February 1948, led by Allan B Crawford, of the South African Division of Meteorology, who had prior experience of operating a weather observatory on Tristan da Cunha, as did two other members of his team (Marsh 1948; Crawford 1948, 1982). The tents of the occupying party were replaced by prefabricated wooden buildings sent to the island aboard the 800-ton South African Government Guano Island's vessel, the ss *Gamtoos*, in January and in the chartered mv *Norse Captain* in March 1948 (Marsh 1948; Mackay 1949; Crawford 1982). At this time a seaman, Joseph Daniels of the *Gamtoos*, drowned while offloading material and was buried on the island (Marsh 1948; Cooper & Avery 1986). Weather observations were commenced on 20 March 1948 by the first ten-person team (which included six Tristan Islanders) and have continued at the Marion Island base until the present. Radiosonde balloon ascents commenced in May 1949 (Van Zinderen Bakker Sr 1971).

relief, Allan Crawford undertook the first trigonometrical survey of the eastern part of the island, assigning names to geographical features, climbed to the island's centre and also made observations and collections of sea birds, adding a number of species to the then-known breeding list (Crawford 1950, 1952, 1982). Crawford Bay on the south coast commemorates his sojourn on Marion Island.

Operation of the Marion Island weather base: the period 1948 to the present day

Until April 1956, the expeditions to Marion Island were relieved twice a year, thereafter annually as at present (Table 1 in Cooper & Avery 1986). Relief voyages were mainly undertaken by frigates of the South African Navy until the mv *RSA* took over in 1962 (Goosen 1973; Headland 1989). South African naval vessels have continued to visit Marion Island to the present day, often when a medical evacuation has proved necessary (Headland 1989).

Relatively little has been written about the early period of occupation, although regular short reports can be found in the *News Letter* of the South African Weather Bureau. Marion Island is somewhat unusual in the lack of books written about it by team members, in contrast to the situation for several other sub-Antarctic islands. However, two early team members published articles on their observations of bird life (Bennetts 1948, 1949; La Grange 1962a).

An informal post office was opened at Marion Island soon after the station was established, with Allan Crawford as honorary postmaster (Rosenthal & Blum 1969; Crawford 1982). A temporary postal agency with a special date stamp operated in March 1958 to commemorate the International Geophysical Year (IGY). A postal service at Marion Island also existed from 1962 to 1980 (Vogel 1982).

On 3 April 1952 an interdepartmental meeting of the South African Government heard that the Department of Transport recommended that married men and families and older and more mature personnel should be encouraged to live on Marion Island, and that married quarters and a doctor for the women would be required. The albatrosses and penguins were to provide "welcome fresh meat" (SPRI archives). Nothing came of this idea.

From October 1951 to April 1952, R W (Bob) Rand, the then biologist of the Government Guano Islands, studied the birds and seals of Marion Island, conducting the first censuses, and undertaking bird-ringing and biological studies (e.g. Rand 1954, 1956). Bob Rand was the first team member to undertake a round-island trip "with a few tins of bully in my pack" (La Grange 1954; R W Rand pers comm to JC). He visited several sealers' sites, including a well-stocked hut, now unfortunately lost to 'souveniring' (Rand 1956; Cooper & Avery 1986; Graham 1989). In April 1954 a brief ("several hours") geological visit was made to Marion Island during a relief voyage (Truswell 1965).

Probably the most significant action that took place during the early period was the introduction of five domestic cats (*Felis catus*) in 1949 to control introduced house mice (*Mus musculus*) in the base (Watkins & Cooper 1986; Bester & Skinner 1991). Mice had been reported at Marion Island as early as 1818 (Webfoot 1871). Rand (1952), in a then confidential report, as

run, commented that "the policy of allowing cats on the island should be halted immediately". Further, he noted that breeding of cats in the base "was encouraged and at one stage, for instance, nearly two dozen cats were habitually found in one bedroom". Rand (1952) reported seeing four cats that had become feral and "were preying on mice and burrowing petrels". What a pity that Rand's advice was not taken, given the adverse effects the feral cats have had on the island's birds and the undoubted huge cost of the apparently successful eradication campaign now drawing to a close (Bester & Skinner 1991).

Several other animals (and plants) were introduced to Marion Island in this early period, but all the domestic stock have subsequently been removed (Watkins & Cooper 1986). The brown trout (*Salmo trutta*) introduced for recreational purposes to an island stream are now also extinct (Cooper *et al* 1992). With the likely demise of the cats, only alien mice, plants and invertebrates remain as consequences of these early practices. Both Crawford (1949) and Rand (1952) commented on the potential of Marion Island for exploitation of its resources, including continued sealing, ranching and farming: it may be considered fortunate that nothing came of these ideas, which were also discussed in correspondence with the Scott Polar Research Institute in 1951 and 1952 (SPRI archives).

The Maritime Group of the South African Air Force (SAAF), operating marine reconnaissance Shackleton Mark 3 aircraft out of Ysterplaat near Cape Town, visited Marion Island on 22 March 1958, taking the first aerial photographs of the island. One week later the flight was repeated, when the aircraft was also asked to look out for errant domestic sheep, which were duly spotted from the air (Uys 1958). On 5 July 1960 a SAAF Shackleton made a supply drop by parachute at Marion Island (Robbs 1960). On 13 and 15 April 1961 the Royal Air Force, operating out of D F Malan Airport, Cape Town, photographed cloud-free parts of both islands using a 6-inch focal length camera at an altitude of 30 500 feet. These visits are the first by aircraft to the Prince Edward Islands (Langenegger & Verwoerd 1971, P R Condy & W J Verwoerd *in litt* to JC).

On 26 June 1966, a fire burnt down the accommodation and communication building at Marion Island, and a SAAF Shackleton was sent three days later to investigate why radio contact with the island had been lost. It re-established contact by dropping short-wave radio equipment, as well as medical supplies (Anon 1966). Subsequently, occasional visits by fixed-wing aircraft have been made to Marion Island from South Africa to drop needed supplies, including medicines (as in July 1984) and to undertake reconnaissance flights (as in January 1987). Two supply drops were made in 1992 by SAAF Hercules C-130s.

In August 1973, two Soviet Union fishing vessels, the *Chatyr Dag* and the *Skiff*, called at Marion Island with an injured crew member (Headland 1989). The visit is memorable for the fact that the Soviet Union's flag was then flown on South African territory (A J Williams *pers com* to JC).

Occasionally, other vessels, including yachts, have called at Marion Island and members of their crews have sometimes gone ashore. The most dramatic visit was by the *srv Totorore*, which made a *force majeure* call after being dismasted on its way from Cape Town on 16 January 1986 during its round-the-world expedition to study sea birds (Clark 1988). During a month-long stay, jury-rigged repairs were made with the help of the base personnel. The *Totorore's* skipper, Gerry Clark, left his two crew members behind on the island for safety's sake when he sailed on 16 February (Clark 1988). One of them, Christine Hänel, a

South African who joined the *Totorore* in Cape Town, was the first woman to reside at Marion Island outside a relief voyage, returning in April 1986 to Cape Town on South Africa's Antarctic supply/research vessel, the *mv SA Agulhas* (Cooper 1986a).

During November 1974, the SAN *Protea* deployed six rondavel-type field huts by SAAF Wasp helicopter around the coastline of Marion Island for use by scientists (Headland 1989). Three of these did not survive the first winter storms (A Berruti *pers com* to JC), but one still remains today. Since then, new huts have been placed, so that there are now no fewer than ten distributed around the island. A field hut placed at Cave Bay, Prince Edward Island and one in the mountains of Marion Island at Katedraalkrans in the 1980s (Brown *et al* 1982) were removed in 1987.

Research at Marion Island: the period 1965 to the present day

Terrestrial biological research commenced in a formal way at the Prince Edward Islands in 1965, with the First Biological and Geological Expedition, led by Professor Eduard M van Zinderen Bakker Sr of the University of the Orange Free State (Van Zinderen Bakker Sr *et al* 1971). This expedition led to the first biological postgraduate degree being awarded within SANAP: a Master's degree to Mr, now Professor, Brian J Huntley in 1968 (Huntley 1968). Professor Huntley currently chairs the South African Committee on Antarctic Research (SACAR).

The history of biological research at the islands is given by Smith (1991). A very large body of publications and a number of postgraduate degrees have now emerged from studies of the natural (and introduced) biota of the islands, as a study of the bibliographies of the 33 South African National Committee for Antarctic Research *Annual Reports to the Scientific Committee on Antarctic Research* (SCAR) will attest (see also Siegfried *et al* 1979). Important reviews of this biological research, in addition to Van Zinderen Bakker Sr *et al* (1971) and Smith (1991), are given by Gremmen (1981) for plants, Smith (1987) and Cooper & Brown (1990) for birds. Smith's (1987) article is most useful as a detailed introduction to Marion Island's natural environment. Until 1989, research direction was given by the South African Council for Scientific and Industrial Research (CSIR) through its South African Scientific Committee for Antarctic Research (SASCAR). Smith (1991) describes planning documents (SASCAR 1978, 1981) that gave direction to the research.

Research at the islands is now administered and directed by the South African Department of Environment Affairs' South African Committee for Antarctic Research (SACAR). Research into the physical sciences at the islands has been mainly in the field of geology, but a modern review of its findings is still awaited (Verwoerd 1971). Perhaps the most exciting geological event was a totally unexpected volcanic eruption on Marion Island during December 1980 (Verwoerd *et al* 1981). In the early years of the station, meteorological data was analysed and published (e.g. Vowinckel 1954; Schulze 1971).

Relatively few visits have been made to uninhabited Prince Edward Island (see Appendix 2 in Cooper & Avery 1986 for summaries of research visits from 1965 to 1985). This has been due to both the relative difficulty of access and the need to keep the near pristine island as little disturbed as possible (Cooper & Condy 1988; Visagie 1988).

The conservation of the Prince Edward Islands

Only recently has the matter of conservation at the Prince Edward Islands been properly addressed, although the islands' seals and sea birds and surrounding seas have been protected since 1982 by South African acts (Monteiro 1987; Cooper & Condy 1988; Cooper in press) and by the Convention for the Conservation of Antarctic Marine Living Resources, of which South Africa is a founder signatory (Miller 1991a). Research on alien biota commenced as long ago as 1965 for plants (Huntley 1971) and for cats in the 1970s (Bester & Skinner 1991). In 1988, a code of conduct was adopted for people taking part in activities at the islands (Visagie 1988), following Cooper & Condy's (1988) review of environmental conservation at the Prince Edward Islands. The code of conduct is being replaced by a management plan that is being drafted during the course of 1992 (Cooper in press). In the past, environmental management at Marion Island has not always been well conducted: deliberate dumping of contaminated diesel fuel into the sea on three occasions in 1980 and 1981 caused the oiling and subsequent death of over 250 penguins (Cooper & Condy 1988; *The Argus* 5 June 1981, A B Eksteen *in litt* to JC). The building of a hydroelectric scheme in the late 1970s and early 1980s that never worked properly, without any prior assessment of environmental effects, is another example. Most fortunately, an ill-advised plan to build a runway for fixed-wing aeroplanes on Marion Island was not accepted by the authorities, after a most comprehensive environmental impact assessment had been carried out in February 1987 (Heymann *et al* 1987). This plan resulted in much adverse public comment, from within and outside South Africa.

It is intended that the islands will soon be accorded legal conservation status with their promulgation as a special nature reserve (Cooper in press). With the management plan, the islands will then be assured of proper legal protection.

South Africa and the Antarctic continent: the period 1901 to 1959

South Africa became involved with the Antarctic continent later than it did with the Prince Edward Islands. After the visits of Cook and Ross to Cape Town (who both went on to make discoveries farther south), South Africa was host to a number of the 'heroic age' expeditions between 1901 and 1913. Erich von Drygalski of the *Gauss*, Robert F Scott of the *Discovery*, and later of the *Terra Nova*, William S Bruce of the *Scotia*, and Sir Ernest H Shackleton of the *Nimrod* all passed through Cape Town, visiting either Table Bay or Simon's Town (Scott 1905, 1913; Shackleton 1909; Headland 1989). Expeditions were revictualled, repairs undertaken, shore leave given and sometimes extra crew recruited. On Scott's first voyage, Professors Sir John Carruthers Beatty and J T Morrison of the Universities of Cape Town and Stellenbosch respectively helped test the magnetic instruments (Scott 1905; Schaffer 1977). Fund-raising was attempted by Scott on his last voyage and The Royal Society of South Africa presented a token 25 pounds at a banquet held for the expedition (Hall 1977). During the Cape visit of Scott's last expedition, Edward Wilson and his wife travelled to Saldanha Bay where they visited the now defunct whaling station at Donkergat (Wilson 1972). Lasting memories of these visits are the Scott memorial statue of a sailing ship in Adderley Street,

Cape Town, and watercolour paintings of the Hottentots Holland Mountains from across False Bay by Edward Wilson, surely the best-known Antarctic artist. Several of these paintings were privately owned by a Johannesburg Africana bookseller some years ago and deserve to be better known.

Several members of these early expeditions had South African connections. Dr Hartley T Ferrar, geologist with Scott's British National Antarctic Expedition of 1901 to 1904 on the *Discovery*, although Irish-born, spent the early years of his life in South Africa (Scott 1905). The Ferrar glacier in the Ross Dependency, which he was the first to explore, was named after him by the expedition. Dr J H Harvey Pirie, geologist, bacteriologist and medical officer of the Scottish National Antarctic Expedition of 1902 to 1904 that visited the South Orkney Islands and the Weddell Sea, as well as Gough Island, settled in South Africa after the First World War. He worked in the field of bacteriology at the South African Institute for Medical Research until 1941. He died on 27 September 1965. The physicist, Dr Reginald W James FRS of Shackleton's ill-fated Imperial Trans-Antarctic Expedition of 1914 to 1917 (Shackleton 1919) later became Professor of Physics from 1937 to 1957 at the University of Cape Town. The astronomy, oceanography and physics building of the university now bears his name (Schaffer 1977). Professor James died on 7 July 1964. Frank Wild, who took command of Shackleton's last expedition after the death of its leader (Wild 1923), and had sailed with both Scott and Shackleton previously, went farming in the Transvaal, where he died.

The influence of the 'heroic age' expeditions did not escape South Africa: hardly surprising with so many of them calling at the Cape Colony. In 1919, a Professor Goddard of the Department of Geology, University of Stellenbosch, commenced planning a South African National Antarctic Expedition. However, by 1921 the considerably advanced plans were called off with the onset of the depression (Rosenthal & Blum 1969).

During the Second International Polar Year of 1932/33 a South African whaling factory ship, the *Tafelberg*, was especially equipped for Antarctic research and worked off the coasts of Dronning Maud and Enderby Lands from October 1932 to March 1933 (Burdecki 1969).

In the first half of the twentieth century whaling fleets of a number of companies called at Cape Town on their way to and from the southern whaling grounds. Some whaling companies were South African-owned (such as the Kerguelen Sealing and Whaling Company) and operated from Cape Town or Durban. The RRS *Discovery II* called many times at Cape Town in the 1930s during investigations of whales and their prey in the Southern Ocean (Coleman-Cook 1963). The *Discovery II* also visited the Prince Edward Islands on 7 April 1935, undertaking soundings and dredging, but made no landing. Whale biologists of the *Discovery* expeditions worked in the Antarctic 'off-season' at the whaling stations of Saldanha Bay and Durban, affording another link to South Africa (Ommanney 1938). Two other members of the *Discovery* expeditions, Ron Currie and Archibald J Clowes (who joined the then South African Sea Fisheries Branch) made significant contributions to knowledge of the Benguela Current off South Africa in the 1950s.

One of South Africa's most eminent Antarctic scientists is Dr Raymond J Adie, a graduate of the University of Natal, who rose to become Chief Geologist and Deputy Director of the British Antarctic Survey for many years. He is the first South African-born scientist to have worked in the Antarctic, spending

three consecutive winters on the Antarctic Peninsula in 1947 to 1950 with the newly established Falklands Islands Dependencies Survey (FIDS) (Wolmarans & Kent 1982; Spencer 1991). He received a Polar Medal from Queen Elizabeth II in 1953 (the first South African to receive such an award), and in 1970 the Order of the British Empire for his role within the Scientific Committee on Antarctic Research (SCAR). Much later, he provided advice to SANAP's earth sciences programme (Von Brunn 1987). Fittingly, his *alma mater* awarded him a Doctor of Science *honoris causa* in 1987 (Gardner 1987; Von Brunn 1987; Spenser 1991).

Visits by Antarctic expedition ships to Cape Town also continued: the RRS *Discovery* (the same vessel as used by Scott), of the British, Australian, New Zealand Antarctic Research Expedition (BANZARE) of 1929 to 1931 and the *Norsel* of the Norwegian-British-Swedish Expedition (NBSE) of 1949 to 1952 are two examples (Fletcher 1984; Gjaever 1954). The latter, which established a base, Maudheim, in Dronning Maud Land, included J A King, Head of the Synoptic and Forecasting Branch of the South African Weather Bureau, during its first summer in Antarctica as an observer (Gjaever 1954). King, who joined the *Norsel* in Cape Town, is therefore the first South African to have worked, albeit very briefly, in Dronning Maud Land, the area of South Africa's Antarctic research to the present day.

Previously, a South African initiative led by Professor L C King of the University of Natal, who chaired a South African Antarctic Research Committee under the auspices of the South African Geological Society, to undertake an expedition to Antarctica after the Second World War in 1946 to 1948 came to nought, although it had the moral support of the Prime Minister (Wolmarans & Kent 1982; SPRI archives). This endeavour was brought about by interest in continental drift, then a controversial theory that had South African support. British opinion was lukewarm and it was suggested that South Africa become involved instead with the planned NBSE to Dronning Maud Land. No South African money was available to support this suggestion, so an opportunity was lost to place South African scientists into Dronning Maud Land ten years before they eventually arrived. Interestingly, R J Adie's name was mentioned as a prospective member of the NBSE in correspondence between Professor King and the Scott Polar Research Institute, since he was due from the FIDS Base at Hope Bay in April 1949 and could go on the Norwegian ship. The then Director of the South African Weather Bureau, Mr T E W Schumann, wrote to the Scott Polar Research Institute on the subject of the continued occupation of the NBSE's Maudheim base: again nothing came of this enquiry (SPRI archives).

The Commonwealth Trans-Antarctic Expedition (CTAE) of 1955 to 1958 led by Sir Vivian Fuchs and Sir Edmund Hillary included Johannes J (Hannes) la Grange as the meteorologist for both the advance and crossing parties (Fuchs & Hillary 1958; La Grange 1959a, b, 1991). La Grange had prior experience as a member of the eighth and 11th Marion Island meteorological teams in 1951 to 1952 and 1954 (La Grange 1954, 1962; Cooper & Avery 1986). Fuchs & Hillary (1958) described him as a "... 'blind date', but we need not have worried as he was as solid in character as he was tall and heavy in build". La Grange is most probably the first South African to have visited the South Pole (with a green flag embroidered with a springbok and a protea; Fuchs & Hillary 1958), which the crossing section of the expedition reached on 19 January 1958. He was awarded a Polar

Medal in recognition of his services to the CTAE, the second South African to be so honoured, as well as a gold medal from the S A Akademie vir Wetenskap en Kuns (La Grange 1991).

A result of La Grange's involvement with the CTAE is that South Africans are eligible for funding for Antarctic research and exploration projects from The Trans-Antarctic Association, a charity registered in the United Kingdom.

Two South African meteorologists of the Weather Bureau, Gordon Artz and Johan Bothma, spent 1959 with the British FIDS at Halley Bay in Coats Land, Antarctica (Artz 1959; Bothma 1961).

Establishment of a permanent South African presence in Antarctica: the period 1959 to 1962

South Africa established a permanent presence on the Antarctic continent in the 1959 to 1960 summer when the first South African National Antarctic Expedition (SANAE), a ten-man party under the leadership of the veteran Hannes la Grange, took over Norway Station (70° 30' S, 2° 52' W), along with its 12 male husky sledge dogs of Greenland stock (La Grange 1962b), on Fimbulisen, Kronprinsesse Märtha Kyst in Dronning Maud Land from Sigurd Helle, head of the Norske Antarktisekspedisjonen from 1956 to 1960 (Wolmarans & Kent 1982). All ten members of the expedition were employed by the South African Weather Bureau.

The station was situated 35 km from the ice front at an altitude of 52 m. Norway Station had been established for the International Geophysical Year in 1957 to 1958 with Sigurd Helle as leader at the time of transfer (Crawford 1982).

The South African expedition sailed south from Cape Town aboard the converted Norwegian sealer *Polarbjørn* on 3 December 1959, reaching the continent, via Bouvetøya (Crawford 1960), at Polarsirkel Bukta on 8 January 1960. Veteran Allan Crawford was aboard as naval meteorologist (Van der Merwe 1968; Crawford 1982). The voyage south was eventful: two members of the *Polarbjørn's* crew died on the southern journey: a steward who fell overboard while emptying an ashtray over the side and the Second Mate, Reidulv Klein, who blew himself up in his cabin while preparing explosives. The latter was buried at sea in the pack-ice, with both Norwegian and South African flags at half mast. Later, the ship had difficulty progressing through the pack but the situation was solved by the timely arrival of the Argentine ice-breaker *General San Martin* (Crawford 1982; La Grange 1991).

Surface and upper-air meteorological and geomagnetic observations, commenced by the Norwegians at the station in 1956, were taken over on 15 January 1960. Glaciological and geological fieldwork and bird observations, including finding breeding snow petrels (*Pagodroma nivea*), were also made during the first SANAE during a five-week field trip with huskies to several nunataks in the northern Ahlmannryggen by Hannes la Grange (1962a) and (now) Professor Victor von Brunn (1963) in November/December 1960. As these nunataks had never been previously visited La Grange and Von Brunn were true pioneers, reaching 71° 30' S at Krylen. J J la Grange summarised his Antarctic field experience in a paper presented to a symposium on Antarctic logistics in 1962 (La Grange 1963a).

The second SANAE sailed south aboard the chartered *Polarhav* in 1961. Based on the experience gained on these two relief voyages, the South African Department of Transport,

which then administered the Antarctic Programme, had the mv *RSA* built in Osaka, Japan to serve SANAE and the weather bases on Marion and Gough Islands. The 1573-tonne *RSA* sailed from Japan on 30 November 1961 and undertook its first voyage to Antarctica. The third SANAE left Cape Town on 2 January 1962 (McNish 1971). The voyage, like that of the first SANAE, was an eventful one. The ship's radio officer, Thomas Moriarty, died from a heart attack while the vessel was tied up at Polarsirkel Bukta in Antarctica, and the *RSA* was beset in the ice on the return voyage for over a month (McNish 1971). During this relief, a new base called SANAE after the expeditions, was constructed at 70° 19' S, 2° 21' E, 20 km to the north of Norway Station, which had become buried in the ice shelf due to accumulation of snow and was becoming uninhabitable. Norway Station was abandoned on 12 February 1962.

Research on the Antarctic continent: the period 1960 to the present day

The South African *Annual Reports to SCAR* covering the period 1957 to 1992 give brief descriptions and bibliographies of research by South Africa on the Antarctic continent. To date, nearly all of this has been in the disciplines of earth and physical sciences: only very recently has biological research commenced (Ryan *et al* 1989; Cooper *et al* 1991).

Burdecki (1969, 1970), Neethling (1972) and Wolmarans & Kent (1982) have summarised the early South African meteorological, geological, geophysical and glaciological investigations in western Dronning Maud Land (see Hunter *et al* 1991 for an up-to-date review of SANAP earth science activities in Antarctica). The early field traverses, commenced in 1960 by La Grange and Von Brunn, used over-snow journeys with huskies and vehicles as far south as the Borgmassivet (74° 12' S) (Neethling 1972). Von Brunn has the distinction of being awarded the first post-graduate degree, an MSc from the University of Cape Town in 1963, for research conducted as part of SANAP. His data analysis was supported financially by the CSIR, an early involvement of this body with Antarctic research.

In 1965 and 1966 South African field parties visited Pyramiden, a nunatak about 280 km south of SANAE, where they found a depot of the NBSE of 1949 to 1952. It had also been visited by air by members of the fifth and sixth Soviet Union Antarctic Expeditions in September 1960 (De Ridder 1967).

On 6 May 1969, a small base, known as Borga, was completed at Huldessrottet (72° 58' S, 03° 48' W) in the Borgmassivet some 350 km south of SANAE (Wolmarans & Kent 1982; Headland 1989). This was the locality of the advance party's base of the NBSE (Gjaever 1954; Headland 1989). Up to four geologists and support personnel wintered at Borga to be able to stay in the field for longer periods.

Belgian geologists, led by Tony van Autenboer, who had wintered on several Belgian and Netherlands joint expeditions, accompanied three joint South African-Belgian summer field expeditions from 1967/1968 to 1969/1970, working in the Borgmassivet and Sor-Rondane areas, as well as visiting the Belgian IGY base, Roi Baudoin (Wolmarans & Kent 1982; Headland 1989). Two fixed-wing aircraft were used, a Cessna and a Belgian Otter, transported south aboard the *RSA*. The latter air-

1969/1970 summer (Wolmarans & Kent 1982). During this period, the SANAE 10 motor mechanic, Gordon I Mackie, lost his life by falling into a windscoop at Slettfjellnutane on 3 December 1969 during a geomagnetic survey.

In April/May 1971, a second summer base was erected at Grunehogna (72° 02' S, 02° 48' W), 195 km south of SANAE when the supply train from SANAE was unsuccessful in reaching Borga. This base, made out of a Parcoll prefabricated hut, was occupied by five geologists during the 1971 winter (Wolmarans & Kent 1982; Headland 1989).

Geological and geophysical fieldwork came to a temporary halt at the end of the 1975/1976 summer: virtually all the rock exposures accessible over snow from SANAE had been visited and geologically studied. On the advice of SASCAR, research was held over until the deployment of helicopters in 1980/1981 (Wolmarans & Kent 1982). South African geological research on Antarctica then went into a 'quiet' period of data analysis and assessment (SASCAR 1984). In 1980/1981 two long-range Aerospatiale Puma helicopters became available on South Africa's new Antarctic supply/research vessel, the 5 353-tonne mv *SA Agulhas*, that had made her maiden voyage to Antarctica in the 1978/1979 summer (Leith 1991). Their presence in the 1980/1981 summer in Antarctica led to the choosing of a site for a new summer base and the restarting of the geological, geophysical and surveying programmes. The Sarie Marais summer base was erected in the 1982/1983 summer at Grunehogna (SASCAR 1984) and continues in use.

The first SANAE base was replaced by a new one in 1971, which was replaced in turn in 1979. A surface emergency base was built next to SANAE 3 in 1984. This has to be jacked up regularly, to keep it from becoming buried by snow like the SANAE bases. In 1991, a fourth SANAE was planned for erection, this time on hard rock at the Vesleskarvet Nunatak at 71° 40' S, 2° 51' W (Claassen *et al* 1991). Plans exist for a temporary field camp, including a field laboratory, to be occupied during each summer for biological research at the Robertskollen Nunataks at 71° 27' S, 3° 15' W (Cooper *et al* 1991).

Physical research in Antarctica has concentrated on studies of the upper atmosphere, commencing with the third SANAE expedition of 1961/1962 (Gledhill 1971, 1987; Hughes & Scourfield 1991). In the 1960s glaciology (Von Brunn 1963; Neethling 1966, 1972) and some medical research (e.g. Van der Merwe 1962) were also conducted at SANAE, but the latter has never been a strong part of the South African National Antarctic Programme (SANAP), and is currently inactive, as is glaciology. Medical research was undertaken once more at SANAE in 1976, but was not sustained. Most of this work has been conducted from the various SANAE bases without the need for distant fieldwork.

South African biological observations on the Antarctic continent started with the reports of birds by La Grange (1962a) and Krynauw *et al* (1983), although small collections of plants and invertebrates had been made in the 1960s. In the 1987/1988 summer season, SASCAR sponsored a two-man biological survey to the northern Ahlmannryggen. Research was undertaken primarily at the Robertskollen Nunataks (Ryan & Watkins 1989; Ryan *et al* 1989), and the survey's report to SASCAR (Ryan & Watkins 1988) showed the scope for further biological work in Dronning Maud Land. Such research has now commenced (Cooper *et al* 1991), and it is expected that the new base at Vesleskarvet with its planned two biology laboratories will

South African activities elsewhere in the Southern Ocean

This history has concentrated on South Africa's activities at the Prince Edward Islands and on the Antarctic continent in Dronning Maud Land. In fact, SANAP activities have taken place elsewhere as well.

South Africa's involvement in the International Geophysical Year (IGY), which lasted from July 1957 to December 1958, was largely restricted to meteorological and oceanographic investigations, utilizing vessels of the South African Navy and aircraft of the South African Air Force. In 1957, SAS *Natal* was "rebuilt to serve as a survey ship during the IGY" and made at least five voyages into the Southern Ocean in 1957-58 releasing radio-sondes (Nagel 1958). In addition, an ionospheric programme was operated at Marion Island as part of the IGY (Crawford 1958, Hayward 1958, Nagel 1958, Anon 1960). During this time, Harry van Loon of the South African Weather Bureau spent three months at Little America V, the United States IGY base in the eastern Ross Sea (Van Loon 1958a,b). Since the United Kingdom-organised Gough Island Scientific Survey of 1955/1956 a South African weather station has operated on Gough Island, a British possession in the South Atlantic (Headland 1989). The IGY was the impetus for the establishment of the station at Gough. The station was moved from The Glen to Transvaal Bay in April 1963. Research by South African-based scientists has also been conducted at Gough Island, mainly during relief voyages (Watkins & Cooper 1983; Cooper & Ryan in press). Such research is no longer supported by SANAP. Gough Island may be reckoned as a dangerous place: four team members have died there since 1956, three by exposure in the mountains and one by drowning while fishing. In contrast, no team member has died at the Prince Edward Islands, although the base has been occupied for a longer period and with larger teams. Possible reasons for this difference are worthy of investigation.

From April 1942 a small South African weather observatory (essentially surface observations) operated at Tristan da Cunha, but this was abandoned on 9 October 1961 at the time of the volcanic eruption and the temporary removal of the island's community (Jackson 1977; Crawford 1982; Headland 1989). It has not been reopened, although in recent years some weather data collected at Tristan have been radioed to Gough Island daily, and automatic weather stations have been placed on Inaccessible Island in the Tristan group on at least two occasions by South Africa.

In the late 1980s, research by the University of Cape Town on Inaccessible Island in the Tristan da Cunha group was supported by SANAP, as was research on fish at the Tristan da Cunha and Gough Islands by Rhodes University (Cooper *et al* in press). Research on Tristan rock lobster (*Jasus tristani*) has also been undertaken by South African researchers of the Sea Fisheries Research Institute from the 1970s (Cooper *et al* in press).

Visits to Bouvetøya, the South Sandwich Islands and South Georgia, with occasional brief landings to place and maintain automatic weather stations and to make scientific observations and collections, have taken place. A visit was made to Bouvetøya in January 1958 by the frigate HMSAS *Transvaal* to investigate the feasibility of erecting an IGY base. In March 1964 and March 1966 helicopters from the mv *RSA*, HMS *Protector* and the SAS *Natal* visited with the idea of Bouvetøya supporting a South African meteorological station (Taljaard 1964, 1966;

Engelbrecht 1966; Jackson 1977; Crawford 1982). The veteran Alan Crawford was aboard to advise during the 1964 visit. In the end, South Africa did not build a base on Bouvetøya, and the advent of automatic weather stations and drifting weather buoys has made it unlikely that one will ever be built, leaving the island to rest in relative peace.

Visiting South African researchers have worked at other localities: on French sub-Antarctic islands, on the Antarctic Peninsula and at the Japanese base Syowa (Hofmeyr 1973), for example. Such collaboration is a feature of the Antarctic research programmes of many nations. It has also led to tragedy. James P Gleeson, who had previously been awarded a Master's thesis for his work on introduced house mice at Marion Island, died after a fall on Ile Amsterdam on 5 November 1981 while engaged in a collaborative project on fur seals with the French (Skinner 1982).

Oceanographic research has been conducted within SANAP in the Southern Ocean from a number of vessels, both South African and belonging to other nations, with visits to areas as far apart as Prydz Bay, in the Australian sector of Antarctica, and Bransfield Strait, off the Antarctic Peninsula. Much of this research has been interdisciplinary in nature, including physical, chemical and biological oceanography, and also marine geology (SANCOR 1979; SASCAR 1987; Lutjeharms 1991).

From 1969 to 1973, South Africa commissioned whalers, initially the *Edwin Cook*, followed by the *Terrier VIII* (renamed the *F H Hughes*), to act as weather ships at 40° S, 10° E (Meyer 1969; Smit 1972; Jackson 1977; Crawford 1982). Previously whaling fleets in the Southern Ocean had sent regular coded weather reports to South Africa. Since August 1975 (Jackson 1977) South African vessels have been used to deploy satellite-tracked weather buoys in the Southern Ocean. In the past aircraft have been sent south to gather data: for weather each month in 1958 as part of the IGY and in the 1960s with Shackletons, prior to the use of the weather ships (Crawford, 1958, 1982; Hayward 1958) and more recently for cosmic-ray research from a Hercules (Van Wijk *et al* 1977). In September 1963, the SAS *Transvaal* travelled 2 000 km south of Cape Town to provide weather information for the United States Air Force that flew two Hercules C-130 aircraft direct from Cape Town to McMurdo Station on the Antarctic continent (Headland 1989).

Oceanographic research has often included visiting researchers from other countries, befitting the freedom of the high seas. Perhaps most notably, South Africa during the 1980s made important contributions to the international ten-year BIOMASS (Biological Investigations of Marine Antarctic Systems and Stocks) Programme of SCAR and SCOR (Scientific Committee on Oceanic Research) in the Southern Ocean (Lutjeharms 1991; Miller 1991b).

South African Antarctic publications: communication and archiving

Scientific research "down south" is traditionally multidisciplinary in nature. In South Africa, research has been conducted mainly by academic departments at universities, with funds and logistic support coming from first the South African government's Department of Transport, and later from its Department of Environment Affairs (DEA). La Grange (1961) has briefly outlined the early administration and structure of SANAP, including the membership of its committees at that time. Research coordi-

nation from the 1960s until recently was conducted by the CSIR and in the 1980s by its then subsidiary, the Foundation for Research Development. The need for effective communication should be apparent and several publications have appeared (and some have disappeared) over the years to help in this regard.

From the early days the *News Letter of the South African Weather Bureau* has included monthly news reports from the bases. From 1952 to 1970, the South African Weather Bureau also published 19 volumes of its journal, *Notos*, which aimed to disseminate basic data assembled under the South African Southern Hemisphere Project (e.g. Vowinckel 1954; Schmitt 1965; Burdecki 1969, 1970). It also served to fulfil obligations to shipping and whaling fleets in the Southern Ocean.

From January 1964 to March 1976, the South African Antarctic Association (SAAA) published its occasional *Antarktische Bulletin*. A link to the past was the appointment of J H Harvey Pirie and R W James as honorary members in the first few years of the association. The association was formed on 16 September 1961 and membership had grown to 290 by 1973/1974. However, it became defunct soon after its 16th annual general meeting on 19 July 1977 due to poor response to public meetings and payment of subscriptions, and has never been replaced. The association arranged annual dinners, lectures and slide shows, many of which are reported on in its bulletin. Diplomatic representatives of other Antarctic nations attended annual dinners, which were black tie affairs. The advent of the *South African Journal of Antarctic Research* in 1971 (see below) reduced material being submitted to the bulletin. This perhaps had some part in causing the association's demise.

During its existence, the SAAA awarded at least 11 South African Antarctic Medals, with the sponsorship of BP Southern Africa (Pty) Ltd, as recorded in issues of the *Antarktische Bulletin* (also sponsored by BP). The first medal was awarded in 1964 to Hannes la Grange. Others who received medals were Professor Victor von Brunn (SANAE 1 geologist; awarded 1965), Marten du Preez (SANAE 1 & 3 radio technician and leader; 1966), Dr Douglas D Torr (SANAE 4 physicist; 1967), Dr Dirk C Neethling (SANAE 2 geologist; 1968), Dr André le R van der Merwe (SANAE 1 doctor; 1969), Henry Fulton (SANAE 3, 8 & 10 leader; 1971), E M van Zinderen Bakker Sr (Leader: First Biological & Geological Expedition to Marion Island; 1972), Piet A le Roux (Marion 18 and Gough 8 leader; 1972), Captain Kenneth T McNish (master, mv *RSA*; 1973), and Dr Gideon J Kühn (SANAE 2 ionosphericist; 1974). No medal was awarded in 1975. The *Antarktische Bulletin* contains several citations and acceptance speeches of medal holders. Dr Torr is notable as the first South African to gain a PhD (from Rhodes University in the field of ionospheric) for research conducted within SANAP.

A call was made for nominations for the 1977 BP Antarctic Gold Medal, as it was then called, but it is not recorded whether a 1977 award has ever been made since the association became defunct in that year, nor whether there was an award in 1976. It is interesting to see that awards went mainly to members of expeditions to the Antarctic continent rather than to members of island teams.

In 1988, after two years of negotiation, a new BP Antarctic Award was announced. It was to be made every two years from 1989 (Condy 1988). This award (an Honor Antarctic Medal and a cash purse of R10 000 to be spent in furtherance of Antarctic science) was to be for some outstanding contribution to South African science and/or conservation in the Antarctic,

have yet been made, perhaps because of the disruption caused by the transfer of SANAP science administration from the CSIR to the DEA in 1989. The BP Antarctic Medal of 1964/1974 was available for a much broader range of initiatives than is its planned replacement, including courage, leadership and supporting role. Given the need for excellent communications and camaraderie within SANAP, it seems a mistake to restrict a new award to science and conservation achievements only. Far better would be a South African Antarctic Medal as part of the national honours list and open to all worthy participants within SANAP, as is the case with a number of other nations involved in Antarctic activities.

The South African Antarctic Club currently exists as a social society for ex-team members (primarily of SANAE) but it is not really open to interested outsiders. A South African Antarctic philately society also exists, producing a small occasional newsletter and arranging philatelic mailings from voyages of supply vessels for its members.

From 1981 until 1989, when the DEA took over science administration of SANAP from the CSIR, the *SASCAR Newsletter* appeared three to five times a year, being issued on behalf of SASCAR under the editorship of Dr Patrick R Condy, then Scientific Coordinator of the CSIR's Antarctic Programme. This very useful publication gave summaries of voyage reports, sailing dates and many other newsworthy items. The DEA plans to restart a newsletter, to be called *Expeditio*, for the South African Antarctic community.

An important publication has been the refereed scientific journal, the *South African Journal of Antarctic Research*, commonly known as *SAJAR*. The journal first appeared in 1971. Its first editor was R W Vice (1971 to 1976, with occasional help from J D Skinner), followed by G S Baker (1977 to 1978), P R Condy (1978 to 1989) and J R E Lutjeharms (1990 to present). Previous editors have usually stayed on the editorial board of *SAJAR* for varying periods, giving needed continuity. Two supplements have been produced (De Villiers 1976; Wolmarans & Kent 1982), but the current practice is to publish monograph-length papers as single issues of the journal itself. A study of the papers published in *SAJAR* over the period 1976 to 1991 shows a broadening of emphasis in South African Antarctic research from earth and physical sciences on the Antarctic continent to include biological research, primarily at Marion Island, and oceanographic work. Such a trend is also evident in the bibliographies included in South Africa's *Annual Reports to SCAR* from 1962 to 1991 (Siegfried 1991), which is South Africa's longest running series on its Antarctic activities. Until 1990 *SAJAR* acted as a medium for the publication of the results of SANAP research only, but it has recently broadened its scope to accept material on original Antarctic research without further restriction.

In addition *SAJAR* has, from time to time, included the names of South African expeditioners and members of SCAR Committees, weather summaries and most recently a news section. The journal was produced by the CSIR until 1989. Production was transferred to the DEA in 1990.

Several important Antarctic books and conference proceedings have been produced by South African scientists. Significant examples are Van Rooy (1957), Van Zinderen Bakker Sr *et al* (1971), Bond *et al* (1979), Gremmen (1981), Siegfried *et al* (1985) and Gon & Heemstra (1990). A number of published bibliographies that include South African Antarctic publications are also worthy of note (e.g. Burdecki 1963; Venter & Burdecki

ward Islands (Haggard 1877; Jenkins 1979), neither being of great literary merit.

The main scientific product of SANAP has been and remains the hundreds of scientific papers that have emerged in specialist journals worldwide. In this regard, the bibliographies compiled on behalf of SASCAR should be continued so that a full record of South Africa's Antarctic research is kept for posterity. Indeed, there is a need for a new depository library in South Africa, where copies of all SANAP publications and theses, and other nations' Antarctic literature, maps and charts can be housed and be made available for scholarly research, along the lines of the literature data base run by the CSIR when it managed South African Antarctic research. The existing Weather Bureau library could conceivably be expanded to fill this function once more (La Grange 1963b), but an academic institution may make a better home, perhaps modelled on the library of the Scott Polar Research Institute.

Less formally, monthly news telexes from the South African bases are sent to family members and friends by the DEA. Such a service no doubt supplies an important link but a study of the telexes for historical information usually yields little value. Many of these telexes have been published, in edited form, in the Weather Bureau's *News Letter*.

Other documents emanating from SANAP over the years include many internal reports and minutes of meetings, dealing primarily with funded research projects. From 1980 to 1985 six annual issues of the *Progress Reports to SASCAR* were compiled and circulated to the community. These informative documents included bibliographies of SANAP publications and annual reports of SASCAR and its various committees, as well as progress reports of funded SANAP projects. From 1986 to 1988, 15 SANAP final research reports were issued in a numbered series, under the title *SANAP Final Project Reports*. Restarting some of these report series should be considered not only to enhance communication but for archival purposes.

International affairs: South Africa's contributions

South Africa joined the Antarctic Treaty as a founder member on 1 December 1959, shortly before its first expedition sailed for Antarctica. Miller (1991) and Viall (1991) discuss South Africa's role within the Antarctic Treaty System (ATS). Probably because the ATS is independent of the United Nations Organization, South Africa has been able to keep full membership and engage in activities of the ATS through the years of *apartheid* (Beck 1986).

South African membership of the ATS was followed by founder membership of the non-governmental Scientific Committee on Antarctic Research (SCAR) of the International Council of Scientific Unions on 21 June 1960 (Swierstra 1991). The third SCAR earth sciences symposium and the seventh meeting of SCAR itself were held in Cape Town in September 1963, signifying an early active role for South Africa within SCAR.

Over the years, a number of South Africans have served in important positions within SCAR, most especially Mr Jan P de Wit of the CSIR, who was Vice-President of SCAR from 1982 to 1986. However, politics stopped the 19th meeting of SCAR from being held in Durban, South Africa in 1986: polite pres-

by the CSIR in pamphlet form of the aborted Durban meeting must now be a piece of rare Africana! Notwithstanding such pressures, the fourth International Symposium on Antarctic Biology of SCAR was held at the Wilderness, South Africa in September 1983 (Siegfried *et al* 1985).

South Africa has also been involved with the International Whaling Commission since its foundation in 1946, whose deliberations include the whales of the Southern Ocean.

More recently, from 1980, South Africa has been active within the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) (Miller 1991). Again, South African expertise has been recognised, with Mr Denzil G M Miller currently chairing the Working Group on Krill of the Commission's Scientific Committee as one of its longest serving members.

International collaboration has also occurred with the World Conservation Union (IUCN) and its Commission on National Parks and Protected Areas (Antarctic Realm Section). South African representatives have attended several meetings organised by IUCN (some jointly with SCAR) on the subject of conservation in Antarctic and sub-Antarctic regions during the last decade, as well as many other ATS, CCAMLR and SCAR meetings over the years.

The South African National Antarctic Programme has helped other countries with logistic support, especially Germany in Dronning Maud Land and Norway at Bouvetøya. In return, other Antarctic nations have helped with freeing beset South African vessels on several occasions over the years, relieving the Marion Island station on at least one occasion (Headland 1989) and evacuating ill team members from SANAE by air.

The South African National Antarctic Programme 1948 to 1992: a microcosm of South African society

Any large endeavour of a nation can be expected to reflect the mores and culture of the society it comes from. South Africa's Antarctic programme over the years has been no exception to this expectation. Apart from two persons listed as servants of the second expedition to Marion Island (La Grange 1954), it was not until as recently as 1989 that a black (equals African, Indian or coloured) South African, Gerald G Meyer spent a year at Marion Island as a meteorologist. Black South Africans have also contributed little so far to science within SANAP: a consequence of the country's *apartheid* policies, which have been in operation for all of SANAP's existence, save for very recently.

South Africa has also not been among the leaders in including women in its Antarctic activities (Cooper 1979; Land 1981; Chipman 1986). This situation is slowly changing. Leigh Ducasse, a female geological assistant, visited Dronning Maud Land and worked in the field in the 1984/1985 summer (Ducasse 1991) and two female biologists, Marietta E Cawood and Dr Marianna Steenkamp of the University of the Orange Free State, spent a year at Marion Island in 1986/1987, the latter receiving a PhD from the University of the Orange Free State in 1991 for her island research. Dr Steenkamp is not the first woman to obtain a higher degree through SANAP. One year previously, Dr

Susan Jackson obtained her PhD from the University of Cape Town for her work on the digestive physiology of sea birds, conducted at Marion and Gough Islands during a number of takeovers in the second half of the 1980s. Noticeable is the nearly 30-year gap between the first SANAP thesis (to V von Brunn in 1963) and the first by a woman. Female oceanographers have played an important role conducting research aboard the mv SA *Agulhas*; e.g. Dianne Gianakouras of the University of Cape Town, who was appointed Chief Ship Scientist on a cruise to Marion Island in 1987.

South Africa's relative isolation from the international community during the *apartheid* era led to a diminution in the number of Antarctic vessels of other countries visiting Cape Town. This trend is reversing and in the last year or so, Russian vessels (and aeroplanes) have been regular callers, to name but one country that previously stayed away.

Into the next millennium: an Antarctic programme for the new South Africa

South Africa is returning to the community of nations and change is the order of the day within the country, especially at the socio-political level. Such changes will, and should, be reflected by changes within South Africa's Antarctic Programme. This brief history is not the place to go into details but several points can be made.

Firstly, any remaining discrimination against women within SANAP should fall away immediately (Cooper 1979). The eminent British scientist Professor G E Fogg has stated while discussing the role of women in Antarctica that it is quite unjust that men should keep such a beautiful and unique part of the world (Antarctica) to themselves (Fogg & Smith 1990).

Secondly, SANAP needs to give careful thought to the need for actions that will open up its activities as quickly as possible to all members of the South African community.

Thirdly, South Africa is the only original non-claimant member of the ATS in the Southern Hemisphere. Its geographical position also means that Antarctica is of special strategic significance, both due to such effects as ozone depletion as well as the desirability to have a demilitarised zone (as perpetuated by the ATS) at South Africa's 'back door'. It is therefore well placed to address many of the criticisms levelled against the ATS by United Nations debates over the last decade (Beck 1986). For these reasons, South Africa should remain an influential member of the ATS.

Fourthly, South Africa is the only African country involved within Antarctica, and the only African member of the ATS, CCAMLR and SCAR. As a prospective Antarctic leader for the Africa continent, South Africa should initiate outreach programmes that would result in citizens and residents of other African countries becoming involved within Antarctica in some way. Such collaboration is at the heart of the ATS and SCAR, and with the continuing proliferation of national bases in several areas in Antarctica (e.g. Headland & Keage 1985) a sharing of resources between nations can only be for the good. A start could be made by inviting the councils for scientific and industrial research or their equivalents of neighbouring southern African countries to consider sending representatives to take part in South African relief voyages or oceanographic cruises, with the costs to be covered by SANAP.

Fifthly, more should be done to increase communication both within SANAP, and between SANAP and the South African community. South Africa does not really regard itself as an Antarctic nation and the coming changes within the country will mean that hard looks will be directed at SANAP and its perceived value to the country. One way to increase awareness is to open up SANAP voyages to national and international non-governmental organisations (especially those involved with Antarctic conservation issues, such as the local Dolphin Action & Protection Group, the South African IUCN Committee and the international Antarctic and Southern Ocean Coalition), educationists, authors, journalists, photographers, TV and video crews, artists and the like. In this regard the current Australian practice could be a role model to follow. A second way is to attempt to restart a South African Antarctic society, which would be open to all who are interested and that would be more than an 'old boys' club'.

Sixthly, Cape Town should be encouraged to regard itself, as do Hobart in Tasmania and Christchurch in New Zealand, as a gateway to the south. Economic advantages from repairing and revictualising Antarctic supply and research vessels of other nations are self evident, given the already existing infrastructure of ship chandlers and repair facilities, including dry docks, and Cape Town's favourable geographic position.

Lastly, but just as important as the above, South Africa should continue to sustain and develop its Antarctic research efforts. The newly signed, but not yet ratified, Protocol on Environmental Protection to the Antarctic Treaty has reaffirmed Antarctica as a land for peace and science. Future research activities will need to work within this philosophy.

In these, and no doubt other innovative ways, South Africa's Antarctic activities can continue as a valuable contribution to the whole country into the next millennium.

ACKNOWLEDGEMENTS

This history was written while the senior author received financial support from the South African National Antarctic Programme (SANAP) of the Department of Environment Affairs. However, views expressed in the paper are those of the authors only and should not necessarily be taken as the policy of SANAP. We thank our many colleagues who have helped us with material, both published and unpublished, that has been consulted in the writing of this account. The senior author wishes to thank the Director and staff of the Scott Polar Research Institute for allowing use of its superb library and archives. We dedicate this paper to the early South African scientific observers at Marion Island and in Dronning Maud Land, especially Allan Crawford, Hannes la Grange, Bob Rand and Vic von Brunn: you led the way, the rest of us have followed.

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