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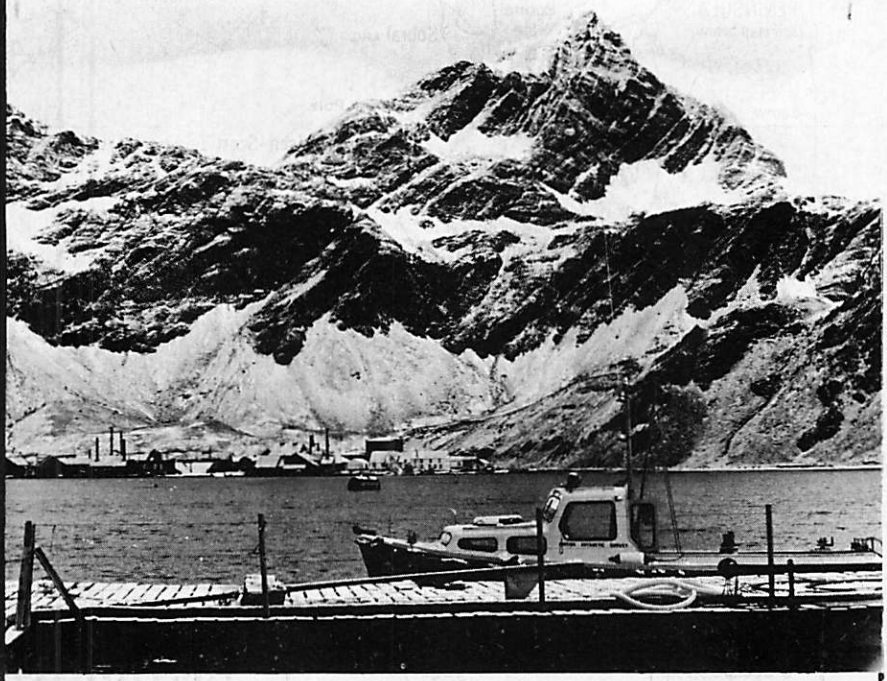

Grytviken, South Georgia, once the main base for Antarctic whaling operations, and now a British Antarctic Survey base. The disused shore station is in the background and in the foregound is the BAS marine sampling boat.

B.A.S. photo by M. R. Pawley

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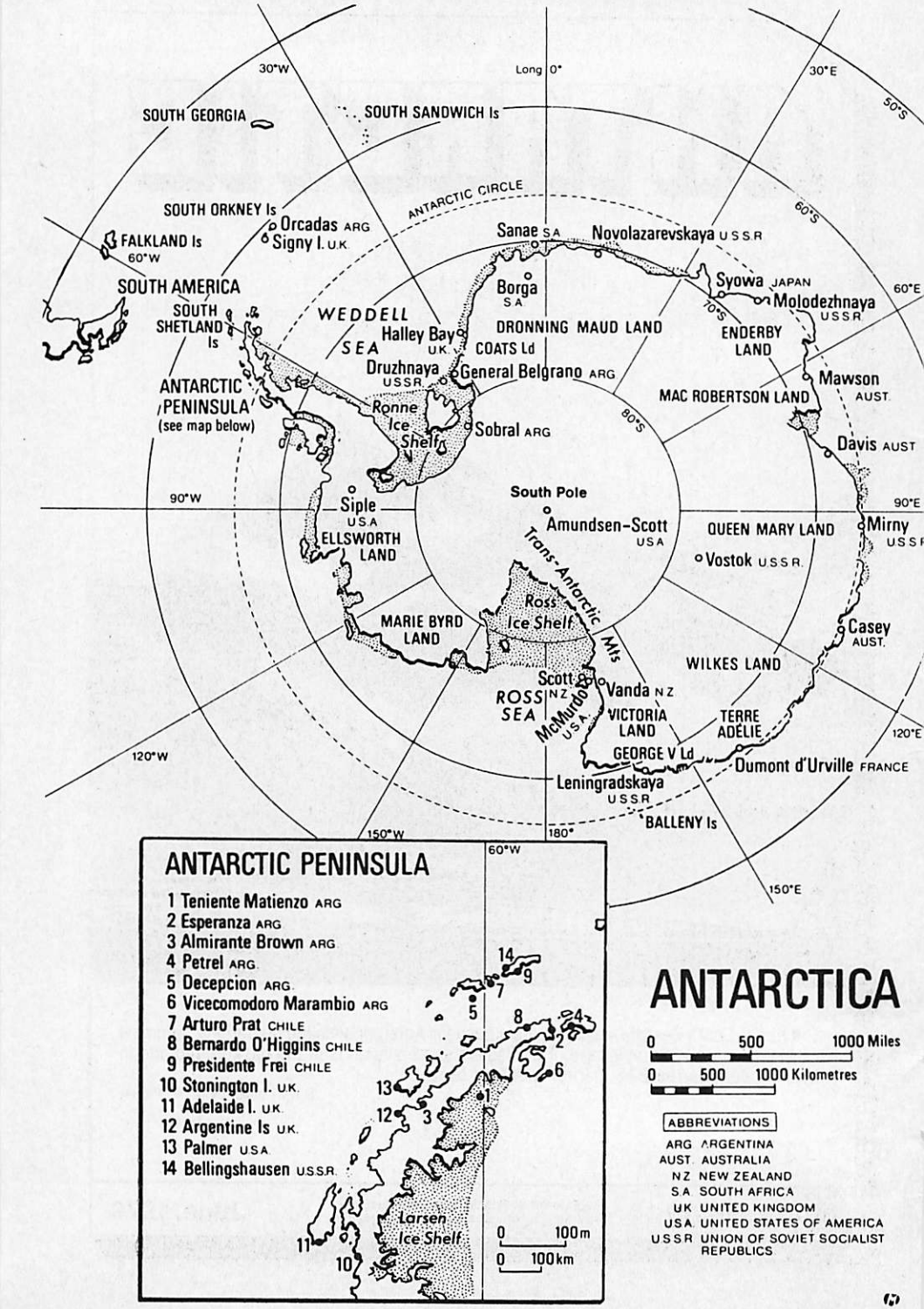

ANTARCTICA

0 500 1000 Miles

0 500 1000 Kilometres

ABBREVIATIONS

ARG ARGENTINA
AUST. AUSTRALIA
NZ NEW ZEALAND
SA SOUTH AFRICA
UK UNITED KINGDOM
USA UNITED STATES OF AMERICA
USSR UNION OF SOVIET SOCIALIST REPUBLICS

ANTARCTIC

(successor to 'Antarctic News Bulletin')

Vol. 8, No. 10 **94th Issue** **June, 1979**

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WINTER DIARY

RECORD COLD MAY AT POLE STATION

Winter did not delay its coming to the South Pole this year. Temperatures began to drop steadily before the sun began to depart in the third week of March. By the time 17 Americans, including a woman doctor, had completed their first six months at the Amundsen-Scott South Pole Station the temperature had come within four degrees of the magical figure of minus 100deg Farenheit (minus 73.3deg Celsius). And at the end of May the thermometer recorded 72.4deg C, and several times after midnight on May 29 the temperature came within two degrees of 100deg F.

Last month was one of the two coldest months of May on record at the Pole since 1957. The average temperature for the month was minus 61.6deg C. In May, 1964 the record figure was 61.4deg. But for stronger breezes on the night of May 29-30 the average would have been even lower.

On Ross Island 1327km to the north of the Pole Station's nearest neighbours, 71 Americans, 12 New Zealanders, including a woman scientist, and a Soviet exchange scientist, had the sun with them a little longer; it did not depart until April 25. But now, like all the winter parties in Antarctica, they have settled down to a regular pattern of darkness and lower temperatures — a pattern which will not be broken until the sun returns in August.

Winter began more slowly for the eight Americans at the new Siple Station, the most remote United States station on the continent, 2250km from McMurdo Station, at the base of the Antarctic Peninsula in Ellsworth Island, and 1500km from the Pole. The sun remained with them until April 30, and although the Ellsworth Land weather pattern gave the winter team many days of high winds and blowing snow, there have been clear nights to observe auroral displays and the rising moon.

After the departure of the last aircraft of the season on February 11, the team at the Pole began preparations for winter. The problems of daily living — heating, lighting, and plumbing — are part of the winter routine, which includes checking stores and equipment, and the regular scientific observations.

FIRST SIGNS

Early in March came the first signs of winter. The shadows of the station buildings began to lengthen, and the temperature dropped below minus 50deg C. Inside the geodesic dome which houses the living quarters the winter team, under the management of Ron Peck, started its indoor recreation with a pool tournament.

Still lower temperatures marked the first weeks of March, minus 60.1deg and 65.9deg. Then, as the sun began to drop towards the horizon 20-knot winds brought a brief kind of Indian summer to the Pole, and temperatures climbed to a relatively warm minus 34.9deg. But the last week ended with a minimum temperature of minus 66.1deg, and a storm prevented observation of the last sunset.

High winds and blowing snow, accompanied by rising temperatures, arrived in the first two weeks of April. The stormy weather increased the amount of snow drift against the station buildings, and brought the maximum temperature to minus 39.2deg. The minimum temperature was also higher — minus 57.5deg.

In the third week clear skies enabled the winter team to look out on a full moon and the fleeting colours of auroras. There was also a last faint glimmer of the sun on the horizon. The weather was colder, and the minimum temperature dropped to minus 64.3deg.

WINTER'S BITE

As the last days of the team's first six months at the Pole passed the temperature dropped to minus 66.5deg. But by May 3 there was a miniscule improvement — the thermometer recorded minus 66.4deg.

Then came the first real bite of winter. Early in the seventh month the temperature went down to minus 71.3deg. The drop prompted some members of the team to head for the station's sauna. They hoped to qualify for membership of the exclusive 300 Club by remaining in the sauna until the temperature reached 200deg Fahrenheit, and then dash out-side to endure briefly a temperature of 100deg F.

But the decline stopped four degrees short of the Fahrenheit century. Inside the station a bridge addict started winter bridge classes, and a chess game began by radio with Soviet players at Vostok, the coldest place on earth.

A full moon arrived on schedule outside early in the third week of May, and inside the station the team turned its attention to the remodelling of the Club 90° South. Walls were papered, trees were "planted" on one wall in the form of a mural, and preparations were made for carpet laying when the thaw began. The minimum temperature was minus 68.7deg.

May ended with a grand reopening of the Club 90° South, and a record average low temperature for the month. The minimum in the last week was 72.4deg.

TURN OF YEAR

This month the weather is not likely to get warmer, but the winter team will be able to celebrate Mid-winter's Day, making the turn of the Antarctic year. Darkness will give way to twilight early in August, and the sun is expected to rise above the horizon again at the end of the month.

Siple II was opened officially in a fierce snowstorm early in January, but its first winter occupants had some comparatively pleasant weather after the last aircraft departed from McMurdo Station on February 11, and the weeks of high winds and blowing snow began. There was only a few windy days, and blue skies on February 28. The minimum temperature was minus 27.4deg on February 24, and a peak gust of 32 knots was recorded on February 27.

Preparations for winter occupied most of the last days of February, but members of the team were able to enjoy cross-country ski-ing. To keep fit when they are confined to their living quarters the men have a choice of yoga or calisthenics. They also take winter courses during their long isolation. Brian Berry, the station leader, reports that the most popular three are computer programming, medical technology, and learning to play the guitar.

FINE SUNSETS

Colder weather marked the first two weeks of March, and the temperature dropped below minus 40deg. But the skies were only partly cloudy, and there were some fine sunsets. About 4.57cm of snow fell, and on March 11 and 12 the minimum temperature was minus 41deg.

Gusty winds and cold temperatures were recorded in the third week, and a 24-hour storm with a peak gust of 38 knots reduced visibility to zero for most of the time. The minimum temperature was minus 40.9deg but the wind chill factor brought temperatures below minus 68.8deg.

Because of the bad weather the team concentrated on inside chores, scrubbing, waxing, and polishing the floors. Pictures and furniture were brought from the old station, and a feeling of added warmth was gained from the murals on the wall.

Winds and blowing snow were experienced for most of the last week. The minimum temperature was minus 33.1deg, and a peak gust of 29 knots was

recorded. More than 5cm of snow fell during the week.

In the first week of April the weather was fare but colder. The minimum temperature was minus 42.2deg on April 5, and the wind from the south was not so strong. There was a return to chilly but fair days in the second week, and one storm lasted less than a day. The minimum temperature was 36.8deg.

A major storm with a peak gust of 52 knots from the south-east marked the third week. There was a 24-hour windy period, and lots of blowing snow. The minimum temperature dropped to minus 38.1deg on April 23.

One storm after another, the last bringing winds up to 50 knots and 2.54cm of snow maintained the Ellsworth Land pattern in the first week of May. But there were a few hours of clear weather when the moon rose over a fresh coat of newly-fallen snow. The minimum temperature was minus 37.5deg.

There were dreams of summer when temperatures soared to more than minus 7.8deg in the second week, but a major storm front brought high winds up to 52 knots from the south-west, which kept the men indoors and dashed their dreams. The minimum temperature was minus 32.9deg, and the maximum temperature was minus 7.9deg.

In the third week the south-west winds continued to blow, some gusts reaching 52 knots. Blowing snow reduced visibility, and the minimum temperature dropped to minus 42.5deg. The winds averaged 21.8 knots for the week, and the peak gust recorded was 53 knots.

But the stormy weather gave the winter team a temporary respite from the arduous task of shovelling snow into the snow melter for the station's water supply. A check of the level of the melter revealed that snow as being blown by the high winds directly down the chute. For about 24 hours the storm slowly raised the level.

STRONG WINDS

McMurdo Station is not exposed to winds blowing directly across the bare ice-cap like Siple Station is, but it has had windy weather, low temperatures, and several storms during the first three months of winter.

In the last week of February after the ships and aircraft departed the skies were cloudy, and there were light snow showers. The maximum temperature was minus 0.7deg, and McMurdo Sound was clear of all annual ice in front of the station.

But Williams Field out on the Ross Ice Shelf was hit by a violent storm with winds of 60 to 70 knots, and gusts up to 80 knots. Whipped by the storm snow drifted round the airfield buildings to depths of 1.5m to 4.5m.

Early in March the water off Pram Point where Scott Base is situated was reported clear of annual ice. and miniature bergs were seen moving in the open sea. The minimum temperature was minus 20deg, and it dropped to minus 23.5deg in the second week, rising to minus 9.7deg in the third week.

March departed, not like a lamb, but with winds rising to 30 knots, and a peak gust of 39 knots. As a parting gesture the temperature dropped to minus 27.9deg on March 30.

ICE DISAPPEARS

April 1 was Winds Day with a peak gust of 50 knots, and a steady blow of 30 knots during the day. The warm, moist wind off the Ross Sea kept the maximum temperature at minus 7.9deg. There were brilliant sunsets during the first week, and much of the newly-formed ice in front of the station disappeared.

There was more windy weather in the next fortnight. A peak gust of 41 knots on April 9, and 46 knots on April 17 were recorded. The weather in the third week was mild although the minimum temperature was minus 28.9deg compared with minus 23.9deg in the previous week.

To mark the departure of the sun a sunset ceremony was held on April 24, and the station flag was lowered and brought inside for the rest of the winter. High winds and poor visibility followed the official sunset on April 25, and winds up to 39 knots were recorded on

April 26 with a peak gust of 52 knots. The maximum temperature for the week was minus 7.8deg on April 24, and the minimum on April 21 was minus 30.6 deg.

During the last days of April the windy weather continued with a peak gust of 47 knots on April 27 and winds up to 35 knots. The minimum temperature was 28.1deg on April 29, and the maximum was minus 9.8deg on April 27.

MORE SNOW

Wind gusting to 62 knots and snow introduced more wintry weather early in May, and the temperature dropped sharply to minus 35.2deg on May 7. McMurdo Sound was frozen over from the permanent ice edge to Hut Point, and there was open water to the north.

A light fall of snow and high winds marked the second week when the minimum temperature was minus 30.2deg on May 17. Then the weather was relatively mild except on May 27 when the wind gusted to 54 knots, and the minimum temperature rose a few degrees to minus 27.4deg. A minimum temperature of minus 35.6deg on May 22 produced frozen pipes around the station.

When the three hours of twilight in the first two weeks of May were replaced by complete darkness this month, the men of McMurdo Station settled down to await the eventual return of the sun. They have nearly two months before it appears again.

WARM APRIL

Although April was one of the warmest on record at Scott Base, the 12 New Zealanders there now have the same daily experience — darkness and cold — as their American neighbours just over 3km away. And their first two months of isolation brought high winds with peak gusts of 67 and 70 knots. A peak gust of 60 knots was also recorded in February.

Late in February the sea ice broke out in front of the base, leaving open water for the arrival of Emperor penguines, killer whales, and Weddell seals. The sight of 350 to 400 Emperors at the front door brought out a small flock of photographers.

In a relatively quiet environment after the departure of the last of the summer workers on February 22 the winter team settled down to prepare for the daily winter routine, much of which is concerned with preparations for the summer influx for the 1979-80 programme, beginning early in October.

Members of the team spent the early days of March on the remaining outside jobs in readiness for the onset of colder days. The dog handler, Peter Cleary (Christchurch) was kept busy getting his 17 huskies and field equipment prepared, and ensuring that there was enough food for the dogs in the winter and spring.

ABORTIVE TRIP

Before wind and darkness limited the dog teams' runs, there was an abortive trip to Cape Crozier, some 80km east of the base, between March 12 and 15. A whiteout and soft snow stopped the trip by a party of five New Zealanders, and one American, at Cape Mackay, some 48km on the other side of Windless Bight.

With Peter Cleary were the senior scientific officer, Thelma Rodgers (Christchurch), Alan Burt, science technician (Invercargill), Brent Trevathan, chef (Blenheim), Bob Geddes, mechanic (Nelson), and Mark Baker, manager of the Berg field centre at McMurdo Station. For some of the party travel in temperatures below minus 30deg, and sleeping in a polar tent during a blizzard, were new experiences.

Windless Bight lived up to its reputation for soft snow, which was belly deep on the dogs, and windless conditons. When the wind at Scott Base reached 70 knots the party in Windless Bight had only 35 knots during the whiteout. On the journey home the dogs performed well, covering about 48km in 6½ hours with a load of between 400 and 450 kilograms.

Cooking at Scott Base has been definitely a new experience for Brent Trevathan, except for the preparation of

meals. There are few chefs anywhere who have to dig snow away from the front of their deep freeze with a front end loader. His freezer is a snow cave 5.4m by 5.4m, and 1.8m high, cut into the ice 2km from the base. Enough food for 18 months is stored there, and any needed for use has to be brought out three days before.

LINGERING LIGHT

Ten pin bowling attracted several of the New Zealanders to McMurdo Station's alley during March. Those who preferred to remain at home began their winter hobbies which ranged from model-making to pottery and painting.

Temperatures in March contrasted sharply with those recorded during the previous month. For February the minimum temperature was minus 19.3deg. In March it was minus 39.6deg, and the maximum temperature dropped from minus 1.8deg to minus 3.8deg. The average for February was minus 9.8deg, and for March it was minus 21.1deg.

April is the month of long, lingering twilight in Antarctica, and the gradual drift into darkness after the last official sunset on April 24, discouraged outdoor activities. The dog teams' runs were shorter, and limited to the early afternoon twilight period instead of the evening darkness.

But on April 15 a dog team made a one-day journey to White Island some 27km south of Scott Base. The leader, John Presland, Peter Cleary, and the McMurdo Station doctor, Dr D. McMillan, went there to find out whether the isolated Weddell seal population appears on the surface of the surrounding ice at this time of the year.

FAST JOURNEY

Travel was excellent with the temperature above minus 35deg, and on the hard, fast surface the dogs covered the distance in three hours. They made the return journey in the fast time of two hours 40 minutes.

During their overnight stay at White Island the three men investigated several miles of tide crack, and walked to Cape Spencer Smith. They found two blowholes and two seals, one of them a yearling. With a north-west wind the temperature at the island was minus 40deg compared with minus 37deg at Scott Base.

In April the few hours of twilight around noon turned the team's efforts to work inside. Much of the last week of the month was spent stock taking, and preparing tents, sledges, and food boxes for the summer field parties. Other tasks included checking the fire alarm systems, and collecting snow with a front end loader for the snow melter.

Some of the studies in the continuing scientific programme can be made indoors, but the auroral camera project demands regular trips every three days to Arrival Heights about 4.8km from the base to change the film and check the instruments.

One of the laboratory technicians, Ray Vincent (Greymouth) has had some exciting moments travelling from the comfort of the base to Arrival Heights. On some days he has faced low temperatures and winds up to 40 or 50 knots, and visibility down to a few metres.

SUN DEPARTS

About the middle of April the sun left the base, and then disappeared below the horizon for three months on April 25. The Scott Base flag was lowered on April 24, the last day of sunrise before the approach of winter darkness, and the Americans and New Zealanders celebrated the occasion with a party at McMurdo Station.

Four hardy souls had a different kind of celebration two days before — a quick dip in the chilly waters beneath the sea ice. Peter Cleary, Bob Geddes, Allister Babington, the Post Office radio technician from Hamilton, and the carpenter, Graeme Abernethy (Papakura), cleaned the blade of a chain saw by cutting a hole nearly a metre square in the sea ice, and then went for their swim, wearing only their underpants.

April's temperatures gave a fair indication of what winter would bring later. The minimum temperature for the month was minus 47.7deg, the max-

imum dropped to minus 7deg, and the average was minus 21.5deg.

With colder weather, increasing darkness, and fewer outside tasks, hobbies became the prime interest in the team's spare time. Thelma Rodgers concentrated on her pottery, using a potter's wheel borrowed from McMurdo Station, learning the guitar, and making a chess set from small glass bottles.

Banjo playing, making model gliders, and talking to amateur radio operators in the world outside, have occupied some of the spare time. Ray Vincent has been working on a radio-controlled model glider, Maurice Challinor, the postmaster from Auckland, has made more than 700 contacts, mainly by Morse code, with fellow-hams in Iceland, Britain, Norway, the Soviet Union, Hawaii, Guam, the United States, Terra del Fuego, and most European countries, and others in the team are catching up on their reading.

Chess is one of the favourite activities of most of the winter teams in Antarctica, particularly the Russians. Games are in progress between McMurdo Station, Vostok, and the French station, Dumont d'Urville. Allister Babington is exchanging moves on the board with Casey Station, and also applying his inexperienced fingers to the banjo strings.

Scott Base is now in complete darkness, but the team can look forward to Mid-winter's Day, the appearance of the sun, and then late in August or early in September to the arrival of the first visitors bringing mail and fresh food. Their isolation will end completely with the arrival of the first of the summer workers, both Americans and New Zealanders, starting in October.

McMurdo Station's new chapel

As a winter project the men at McMurdo Station have built a chapel to replace Antarctica's first church — the tiny Chapel of the Snows — which was destroyed by fire in the early hours of August 23 last year. Since 1956 the original chapel had been a place of worship for Americans who lived and worked at McMurdo Station, and also for New Zealanders at nearby Scott Base.

Construction of the new chapel, which is planned to be ready for the 1979-80 season, is well advanced. There is still work to be done on the building, but a lay reader who takes the place of United States Navy chaplains in the winter, was able to conduct an Easter Day service on April 15.

Only the chapel bell and small religious items, damaged by the flames, were recovered from the fire. One loss was a Bible presented by the American evangelist Dr Billy Graham.

New Zealand churches have an interest in the new chapel because for many years their ministers shared parish duties at McMurdo Station with United States Navy chaplains each summer, and conducted services in the original chapel. Now, a country parish north of Christchurch has offered a pulpit from a city church, St Mary's, Merivale, for the new chapel.

This pulpit comes from the original St. Mary's Church, which was built in 1866. It has an Antarctic connection for Dr Edward Wilson attended a service at St. Mary's before he left New Zealand to return home after Scott's first expedition of 1901-04.

In Christchurch Wilson stayed with Joseph Kinsey at his home "Warrimoo", in Papanui Road, now replaced by motels. He recorded in his Discovery diary: Sunday, June 5, 1904. "Early service with Ory (his wife Oriana) at Merivale church."

Klari, one of two Australian huskies from Mawson, now at Scott Base, has become a New Zealander — at least by name. She has been given the Maori name of Kiritea, which, in English, means the fair one. An exchange of huskies between the two bases was made last season. Klari and Dick came from Mawson to Melbourne in the relief ship Thala Dan, and then were flown to Scott Base.

80 years of Mid-winter's Day celebrations

Mid-winter's Day is the most important date in the Antarctic calendar for the men and women of 11 nations who are wintering at the South Pole, and other inland and coastal stations this year. They celebrate the shortest day of the year because it marks for them the beginning of the end of darkness and isolation, and because they wish to carry on a tradition established in the early days of the Heroic Age of exploration.

South of New Zealand the tradition dates back 80 years. The 10 members of the Southern Cross Expedition led by C. E. Borchgrevink, who were the first to winter on the continent at Cape Adare, celebrated their Mid-winter's Day on June 21, 1899.

On Ross Island even further south 12 New Zealanders, including one woman, at Scott Base, and 71 Americans and one Soviet exchange scientist at McMurdo Station celebrated the occasion with formal dinners and more informal activities. They also exchanged greetings with their nearest neighbours — 16 men and a woman doctor at the Amundsen-Scott South Pole Station.

Scott Base had five American guests for dinner on June 22 and they and the winter team enjoyed a superb meal prepared by the chef, Brent Trevathan, and then sat back to sip their after-dinner port. But the celebrations did not end with port. They were continued with a sports meeting the next day in the McMurdo Station gymnasium.

Then on June 24 those who had not wintered before went through an initiation ceremony modelled on the traditional Crossing the Line ceremony held aboard ships. Father Neptune came ashore from the Ross Sea to preside. Behind his beard were the familiar features of the Soviet exchange scientists, Dr Eduard Lysakov, who has spent three previous winters in Antarctic at his own country's bases.

Mid-winter's Day is also celebrated in New Zealand by men who have wintered in Antarctica or have other associations with research and exploration there. In Christchurch a Scottish scientist, Dr R. V. Birnie, of the University of Aberdeen, who worked with the British Antarctic Survey on South Georgia, was the guest speaker at the dinner arranged by the Canterbury branch of the New Zealand Antarctic Society on June 22. The chairman, Mr R. L. Park, who has worked at Scott Base in past summers, presided over an attendance of more than 60.

Among the guests were 91-year-old Bill Burton, one of the two survivors of Scott's last expedition, the superintendent of the Antarctic Division, D.S.I.R., Mr R. B. Thomson, and Miss Margaret Lanyon, representing the United States National Science Foundation.

In Wellington the Antarctic Society's branch held its Mid-winter's Day function on June 21. The chairman, Squadron Leader W. L. Hopper, presided over an attendance of 50, and the guest speaker was the Minister of Foreign Affairs (Mr Brian Talboys). Among the guests were diplomatic representatives of several of the Antarctic Treaty nations.

Once again former Antarcticians in the "Deep South" and the "Far North" attended reunion dinners to mark Mid-winter's Day and bring together, men who have worked in the Antarctic. The third southern region reunion was held at Queenstown on June 23. Many of those present had travelled hundreds of miles to attend, some from as far north as Christchurch.

Convenor of this year's reunion was

Mr W. R. Lucy, who went south first in the 1963-64 season, wintered at Scott Base in 1964, and was leader at Vanda in 1969. His efforts brought together scientists, Scott Base support staff, and most of the 21 years of New Zealand Antarctic activity were represented.

There are many Old Antarctic Explorers, as they mockingly describe themselves, both north and south of Auckland where the O.A.E. reunion dinner was held. This year's mailing list included scientists, support staff, leaders at Scott Base, and men who served in or commanded the Royal New Zealand Navy's two Endeavours, which provided logistic support for the New Zealand research programme between 1956 and 1972.

This year the organisers of the reunion were, appropriately, a scientist and a field assistant. They were Michael Chapman-Smith, a geologist who spent three seasons in the Antarctic, the first in 1969-70, and Michael Wing, who went south first in the 1972-73 season, and was the dog handler at Scott Base in the winters of 1973 and 1976.

Marie Byrd Land plant fossils

A New Zealand geologist's discovery of plant fossils in the Ruppert-Hobbs Coasts sector of Marie Byrd Land late in 1977 has been described in the "Antarctic Journal of the United States" as the most exciting event of the 1977-78 field season. The fossils were found by Dr G. W. Grindley, chief project geologist of the New Zealand Geological Survey, who was a guest member of the United States team which made a geological survey of the Ruppert-Hobbs Coasts sector.

In a report on the survey Dr F. Alton Wade, an authority on the geology of Marie Byrd Land, who died last year, says that although the plant fossils were present only in erratics of carbonaceous argillite that rested on the granite surface of Milan Rock (about 79deg 1min S/140deg 20min W) in considerable numbers, they could not have been transported more than one or two kilometres. From the characteristics and bearings of the glacial striations on the granite outcrop, it appears that they were plucked from a sub-ice outcrop located to the south-east of Milan Rock.

Four American geologists were present when Dr Grindley made his discovery. One of them, John R. Wilbanks, of the University of Nevada-Las Vegas, also made a collection of plant forms. His collection was submitted to James M. Schopf, of the Institute of Polar Studies and the Department of Geology, Ohio State University, for study and fossil identifications. His preliminary results indicate the age of the formations to be Middle Devonian (358 to 370 million years).

Dr Grindley's collection was studied by D. C. Mildenhall. His preliminary report suggested a relative age of Upper Devonian (345 to 358 million years.)

Snow toads again

Snow toads, the Antarctic gremlins, and a printers' strike, can take most of the blame for two annoying errors in the March issue of "Antarctic". One transferred an island in the sub-Antarctic to Antarctica.

A fine photograph of one of the Bounty Islands on Page 329 was given a caption which referred to a geological formation in the northern Britannia Range between the Hatherton and Byrd Glaciers. The caption should have appeared beneath the photograph on Page 324. Even worse, the Britannia Range photograph was printed in reverse.

Our apologies to Dr Donald Horning, who took the island photograph, and Dr Michael Selby, of the University of Waikato, who sent us the Britannia Range photograph. We will try to keep the snow toads in check.

Brigantine for Antarctic research

After two research voyages to the Balleny Islands and Torres Strait in the 18m yawl Solo the Australian Ocean Research Foundation wants to replace it with a 22m ice-strengthened auxiliary brigantine, mainly for Antarctic research. Dr David Lewis and his fellow-scientists and explorers, who established the foundation in 1977, have launched an appeal for $200,000 to buy a suitable, partly-completed hull now available in Sydney, and design a ship for oceanic research in the waters of the Pacific and the Southern Ocean.

Design requirements for the new ship, which will be called Douglas Mawson after Australia's greatest Antarctic explorer, call for a strengthened steel vessel with modern rig, of 60 to 100 tonnes displacement, a cargo capacity of 15 to 20 tonnes, and a 150 horsepower diesel engine. It will be designed to make 2500-mile passages to Antarctica without refuelling, and other requirements include accommodation for up to 24 people, the strength to work in reasonably free pack ice, laboratory space, and electric power for simple laboratory work on location. The drawing reproduced here shows a staysail schooner-brigantine rig with good fore and aft sail area for windward work.

An initial programme of research covers the fields of geology, biology, oceanography, anthropology, physiology, and logistics. Physiological research would include experiments with Eskimos in the application of their travel, fishing, and camping techniques in Antarctica.

Research work proposed for the Douglas Mawson would call for offshore and onshore projects on islands and off coasts where landings and studies have not been completed because of difficulty or high costs of access by conventional expeditions. Examples given in the programme are the Balleny Islands, Macdonald Islands, Smith Island, and Bouvet Island.

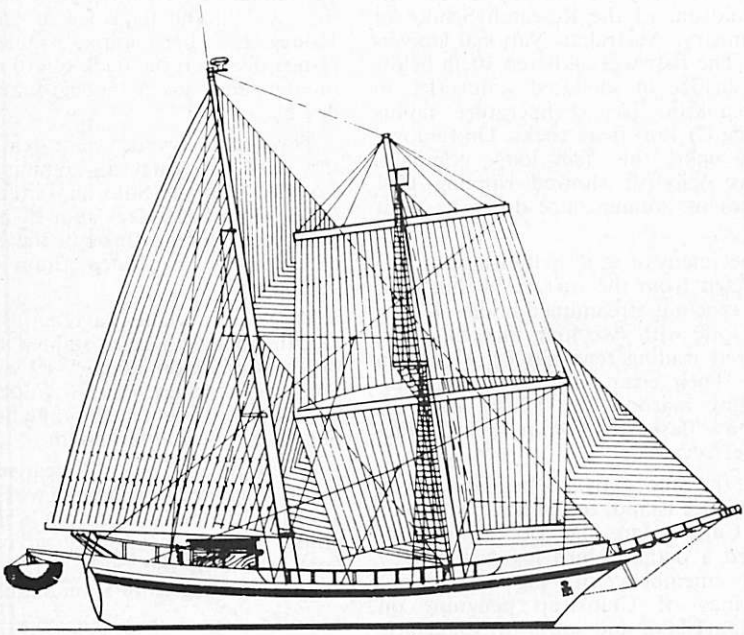
Other projects would involve remaining for long periods in remote waters to observe seasonal changes and effects such as the life cycles of icebergs or pack ice. On occasion the ship could winter in a suitable Antarctic location like a Vestfold Hills fjord or in Wood Bay on the coast of Victoria Land.

ICEBERG ZONES

As the Ocean Research Foundation was founded to study the unique environments of Antarctica, Oceania, and Australian waters, the Douglas Mawson will be used for a wide range of projects such as investigations of the outer faces of coral reefs on the Australian continental shelf, rocks and shallows near Heard and Macquarie Islands in the sub-Antarctic, and the iceberg zones of the Southern Ocean in late summer. Scientists would also be able to study the maritime technologies of indigenous Pacific and South-east Asian peoples, especially methods of fishing and oversea travel.

When Dr Lewis led the Oceanic Research Foundation's first Antarctic expedition to the Balleny Islands in the 1977-78 season, landings were made on Sturge and Sabrina Islands. Rock and soil samples were collected and brought back to Australia for more detailed examination, and logs were kept of bird and whale sightings. Results of the examination of soil samples have disclosed the presence of two thermophilous fungi previously unrecorded in Antarctica.

Dr D. Ellis, of La Trobe University, who examined soil samples taken from the vicinity of an Adelie penguin rockery on Sabrina Island, identified the two



thermophilous fungi, using a scanning electronic microscope. Thermophilous fungi are virtually ubiquitous, but there have been no previous reports of their occurrence in Antarctica.

Dr Elizabeth Kerry, of the Botany Department, University of Melbourne, made microbiological studies of three Sabrina Island soil samples for the presence of bacteria and fungi. These were taken both from the surface and subsoil within the rookery, and from the surface about 8m from the edge of the rookery.

FUNGI PRESENT

In her report Dr Kerry says that bacteria and fungi were present in all three samples. Fourteen species of filamentous fungi were identified. One sterile and therefore unknown Basidiomycete was isolated, and represents the first record of this group in Greater Antarctica. Basidiomycetes have, however, been identified on the Antarctic Peninsula.

Four Penicillium species (P. spinulosum, P. verrucosum, var. cyclopium, P. enchulatum, and P. chrysogenum) and Botrytis cinerea, occurred in the Sabrina Island samples, and are possibly the first records of these species in Antarctica. Penicillium species dominated the fungal flora of all three soils, both in frequency of occurrence and species diversity.

Dr Kerry says that her study has demonstrated that the soil microflora of the Sabrina Island soils is similar to those of many other Antarctic soils. The dominance of fungal flora by Penicillium species is a feature shared with other Antarctic soils as well as those in warmer environments.

Mossy growths (the only green objects seen by the Solo's crew south of Macquarie Island) were given to the National Herbarium in Melbourne for identification. Samples studied at the Australian Museum contained many nematodes.

Two types of jellyfish were collected close to Sturge Island by Dr P. B. Donaldson, of the Research School of Chemistry, Australian National University. The first was gathered 10cm below the surface in sheltered water rich in zooplankton (sea temperature minus 1.6deg C) 15m from rocks. On removal from light, this 5cm long, compact, brown jellyfish showed rippling blue flashes of luminescence down its eight ribs.

Specimens of other jellyfish were also collected from the surface in this area. This type has streamlined bodies 4cm to 6cm long with two long maroon, hair-covered trailing tentacles 6cm to 10cm long. Their clear bodies had eight undulating maroon ribs which gave off rainbow flashes of colour by a diffraction effect.

On the Solo's voyage, beginning from Macquarie Island, to the Balleny Islands and Cape Adare, Dr Donaldson conducted a detailed bird log, assisted by other members of the expedition. Sightings of Chinstrap penguins on Sabrina Island and south of Macquarie Island support the view that this species seems to be expanding its range from the other side of Antarctica.

In addition, in the expedition's region of study, Antarctica fulmars appeared to outnumber snow petrels by about three to one. This result is uncommon for most areas of Antarctica.

Only one Emperor penguin was signed (at least 100 nautical miles north of Cape Adare). Nesting Adelie penguins were noted on Sabrina Island, Buckle Island, and Cape Adare. The chicks on the Balleny Islands were about three weeks less developed than those in creches and losing down on the further south but sunnier Cape Adare.

WHALE WATCH

A continuous watch for whales was kept aboard the Solo, and Dr Donaldson recorded 22 sightings between December 30, 1977, and January 24, 1978, in latitudes from 57deg 5min to 69deg 7min S.

Six killer whales remained with the Solo for 15 minutes on December 30 when she was at 57deg S/158deg 1min E. On January 16 five more were passed by the yawl in the pack ice at 66deg S/164deg E. Three minke whales were filmed diving in the pack for 10 minutes on the same day at 66deg 4min S/164 deg E.

Three minke whales were sighted near the pack ice early in January. One sounded near the Solo on January 5 at 64deg 4min S/164deg 7min E, and two were seen moving through the pack at 66deg 1min S/116deg 3min E on January 8.

Three sei whales averaging about 15.24m in length were sighted basking on the surface on January 19 when the Solo was at 66deg 8min S/173deg 8min E. They were frightened by the boat and porpoised away about 30km.

When the Solo was still near the pack ice on January 23 one minke was sighted at 71deg 3min S/170deg 1min E. The last minke slowly porpoised across the boat's bow in the open sea at 69deg 7min S/170 deg 7min E on January 24.

Women and work in winter

A change in the United States Navy's policy about women serving in Antarctica may enable them to spend the winter there. Women have worked with the naval support force during the summer at McMurdo Station in recent years, but they have not been allowed to accept winter assignments.

Now the policy has changed to "permit" assignments of "qualified women volunteers to winter" on the continent in 1980 "so long as appropriate funding is made available". Since 1974 four American women have wintered at McMurdo Station, and there is a woman doctor at the Amundsen-Scott South Pole Station this winter, but all are civilians.

No attempt to recover Hercules

No attempt will be made this season to recover a disabled United States Navy Hercules aircraft abandoned about 1060km from McMurdo Station in December, 1971. The recovery of the aircraft was considered by the National Science Foundation and the Navy in the 1977-78 season after the successful recovery of three damaged Hercules aircraft from Dome C in Wilkes Land during the 1975-76 and 1976-77 seasons.

On December 4, 1971, the fourth aircraft, No. 148321, was downed because its JATO system malfunctioned at 68deg 20m S/137deg 31m E, about 225km inland from Dumont d'Urville after it had resupplied a French traverse party. United States aerial and French surface observations over six years, knowledge of the actual damage to the aircraft, and experience gained in the recovery of the aircraft at Dome C, indicated that the abandoned Hercules could be repaired and returned to service.

To confirm this opinion a team of experts from the Navy and the aircraft manufacturers flew in from McMurdo Station to the aircraft in the 1977-78 season. Expeditions Polaires Francaises assisted the experts and a support team to reach the Hercules which is at a point, D59, on the traverse route. A skiway was built near Dumont d'Urville by the French winter team. A second French support team was flown to the site from McMurdo Station, and then made a traverse of D59 where it built a skiway. A temporary camp was established for the inspection team.

A recovery attempt was planned for last season but was cancelled for operational reasons. Preliminary planning for next summer's programme does not provide for the attempt to be made in the 1979-80 season.

Unexpected visitors to Pole

Ten days after 18 Americans at the Amundsen-Scott South Pole Station had been left to their winter devices they had unexpected visitors who brought 4kg of mail, but stayed only 40 minutes. They were the crew of a United States Hercules which made an unplanned flight to pick up a member of the winter team and bring him back to New Zealand.

After the last Hercules flight of the season to Pole Station on February 12 one man decided he could not face nine months' isolation. A request was made for his evacuation, and one of two Hercules aircraft which made the last scheduled flights of the 1978-79 season between Christchurch and McMurdo Station continued on to Pole Station.

Commander W. Morgan, commanding officer of the Navy's VXE-6 Squadron, who ended three summers of Antarctic flying last season, made the unplanned flight. When he landed the Hercules on the South Pole skiway the temperature was minus 51deg Celsius, close to the safety level for air operations at the Pole.

Cargo was landed aboard the Hercules during its 40-minute stay, and Commander Morgan kept his engines running. Then the doors were shut, and the aircraft moved to the taxiway. But the man to be evacuated was almost left behind. No time had been allotted to him to get aboard, and the Hercules had to make a half-circle to pick him up.

Commander Morgan and his crew completed their mission in 24 hours almost to the minute, including the six-hour flight between McMurdo Station and the Pole. They left 16 men and one woman, Dr Michelle Raney, to await the arrival of another Hercules early in November.

West German design for first base

West German scientists and technicians who will man their country's first Antarctic research station on the Filchner Ice Shelf next year will live in an M-shaped system of tubes placed in tunnels under the ice. This summer an advance party of six with a mobile base station will be flown south by a Hercules aircraft of the West German Air Force Transport Command. The party's main task will be to choose the final location of the site for the new base, and mark out two 1097m ice runways for the expedition's two Twin-Otter aircraft.

Equipment for the new base, which will extend over about two-fifths of a hectare is expected to cost DM20 million. Establishment costs of the prefabricated base and its transport have been estimated at DM80 million to DM100 million, and West Germany proposes to spend about DM30 million a year on research.

Satellite photographs and aerial reconnaissance have been used to decide on an approximate location for the station. The exact location has still to be decided, but reports suggest that it will be at least as far south as 75deg and 45deg to the west.

A Munich firm, Dorsch Consult, which has been associated with the construction of the Alaskan oil pipeline, has designed the M-shaped tube system for the West German Ministry of Research and Technology. Each tube will be 6.45m high and 96m long.

One tube will accommodate the base doctor, his sickbay, and sleeping quarters for the base scientists and technicians. The second tube will contain a miniature gymnasium, toilets, showers, sauna bath, laundry, office and radio room, lounge, library and cinema, dining room, kitchen, pantry, garage, and workshop. Tube three will house the laboratories for atmospheric research, geophysics, geodesy, geology and glaciology, a dark-room, computer, electronics workshop, heating, water supply, power generator, and waste incinerator.

In summer the base will be occupied by 18 scientists and technicians, four pilots, three engineers, a doctor, a radio operator, an electrician, a cook, and a steward. In winter the base will be maintained by a team of six to eight.

Vehicles will include four snowmobiles and five mobile base camps for teams of up to six, five motor sledges, two tracked vehicles, freight sledges, and crevasse-bridging equipment. The base will also have emergency rations, and a survival raft containing clothing, fuel, hammocks and food for 50 people for a fortnight.

An ice-going cargo ship will take all the materials and equipment for the base to the Antarctic in the summer of 1980. Sledges and tracked vehicles will haul the prefabricated sections to the foot of the ice shelf. There they will be lifted 48m by crane and helicopter on to the shelf.

West Germany will also have a polar research ship for its comprehensive Antarctic research programme. This ship has been designed by the Shipbuilding Research Institute in Hamburg, and will be commissioned later this year.

To plan and direct the research programmes the Government has established the Alfred Wegener Polar Research Institute. No decision has been made yet on its location, but Kiel, Hamburg, Bremen, and Munster universities have offered it a home.

Calls for moratorium on all whaling

When the International Whaling Commission holds its 31st annual meeting in London next month it will discuss another call for a moratorium on all commercial whaling of all species. This time the call comes from the United States, one of the 11 non-whaling nations represented on the commission, which now has 18 members.

Similar proposals have been put forward by Australia and the Seychelles. Australia has decided to cut out its only land-based whaling operation, and the Seychelles seeks a ban on all commercial whaling in the Indian Ocean. The United States wants all commercial whaling suspended until population levels can be determined with sufficient accuracy and confidence to avoid subjecting whale stocks to unacceptable risks.

Calls for a 10-year moratorium on all commercial whaling have been put to the commission since 1972 when the proposal was made first by the United Nations conference on the human environment in Stockholm. The calls have not been accepted by the commission, but is has responded to demands for reduced catch quotas to protect existing stocks, and some species have been given complete protection.

There was no proposal for a moratorium to the 1977 meeting in Canberra although President Carter sent a personal message reaffirming support for a 10-year moratorium. At the meeting in London last year Panama, one of the non-whaling nations, called for a moratorium but dropped the proposal at the last minute. There were claims by environmentalists that Japan, one of the major whaling nations, had brought trade pressure to bear on Panama.

Acceptance of a moratorium requires a three-quarters majority of members of the commission. At present there are seven whaling nations — Japan, the Soviet Union, Australia, Norway, South Africa, Iceland, and Brazil. The non-whaling countries are Argentina, Britain, Canada, Denmark, France, New Zealand, the Netherlands, Mexico, Panama, the Seychelles, and the United States.

More support for some form of moratorium is expected at next month's meeting. At previous meetings some non-whaling countries have supported the recommendations of the commission's scientific committee on quotas to conserve stocks of the unprotected species. Also there has been concern that insistence on a moratorium might cause major whaling nations such as Japan and the Soviet Union to withdraw from the commission and fish for whales unilaterally.

New Zealand, which rejoined the commission in 1976, has now decided to support moves for a moratorium on all commercial whaling. The Minister of Foreign Affairs (Mr Brian Talboys) who announced the decision last month, says there are indications that the Soviet Union might end commercial whaling in a few years, and Australia is considering a ban on the taking of whales in its fisheries waters.

Dr Vyacheslav Zemsky, who headed the Soviet delegation to a meeting of the scientific committee in California at the end of last year, has said that the Soviet Union plans to end its whaling industry within five years, first in the North Pacific, and then in the Antarctic. The seven whaling fleets have been reduced to four, two in the North Pacific, and two in the Antarctic (which took fish as well as whales). One fleet was excluded from the North Pacific this season.

BAS NEWS

Geophysical cruises by Bransfield

Geophysical and biological studies were made in Antarctic waters last season by scientists who worked aboard the Royal Research Ship Bransfield in the British Antarctic Survey's research programme. The Bransfield spent most of April on geophysical cruises in the Scotia Sea and to the north and north-east of the Weddell Sea after she had relieved all the BAS stations.

Field parties were supported by the two BAS Twin Otters, which operated from the United States Siple Station for a joint doppler satellite positioning (geoceiver) programme, and for glaciological work near the Ellsworth Mountains. The geoceiver team worked in nine localities, including the Shackleton Range, Pensacola Mountains, and the Berkner Ice Shelf.

This year 72 men are wintering at the five BAS bases. There are 13 at Faraday (Argentine Islands), 18 at Grytviken, 17 at Halley, 12 at Rothera, and 12 at Signy. Those who wintered last year, and the last of the summer visitors, arrived home on the Bransfield, which reached Southampton on May 29.

By the end of January the Bransfield had relieved all stations except Rothera, Adelaide Island. The approaches to Rothera were still blocked by ice. In early February, the ship returned to the Falkland Islands and proceeded to Punta Arenas to pick up more summer visitors, including the BAS director, Dr Richard Laws. At the same time, Captain John Cole handed over command to Captain Stuart Lawrence, the Bransfield's co-master, for the second half of the season.

When the Bransfield returned to the west coast of the Antarctic Peninsula she spent three days at Faraday, Argentine Islands, before continuing south to Adelaide Island, arriving at Rothera on February 19. Unloading of cargo (which included 1,000 drums of aviation fuel) was interrupted by the presence of sea ice, but the intervals were used to transport geomorphologists to localities in Marguerite Bay. Fast ice still blocked access to the old Stonington Island station.

Dr Laws spent three nights at Rothera and one at Fossil Bluff (the advance base in George VI Sound). He inspected the new Rothera building complex which is now nearly complete; and visited a number of field parties.

Then the Bransfield returned to Faraday and stood by to give assistance with building operations. The Governor of the Falkland Islands and High Commissioner of the British Antarctic Territory, Mr J. R. W. Parker, and his wife, arrived there in H.M.S. Endurance at the beginning of March. They were shown round the station by Dr Laws, who then transferred to the Endurance to return to the Falklands and so fly home. The Argentine ice-breaker San Martin visited Faraday a few weeks later.

GEOPHYSICAL CRUISES

After completing the relief operations, the Bransfield returned to Grytviken, South Georgia. She then undertook geophysical cruises in the Scotia Sea and to the north and north-east of the Weddell Sea, visiting Signy en route. This pro-

This dining room is part of the design for Antarctic living at Rothera, the new British Antarctic Survey station at Rothera Point on Adelaide Island. It was completed last summer and replaces the old Adelaide base. B.A.S. photo by D. J. Hill

gramme which occupied most of April, and covered 4,574 nautical miles, was a continuation of the University of Birmingham's long-term Scotia Arc project which was initiated in 1959-60.

Minor engine trouble, intermittent storms, and the presence of ice at the end of the period limited what could be done, but most of the programme was completed very satisfactorily. While the Bransfield was sheltering briefly in Scotia Bay, Laurie Island, her master was able to visit the Argentine station, Orcadas.

From January to March, a small biological team led by Professor G. E. Fogg, of the University College of North Wales, Bangor, carried out a research project from the Bransfield, measuring plant micronutrients in the water of the Southern Ocean, and relating them to the growth and distribution of phytoplankton. They hope to compair their continuous measurements of chlorophyll in the sea with those taken by the Nimbus-G satellite.

Earlier in the season, another shipboard programme monitored the level of mercury in sea-water, as well as the amount of mercury transmitted into the lower atmosphere by the evaporation of spray. Measurements have previously been made in the Northern Hemisphere, but little is known about the concentration of this heavy metal south of the Equator.

Towards the end of April, the Bransfield paid final visits to Signy and Grytviken, picked up the summer field party from Bird Island, and then continued geophysical profiling north of South Georgia to Latitude 48° N. The four biologists who had been working on Bird Island, had been confined to base by severe weather for much of March, but their season was very profitable.

Among the men embarked at Grytviken were four who had been there for 28 months, and two Royal Engineers who had spent a few weeks there surveying the BAS jetty which is in need of repair. During the summer, BAS men repaired the surface of the jetty which is used frequently by visiting ships to take on water. This season, these included Soviet and Polish marine research vessels, and Soviet trawlers and tugs.

As usual, the two Twin Otter aircraft continued to support field parties throughout the summer, though they were grounded by severe weather for

two weeks in mid-February. Damoy air facility in Wiencke Island was closed at the end of December, when summer ferrying operations had been completed.

Siple Station was the centre for aircraft operations for the British — United States doppler satellite positioning (geoceiver) programme, and for glaciological work near the Ellsworth Mountains. The geoceiver work was carried out in December and early January in nine widely separated localities, including the Shackleton Range, Pensacola Mountains, and the Berkner Ice Shelf.

In each area, co-ordinates were established to an accuracy within 10m., and these will provide accurate control points for future mapping from satellite imagery, and tricamera air photography. Gravity measurements were also taken at each locality, thus linking existing gravity networks in the Antarctic and closing the network from New Zealand through McMurdo Station and the Antarctic Peninsula to South America.

During the course of this work, the geoceiver team was able to visit Belgrano and Druzhnaya Stations, as well as American and Soviet field camps in the Dufek Massif. It returned to Rothera in mid-January together with two glaciologists who had been ice-drilling and coring for climatic studies near Siple station.

THICKEST ICE

Other glaciologists continued working on the Rutford Ice Stream hinge-zone (near the Ellsworth Mountains) until mid-February, and succeeded in measuring deformation of the ice by tidal currents. The ice in this area is at least 1220m thick and, as far as it known, is the thickest ice afloat anywhere. Electrical measurements, at direct current and radio frequencies, were used to gain further understanding of the electrical properties of ice for interpretation of remote-sensing studies.

The programme to determine general movement of ice shelves and glaciers were continued. Oceanographic equipment was also installed at the northern ice front of George VI Sound to sample the environment at the bottom of an ice shelf, to investigate the dynamics of the ice itself and the origin of bottom water which forms a major constituent of ocean circulation.

A hot-water ice drill, developed by a BAS man to sample sea water through ice shelves, was tried out on the ice cap near Rothera. It proved to be very successful, penetrating 100 metres in 27 minutes and providing a bore-hole 5cm in diameter.

Throughout December, January and early February, the Twin Otters also undertook systematic photo reconnaissance, while testing a Vinten 70mm vertical air reconnaissance camera. The areas covered were James Ross Island and the adjacent mainland (Cape Longing), Marguerite Bay, and Ablation Lake and Spartan Glacier in the George VI Sound area. This will provide valuable information for both earth and life scientists. On one flight, a relief pilot was taken to the Argentine base, Marambio, on Seymour Island where he boarded H.M.S. Endurance to return home.

VOLCANIC ROCKS

Four geologists who landed at Hope Bay by the Bransfield in mid-December, spent more than two months working on the sedimentary and volcanic rocks of the Trinity Peninsula, and a number of off-lying islands (including some of the South Shetlands). They were assisted by the Endurance's helicopters. In mid-February they were flown by BAS aircraft to the Chilean base at Cape Legoupil where three were picked up by the Endurance, the fourth returning to Rothera for the winter.

The last field party were flown back to Rothera on February 25, and the two aircraft departed on March 2 to return to Canada for their annual overhaul.

BAS men at Grytviken, South Georgia, inspected the old whaling stations in March and made an inventory of the whaling records, so they could be preserved as archive material. (The Government station records which were retrieved a few years ago by the late Dr Brian Roberts, are now housed by the Scott Polar Research Institute in Cambridge.)

Journeys were also made to the Barff Peninsula, where reindeer-hunting parties managed to supplement Grytviken's meat supply, and to the Hodges Glacier where glaciologists checked their measurement stakes. Routine programmes continued at the base.

At Signy, South Orkney Islands, a wide range of biological projects, including seal counts, the mapping of penguin colonies and diving programmes were continued. The number of men working there more than doubled during the summer months.

Local field work continued at Rothera after the departure of the aircraft and the Bransfield.

NEW LABORATORY

Routine programmes also continued at the Faraday and Halley geophysical observatories. At Faraday, the building project (construction of a new generator shed and large fuel tank) using 250 tons of material, was completed. A new ionospheric laboratory of heavily insulated aluminium, which was taken in to Halley by the Bransfield, is now being installed. The building is fitted with runners and a jacking system so that it can be kept above the snow surface. (The present ionospherics laboratory is now 15.25m below the surface.)

From Halley, three parties set out across the ice shelf in April to try to reach the hinge-zone, 64km south of the base, where they hoped to locate a buried fuel dump and erect a radar reflector for tuning the base meteorological radar. Unfortunately, pressure ice precented them from reaching their destination, but all had good weather and enjoyed the trip.

The original Halley hut built at the beginning of 1956 by the Royal Society for the International Geophysical Year, recently floated out to sea when a portion of the Brunt Ice Shelf calved. Fortunately, watch had been kept on the developing cracks (including from the Polarsirkel's helicopter, when the Norwegian expedition ship called in February), and the VLF hut at the IGY base was transferred to the present station site.

The IGY base had moved 8m from its original position, the ice shelf in that area now being more extensive than it was in 1956. A station has been maintained in that area, in spite of the problems of building on moving ice, as the site is a key one for atmospheric and geophysical studies. It is in the optimum position for high geographic and low geomagnetic latitude, in the region of maximum auroral activity.

East German base planned

East Germany plans to establish its own Antarctic research station during the 1979-80 season. Groups of scientists from the German Democratic Republic have taken part in Soviet Antarctic expeditions for a number of years, and the GDR sent an observer to the annual meeting of the Scientific Committee on Antarctic Research last year.

European reports do not indicate where the base will be established. But it has been suggested that the research station will be at a coastal, rather than inland, location on the continent.

East Germany is also interested in Antarctic marine resources. It has joined other fishing nations in the Southern Ocean, and last season GDR vessels were reported to be active in the waters near South Georgia.

Tasmania, which has been associated with Antarctic exploration and research since 1840, has plans for a feature film to be made in Tasmania and Antarctica. The Tasmanian Film Corporation has commissioned an Australian author, Alan Seymour, to undertake research and development for the film. He is a senior script editor with the Australian Broadcasting Commission, and is well-known for his play, "The One Day of the Year", a controversial look at Anzac Day.

JARE REPORTS

Japanese plans for new icebreaker

Construction of a new icebreaker to support Japanese Antarctic research expeditions has been approved by the Japanese Government. The new ship will replace the Fuji, which has been in Antarctic service since the 1965-66 season, and is expected to be used by the 25th Japanese Antarctic Research Expedition in the summer of 1983. The total cost is estimated at 25 to 30 billion yen, and one billion yen have been allocated towards construction in this financial year.

Design and operation of the new icebreaker, which will be larger and more powerful than the Fuji, will be the responsibility of the Maritime Self-Defence Agency under the direction of JARE Headquarters, which is headed by the Minister of Education, Science, and Culture. A committee of representatives of government agencies and experts has been organised to build the new ship.

Basic plans provide for the icebreaker to have a displacement of about 11,000 tonnes, compared with the Fuji's 7,760 tonnes. Her diesel-electric engines of more than 30,000 h.p. will drive three propellers, and give her a cruising range of 25,000 nautical miles at 15 knots. The Fuji has a range of 15,000 nautical miles, and is equipped with an 11,900 h.p. diesel-electric engine.

Like the Fuji, the new icebreaker will carry three helicopters. She will be able to transport more than 1000 tonnes of cargo for JARE, and will have accommodation for about 60 men on expeditions, and will carry a crew of 170. Facilities will also be provided for scientific observations, including marine-meteorology, upper air weather studies, oceanography (physics, chemistry, biology, and geology) and upper atmosphere physics.

BLOCKED BY ICE

As in previous seasons the Fuji was unable to penetrade the ice round East Ongul Island last season when she took the 42 men of the JARE-20 winter and summer parties south. She had to remain 40 nautical miles from Syowa Station, and all her cargo had to be transported by her two Sikorsky S-61 helicopters. Between January 5 and February 22 the helicopters made 278 flights and transported about 500 tonnes of cargo.

After her departure from Tokyo on November 25 last year the Fuji's first call was at Freemantle from December 10 to 15 to load seven Australian-built drifting buoys. These buoys were deployed in the Southern Ocean between December 17 and 23 as part of the First GARP Global Experiment (FGGE) of the Global Atmospheric Research Programme (GARP) to obtain information on sea surface temperature and atmospheric pressure on a world-wide scale. Data obtained by the buoys is still being collected through the Japanese geo-stationary satellite programme.

When off the Soviet station, Molodezhnaya, the Fuji entered the pack ice. The first helicopter flight was made on December 31 when the ship was about 61 nautical miles from Syowa. Eagerly awaited mail, fresh vegetables, and other materials were flown to the winter party of JARE-19.

Because of the bad ice conditions, the first priority for the helicopters was to transport cargo. But one geological survey party was dispatched to Kasumiiwa Rock, about 80 nautical miles from Syowa, and remained there from February 2 to 5. Artificial seismic ex-

ploration was carried out by a geophysics party on January 14 on the sea ice in Ongul Strait near Syowa, and also on the continent where the crustal structure was studied after an explosion on January 23.

POLEX-SOUTH

One of the major programmes of JARE-20 is the POLEX-South project, which is a sub-programme of FGGE. A three-year POLEX-South project began last season at Mizuho Station, which is about 300km south-east of Syowa on the inland ice sheet. Mizuho has been maintained continuously, and last winter it was occupied by parties of scientists sent in rotation from Syowa. Observations were concentrated on the POLEX-South programme of air-ice energy interaction.

Relief of the last of the JARE-19 parties began on January 8 when Dr Shinji Mae, glaciologist at the National Institute of Polar Research, led a traverse from Syowa to deliver supplies and make the change-over of staff. Dr Mae and two colleagues had spent several weeks earlier in the season studying air-ice sheet interaction and other meteorological and glaciological parameters. When the party reached Mizuho it erected a meteorological observation mast 30m high on January 19 and began the installation of sensors.

On January 23 the change-over of staff was completed, and five men of JARE-20 remained in charge of the observations into meteorology, glaciology, upper atmosphere physics, geomagnetism, and human biology. Another change of staff was made at the end of April, and the second traverse party was expected to return to Syowa about May 5.

PLANE DAMAGED

Only one mishap occurred during the successful summer operation of JARE-20. The Cessna-A185 aircraft brought for use at Syowa was damaged during a heavy blizzard which lasted from February 8 to 9. The Cessna had been flown several times from the sea ice runway near Syowa, and was tethered there when the blizzard apparently loosened the guy wires, and the wing hit the ice.

Nobody was hurt, and the damaged aircraft was lifted by helicopter to the Fuji with two members of the aviation staff on February 21. The Fuji left the ice edge, which had retreated during the cargo transport, on February 23.

After leaving the ice edge the Fuji called at Port Louis, Mauritius, from March 8 to 15, and the JARE-19 winter party returned to Tokyo by air. The Fuji called at Singapore from April 1 to 8, and returned to Tokyo on April 20 as planned with 12 men of the JARE-20 summer party led by Professor Yoshio Yoshida.

During the summer the men of JARE-20 participated in the first live telecasts from Syowa to Japan between January 28 and February 3. From January 30 to February 3 the telecast was carried out every night for 40 to 60 minutes.

These telecasts were planned by the Japan Broadcasting Corporation (NHK). A parabolic antenna with a diameter of 100m was erected at Syowa, and TV signals were related to the Intelsat IV over the Indian Ocean to the Yamaguchi station of KDD (Kokusai Denshin Denwa Co.) and from there to Tokyo for national telecasting.

METEORITE SEARCH

Three young scientists from the National Institute of Polar Research took part in the United States-Japan meteorite research programme last season. Fumihiko Nishio, Kazuyuki Shiraishi, and Minoru Funaki, worked in the dry valley area from October to January. They collected 266 meteorite fragments from the Allan Hills icefield, and 44 samples from the Darwin Glacier area.

To clarify the mechanism of the concentration of meteorites several scientists have put forward the theory of a conveyor belt effect of ice sheet flow. To verify the hypothesis Nishio and an American colleague made a triangulation survey on the bare ice field near the Allan Hills, installing stakes over a distance of 20km, and collecting ice samples for age determination. The Japanese team also collected rock

specimens for paleomagnetic studies, and made a geological survey.

A specialist in the taxonomy of bryophytes, Dr Hiroshi Kanda, of the National Institute of Polar Research, joined the Chilean research programme as an exchange scientist under the Antarctic Treary last season. In January and February this year he collected samples of moss and lichen near Presidente Frei Station on King George Island in the South Shetlands. He also visited the Polish and Soviet stations — Arctowski and Bellingshausen — on the island.

Organisation of JARE-21 is expected to be completed this month. The leader is Professor Koshiro Kizaki, of Ryukyu University, and the deputy leader is Associate Professor Sadao Kawaguchi, of the National Institute of Polar Research. The former will be aboard the Fuji, and the latter will winter at Syowa next year.

SANAE NEWS

New five-year research programme

A comprehensive review of South African scientific activities in Antarctica and on the sub-Antarctic islands in the five-year period 1978-82 has been made by the South African Scientific Committee for Antarctic Research. The review, published at the end of last year, classifies the scientific programme under the five headings of solar terrestrial physics, earth sciences, biology, meterology, and environmental monitoring.

South Africa's new programme has been planned in relation to its new research and supply ship. The Agulhas, which went into service last year, has more passenger space, and is equipped with two helicopters. For the first time it gives South African oceanographers regular access to the waters of the Southern Ocean. It has also made possible a completely new approach to field work in the earth sciences in Antarctica.

In the past the earth sciences programme has been undertaken by a small number of scientists who have had to spend about 14 months away from South Africa to do a maximum of 60 days of active field work in the spring and early summer. Now with the logistic support of the Agulhas the field work can be done during summer seasons, and an increased number of experienced scientists will be able to work in Antarctica and be away from South Africa for only three or four months.

As a result SASCAR has decided that the new programme will be run on a multi-disciplinary multi-instutional basis to make better use of experienced geological manpower. Participation in the programme will be sought from universities as well as from the Geological Survey.

While the geology programme will form a major component of the earth sciences effort, closely related programmes in glaciology, geophysics, and survey and mapping, will be undertaken simultaneously. Glaciologists will continue studies of the Finbul Ice Shelf on which Sanae has been built, and of the inland ice. Geophysical surveys will be made on selected areas, and surveyors will produce 1:50,000 base maps of the area between 6deg W and 2deg E, and 71deg and 74deg S.

Changes have been made in the biological section of the proposed fourth five-year Antarctic programme because of increased awareness of the importance of the living resources of the Southern Ocean. More emphasis has been given to

the study of the ocean components of the Marion and Prince Edward Island system. The terrestrial component of the programme has been limited to the Prince Edward Islands group, and biological work on Gough Island has been limited to seal research.

In addition to this, research has been planned on the island animals during the large part of the year which they spend at sea, on other pinnipeds, and on the general productivity of the Southern Ocean between South Africa and Antarctica. The programme has been designed in such a way that together with the Southern Ocean programme, now being developed, it will form a contribution to international research in the area, especially BIOMASS (Biological Investigations of Marine Antarctic Systems and Stocks).

South Africa's environmental monitoring programme, which consists mainly of the monitoring of pollution in the atmosphere and marine environment, will be extended to the sub-Antarctic. Marion Island is generally accepted as sufficiently isolated and uncontaminated to be the most suitable site available to South Africa for providing baseline reference data in environmental pollution concentration levels in the Southern Hemisphere.

A limited initial programme of atmospheric monitoring on Marion Island has been planned as the first stage of a long-term programme. The pollutants to be measured are the trace metals, hydrocarbons, carbon monoxide, and halogenated hydrocarbons (freon).

MARINE POLLUTION

Marine pollution monitoring will be carried out as a co-operative effort between the mammal research, marine biology, ornithology, and environmental monitoring programmes. The Mammal Research Institute, University of Pretoria, is interested in the determination of organo-chlorine and heavy metal pollution levels in Antarctic and sub-Antarctic seals as part of the Antarctic mammal research programme. Also the marine pollution section of the National Programme for Environmental Sciences is interested in such levels in plankton, shellfish, pelagic fish, seaweed, and birds' eggs.

Five South African research groups contribute to international studies in the field of solar terrestrial physics. The Antarctic programme is a major part of the national programme, and extends to the Antarctic and to Marion Island the ground-based observations made in South Africa, and supplements these with the occasional series of observations from ships and aircraft in the Southern Ocean.

Programmes planned for research at Sanae and on Marion Island cover a wide range. They include ionosphere and airglow observations, measurement of the intensity variations of cosmic rays at Sanae, in South Africa, and on the Agulhas during her regular relief voyages, studies of cosmic radio noise absorption, and the investigation of possible mechanisms whereby solar activity may influence the weather. Scientists will also study auroral emissions, atmospheric electricity, whistlers, and the propagation of VLF emissions.

Sanae is one of the chain of stations having the same geomagnetic latitude, the others being Halley, Siple, and General Belgrano. These stations have a pre-arranged schedule for ground-based recording of whistlers. Active collaboration on this and other projects is under way with groups in Britain, the United States, France and Canada, on ground-based and satellite observations.

Meteorological activities in the South African Antarctic research programme have been concentrated on the provision of the most complete surface and upper air data sets possible from the three meteorological stations at Sanae, Marion Island, and Gough Island. These routine surface and upper air observations will be continued, and research will be carried out on the variation of the intensity of the Southern Hemisphere circumpolar vortex, and its effect on the weather over southern Africa. Another objective will be to promote the acquisition of meterological observations from the South Atlantic and Indian Oceans by means other than fixed land stations, such as ships, drifting or anchored buoys, and satellites.

Polish research in South Shetlands

Since Poland decided to establish its first permanent scientific station in the Antarctic — Henryk Arctowski — in the South Shetlands, the Polish Academy of Sciences has sent three expeditions south. The first was responsible for the construction of the station, which was opened on February 26, 1977. Since then Polish scientists have carried out of a wide range of research projects in such fields as meterology, oceanography, marine biology, geology, and geophysics.

In the 1976-77 season the first expedition arrived from Gydnia in the Dalmor and Zabrze to build the station on the west coast of Admiralty Bay, south of Point Thomas, King George Island. Construction of the station began on February 1, 1977, and was completed by March 26. A winter party of 19 men remained to carry out work in the fields of meteorology, marine biology, human physiology, and geomorphology.

Dr S. M. Zalewski led the 1977-78 expedition, which included a scientific party of 36, and a technical party of the same number. The scientific party was divided into an oceanography and biology group under Professor J. Dera, and an earth science group under Professor K. Birkemajer. The technical party included a construction group under Engineer L. Rosciszewski (deputy leader of the expedition) and marine transport group under Commodore R. Firlej.

This expedition, which went south in the Antoni Garnuszewski, worked in the Admiralty Bay area from December 20, 1977, to March 15, 1978. Scientists in the winter party of 19 led by Dr Zalewski continued the research programme.

Summer biological research on land included studies of the breeding cycle at the Point Thomas and "Llano Point" (unofficial name) rookeries of Adelie, Chinstrap, and Gentoo penguins. Population estimates were made of elephant seals, fur seals, and Weddell, crabeater, and leopard seals. This work was continued in the winter. Other activities included scuba diving in Admiralty Bay.

Oceanographic research included an integrated study of Ezcurra Inlet in the Admiralty Bay area. The work also covered the study of bottom sediments, bathymetric sounding, and bottom mapping. Marine biologists studied the marine ecosystem, and made population studies of plankton, including krill (Euphausia superba) and benthos.

A preliminary study and helicopter reconnaissance of glaciers around Admiralty Bay were made as a background for planning further glaciological research. As part of the geomorphological work a map (scale 1:25,000) was compiled for the station and its surroundings, and detailed topographic maps were made (1:25,000 and 1:1000) of selected areas round the station.

Geological research concerned the study of sedimentary and volcanic succession, mainly of Tertiary age, and its structure in the area between Ezcurra Inlet and Bransfield Strait. A geological map was prepared (scale 1:50,000) which covered about 100 square metres. Five marine sediment horizons with fossil plant remains were recognised and sampled for further palaeobotanical work.

A geophysical observatory was built by the geophysical group for continuous recording of the earth's seismic and magnetic field changes. It came into use on March 8 last year.

In the 1978-79 season the Antoni Garnuszewski took 141 members of the third expedition to King George Island.

Twenty-nine members of the expedition are spending the winter at the station. There are 10 scientists and 19 support staff.

POLAND'S FIRST STATION

A view of Arctowski Station on King George Island, South Shetlands which is Poland's first permanent Antarctic research station. It was established in the 1976-77 season at Port Thomas on the south side of the entrance to Ezcurra Inlet in Admiralty Bay. The photograph was taken by Roger Waite, an English-born New Zealand marine biologist who worked at the station last summer.

Addition to French yacht crew

South Georgia's first baby was born on April 15 this year at Leith Harbour, one of the deserted whaling stations on the island. The parents are Jerome and Sally Poncet, the husband and wife crew of the French yacht Damien II, which wintered in Marguerite Bay last year.

Jerome and Sally Poncet, who put their yacht in dry dock on Avian Island, spent part of their time in Marguerite Bay at the old British Antarctic Survey station on Adelaide Island. They left the area in February and called at Faraday (Argentine Islands) at the beginning of March before proceeding to South Georgia.

After visiting BAS friends at Grytviken they went on to Leith Harbour where Sally gave birth to a boy, Dion Michael (named after the Dion Islands in Marguerite Bay). All went well and the services of the BAS doctor were not required.

This was the first birth on South Georgia, and it was duly recorded by the BAS station commander at Grytviken in his capacity as magistrate. Although a number of families with young children lived at King Edward Point, Grytviken, when the Falkland Islands Government station there was in operation, no children were born on the island.

Damien II is now in the Falklands, and the Poncets intend to sail her to Tasmania. She is one of four French yachts which sailed along the west coast of the Antarctic Peninsula last season. The Kotick and Champi also put in to South Georgia.

A fourth yacht, Isatis, which made a voyage from Lyttelton, New Zealand, to Palmer Station in December and January, also sailed along the coast, and called at Faraday. The crew, Jean and Claudine Lescure, and Claudine's brother, Jean-Marie Pare, spent several days climbing on the mainland near the Argentine Islands.

Fines for Antarctic parking

Parking bodies, not vehicles, has been made illegal at Scott Base this winter, and offenders have been fined, but in a good cause — the national telethon appeal for the International Year of the Child conducted by South Pacific Television. Twelve New Zealanders at Scott Base, and 71 Americans and one Soviet exchange scientist, at McMurdo Station have provided more than $600 in fines for the New Zealand Antarctic Research Programme contribution to the appeal.

Several hundred New Zealanders who have worked at Scott Base or visited it, even as far back as 1959, were reminded this month that the parking regulations had been applied to them restrospectively. They received an elaborately-drawn summons calling on them to pay a fine of not less than $1 by June 30 for "illegally parking their bodies" at Scott Base.

This winter's team was one of the first New Zealand groups to begin raising money for the telethon appeal. They invited their American neighbours to a fund-raising party towards the end of February. Then a casino night and barbeque produced $250 in "fines", and brought the Antarctic fund to $605, which represents $7.20 a head of Ross Island's winter population.

A television documentary film on the construction of the new base for the South African National Antarctic Expedition (SANAE) in Queen Maud Land was made last season by the South African Broadcasting Corporation. The television team of Nigel Brown (producer), Chris Visser and Nick Oosthuizen (cameramen) and Max von Bellow (sound recorder) spent 14 weeks at the present Sanae Station.

Problem of visitors to historic huts

Although the condition of the three historic huts on Ross Island is generally sound, the deterioration of supplies in them because of handling by visitors remains a problem. Two caretakers from the New Zealand Antarctic Society, who worked for three weeks at Cape Royds, Cape Evans, and Hut Point last season, found that the problem related to the Discovery hut more than the others because of its location and the number of visitors. In their report they suggest that greater control and supervision of visits to the hut might be needed in the future.

Each summer since 1969 two caretakers from the society have worked on the huts for the Antarctic Division, Department of Scientific and Industrial Research, which is responsible for their maintenance and preservation. Last season was the eighth in which members of the society have worked on the huts prosject. No caretakers went south in the 1975-76 season because of lack of air transport.

Messrs Clive Patterson and John Oliver, of the Canterbury branch of the society, who flew south on December 14, began their work at Hut Point on December 15. One of their first tasks was to remove a small amount of snow from the hut's false ceiling, and from tools, sledge parts, and stores in the south-east corner. To protect the "weak" floor structure they placed the visitors' book on a large upturned box about 1.8m away at the base of a main rafter support. Usually visitors congregate around the book, subjecting the floor to additional weight.

Necessary repairs and maintenance were required in the hut, but generally its conditions, especially the exterior, was better than expected. The biggest problem is the condition of the false ceiling inside the hut. It was pulled down to a lower level by parties using the hut in the days of Scott and Shackleton so they would have less space to heat.

In more recent times the ceiling has dropped further in several places, largely because of its own weight, and particularly in the north-west corner. The caretakers raised the ceiling several inches, and secured it with wire in the north-west corner. But they suggest further bracing above the ceiling so it could be secured from above.

MEMORIAL CROSS

After they had completed work on the Discovery hut the caretakers inspected the memorial cross to George Vince, the seaman who died at the beginning of Scott's first expedition. They also worked on the jarrah timber cross erected in 1913 on Observation Hill in memory of Scott and his companions on the South Pole journey.

Vince's cross, now 77 years old, is still in good condition. Because it has been reset in the ground the caretakers suggest that a check should be made to see that the base is secure. Last season's mild conditions softened the surrounding ground.

On Observation Hill the caretakers replaced four of the bronze bolts which hold the vertical components of the cross together. A chisel was used to obliterate as well as possible the word "Paul" carved with a sharp instrument into the wood of the cross next to the last word ("yield") of the inscription. [Only a few weeks after the graffito had been removed two sets of initials were found scratched on the cross.]

Visually the locality of the cross has been improved considerably as a result of the work done by the caretakers and Garth Varcoe, buildings officer, Antarc-

tic Division, who worked at Scott Base last season. Loose wire and steel plate in front of the cross, and nearby rubbish, were removed, and a number of rocks was placed round the base.

A bronze plaque with inscriptions in four languages — English, French, Russian, and Spanish, has been wired to the base of the cross for several years. The caretakers in the 1977-78 season suggested it could be better sited on a sound flat rock nearby. Mr Varcoe removed the plaque and its stand, and relocated it about 4.5m to 6m north-east of the cross.

SNOW AND ICE

Before the caretakers travelled to Cape Evans by dog team with the Scott Base dog handler on December 22, they spent three days at the base doing a survival course and "house mouse" duties. They worked on Scott's hut until December 30 when a United States Navy helicopter took them to Cape Royds.

Like their predecessors and previous caretakers Messrs Patterson and Oliver spent some time removing snow and ice from the stables, and improving their weather proofing. They also painted the roof (main hut, stables, annex, and cold porch, using 24 litres of paint, which was sufficient for all but about 18m of the west end of the stable roof.

When the caretakers had removed all the snow which had gathered since the 1977-78 caretakers' clearance — not as much as might be expected — they removed ice from the stable once occupied by the mule Khan Sahib, and to a lesser extent from Gulab's stall.

STABLE PROBLEM

Generally the state of the main hut at Cape Evans was very good, but the stables are still the biggest problem. The caretakers hope that their work on the south-east wall will be reasonably successful in keeping snow from that corner. But there are big gaps between many boards forming the north wall, and some seem to be missing.

A careful examination of the north-east corner of the stables suggests that no more ice should be removed from this end unless major reconstruction is planned. There are no wallboards along this part of the north wall, and the ice is an integral part of the structure. If it was removed the stacked fodder bales would tend to deteriorate faster, and their complete collapse would be hastened.

Because a sufficient area has been cleared to give a good impression of the stables and their construction, the caretakers suggest that the three stalls at the west end should be left full of ice. They say that this remaining ice-filled area creates a lasting aura by preserving the effect time has had on the past.

A close examination of the south wall of the main hut was not possible because of the presence of considerable snow and ice. The wall did not appear to require urgent attention, and the caretakers feel that excavation could lead to the deterioration of supplies, and perhaps the wall itself through freeze-thaw conditions.

SLOPE EROSION

Suggestions have been made by previous caretakers that a retaining wall be constructed to stop erosion of the slope in front of the hut latrines caused by visitors walking in the loose scoria. Undermining of the latrines is not an immediate problem; it will become a reality with an increasing number of visitors.

Both caretakers agree with earlier suggestions that a wall made of synthetic bags filled with scoria and set into the slope could be constructed without too much difficulty although the task would be time-consuming. The wall should not be a major barrier but designed to reduce the rate of erosion.

When the caretakers arrived at Cape Royds on December 30 they found the interior and exterior of Shackleton's hut to be in good condition. They tidied up the interior and cleaned the windows. Rubbish such as smoke canisters, beer cans, etc. was collected from the surrounding area, and non-combustible material was brought back to Scott Base on January 5. The false ceiling of Mawson's laboratory was checked, and found to be free of scoria.

One of the jobs set down for the visit to Cape Royds was the painting of the

hut roof. All available paint had been used on the roof at Cape Evans, however, and no more paint was available or a helicopter to transport it. But the roof tarpaulin is in reasonably good conditions, and not in urgent need of painting and repair.

Two coats of neatsfoot oil were applied to a leather pony harness hanging on the inside of the west wall of the hut. This was very dry, and much of it was cracked and brittled. The caretakers suggest a regular treatment of the harness each season to reduce the effects of the dry atmosphere.

LAKE LEVEL

Monitoring of the level of Pony Lake was another task for the caretakers at Cape Royds. As a result of one or two mild days before they left for Scott Base on January 5 the level had dropped several inches although about 50 to 60 per cent of the surface was still covered by snow and ice.

A marker placed in December, 1976, by that season's caretakers, was located and found to be 9m from the present shore level at the north-east end, and the water depth was about 27.9cm. The marker was painted with one band of green paint. Its top was about 29.8cm above the water level.

Last season's marker pipe (distinguished by two green bands) was placed at the water's edge (January 1, 1979). Its top was 36.7cm above the water level.

Few new relics were located during the caretakers' work on the huts, and their recovery was given second priority to the work programme. But on the floor of Khan Sahib's stall near the blubber stove the caretakers recovered a type of ice axe or pick.

No similar type of axe was seen among other relics at Cape Evans or Cape Royds. The axe was photographed, measured, and its location recorded. It is now behind the inner door to the main hut.

A hot plate, ring plate, and poker, were found lying near the original hearth around the blubber stove. The hot plate and ring did not seem to belong to the existing stove, but fitted into the large iron top plate that was already leaning against the wall behind the stove.

Apart from a Western Record No. 12 shotgun cartridge found about 274m from the hut no new relics were located at Cape Royds. This cartridge was placed with several others on a shelf inside the hut.

MANY VISITORS

There were supply visits to Cape Evans by a motor toboggan and an American helicopter, but the caretakers had no other visitors at either Cape Evans or Cape Royds during their stay. But the visitors' book show that from December, 1977 to December, 1978, more than 700 people visited the three huts.

While the caretakers were at Hut Point most of their visitors were Americans from McMurdo Station, who came to look through the Discovery hut, and photograph and sketch it. Between January 11 and December 14 last year 345 people had signed the visitors' book.

From December, 1977 until the caretakers arrived on December 22, 1978, 208 people had signed the visitors' book in the Cape Evans hut. Between December, 1977 and December 30, 1978, the book at Cape Royds had been signed by 176 visitors.

A postscript to the caretakers' report was added a month after their return to New Zealand by Baden Norris, who was appointed by the Antarctic Division as a guide to the historic huts for the cruise ship Lindblad Explorer's visit to McMurdo Sound.

In 1963-64 Mr Norris was one of the four members of the Antarctic Society led by Eric Gibbs, who cleaned up and restored the Discovery hut, which was almost filled with snow and ice. This year he flew south on February 2 and on the morning of the next day he spent five hours at Hut Point. It was his first visit to the Discovery hut since February, 1964, when the restoration was almost completed.

Mr Norris found that the hut was as sound as it was when his party cleaned it out. The interior was tidy and well-kept.

Because the Lindblad Explorer was delayed by bad weather on her way to McMurdo Sound Mr Norris was unable to join the ship when she was at Cape Royds on February 10, and passengers were able to see only the surroundings of the hut when they went ashore. He was landed by helicopter at Cape Evans in the early hours of February 11, and was picked up by a Zodiac rubber boat from the Lindblad Explorer after she had anchored off the cape.

Sir Peter Scott, son of Captain Scott, and his wife, were the first passengers to be escorted to the hut by Mr Norris. They entered the building alone.

Later Mr Norris showed between 110 and 120 passengers and crew members around the hut in groups of about 15 at a time. A West German television unit headed by Franz Lazi filmed Sir Peter Scott in the hut, and during his interview he complimented the New Zealand Antarctic Society and the Antarctic Division for the work they had put into the restoration of the hut.

THE READER WRITES

Sir,—Most of the books in the Canterbury Museum's polar library are about exploration and research in Antarctica, and the navigators, explorers, and scientists who have been south since the days of Cook, Bellingshausen, Ross, Wilkes, and Dumont d'Urville. One book, however, says nothing about Antarctica although it made three voyages south, and its readers included two noted explorers, Lincoln Ellsworth and Sir Hubert Wilkins.

This book is a novel, "Blood Royal", by an English writer, Dornford Yates, who was well-known in the 1920s and 1930s. It bears the name of the author, and a brief inscription: "This book was made by Dornford Yates but sailed with his betters."

How "Blood Royal" went to Antarctica from New Zealand and back again, and later to England and South Africa, is a story which begins and ends in Christchurch. The novel was one of the books in the small library aboard the Wyatt Earp, the 400-tonne Norwegian herring boat used by Lincoln Ellsworth on each of his three attempts to cross Antarctica by air.

Sir Hubert Wilkins, who made the first aircraft flight in Antarctica more than 50 years ago, was Ellsworth's technical assistant and virtual second-in-command. While the Wyatt Earp was at Dunedin in November, 1933, preparing for the voyage to the Bay of Whales from where Ellsworth planned to fly to the Weddell Sea, Wilkins wrote to Whitcombe and Tombs, the Christchurch booksellers and publishers, for a selection of books for the ship's library.

Wilkins was not concerned with titles, and asked that the books should occupy a specified amount of space aboard the Wyatt Earp. The late Mr A. H. Johnstone, a noted New Zealand book collector, who knew Wilkins, chose the books himself, and included "Blood Royal" as one of the popular novels at that time.

Ellsworth's first attempt to fly from the Bay of Whales to the Weddell Sea failed. His aircraft, Polar Star, was landed on the bay ice in January, 1934, and made a successful trial flight. But a gale broke up the ice and crushed the Polar Star so extensively that the attempt was abandoned.

In September, 1934, the Wyatt Earp sailed again from Dunedin, but this time to Deception Island off the Antarctic Peninsula. Persistent bad weather prevented the attempt to fly from the Weddell Sea to the Ross Sea, but Dundee Island, on the eastern side of the peninsula, was selected for a third attempt.

Success came in 1935 when Ellsworth and his pilot, H. Hollick-Kenyon, flew from Dundee Island on November 23. They made four landings on the flight, and on December 5 reached the northern end of Roosevelt Island, only 25km

south of the Bay of Whales. The Polar Star's 466 gallons of petrol were completely exhausted.

On December 9 Ellsworth and Hollick-Kenyon left their fifth camp and set off for Little America, Byrd's base for his 1928-30 and 1933-35 expeditions. They reached the base on December 15, and settled down in the radio shack to await the Wyatt Earp as arranged.

But the failure of the Polar Star's radio transmitter early in the flight prompted the Australian Government, supported by the British and New Zealand Governments, to send a relief expedition. On January 15, 1936, the Royal Research Ship Discovery II reached the Bay of Whales and picked up the two men. Three days later the Wyatt Earp arrived.

After the last expedition Wilkins sent "Blood Royal" back to Mr Johnstone as a token of appreciation. It carried the signatures of 16 members of the expeditions, among them Bernt Balchen, who flew Byrd to the South Pole 50 years ago, Chris Braathen, Sverre Strom, and a New Zealander, Alfred Robinson, who had all served with Byrd's expeditions.

Later Mr Johnstone decided that English publishers might be interested in the travels of the novel. So he sent it to Mr Percy Hodder-Williams, head of Hodder and Stoughton in London. He in turn sent it to Major William Mercer (Dornford Yates) who was then living in South Africa.

Forty years ago "Blood Royal" came back to New Zealand for the last time. It remained in Mr Johnstone's collection which came eventually to the Canterbury Museum. When the polar library was opened in 1977 as part of the National Antarctic Centre it assumed its rightful place with Antarctic literature.

Yours etc.,
"JAMES PIGG"

Argentine proposals for polar air route

Argentine interest in the development of a commercial air route between Europe, Australia, and New Zealand over the South Pole has revived again. A feasibility study of the route was made in 1973 for Argentina's national airline, Aerolineas Argentinas, by an Argentine Air Force Hercules which flew from Buenos Aires to Canberra and back, crossing Antarctica, and refuelling at Christchurch and the Air Force base, Vicecomodoro Marambio, on Seymour Island off the Antarctic Peninsula.

In 1977 the question of an Argentine air link with New Zealand was raised by the Argentine Ambassador (Dr Rodolfo Zapata). Before he returned home early this year after his two-year term in New Zealand Dr Zapata announced that the New Zealand Government had agreed in principle to a service by Aerolineas Argentinas between Buenos Aires and Christchurch.

Representatives of Aerolineas Argentinas and Air New Zealand have discussed the proposed passenger and freight service, according to Dr Zapata. He said it was hoped that eventually Air New Zealand would fly to Buenos Aires. The proposed Argentine service would be operated with DC-10 aircraft, and initially there would be one flight a week.

Aerolineas Argentinas proposed to fly from Buenos Aires by way of Vicecomodoro Marambio in the summer. There are two air strips at this Air Force base, both with a graded earth surface.

One, 2399m long, has aluminium matting. It is used by Hercules aircraft in Antarctic operations, but would be unsuitable for DC-10s. In winter the DC-10s would fly direct to Christchurch from the international airport at Rio Gallegos in the south of Argentine Patagonia.

There is no bilateral aviation agreement between New Zealand and Argentina at present. Such an agreement would be necessary before the service planned by Aerolineas Argentineas could be inaugurated.

As the new route might be uneconomic at present the service would probably be operated in the early stages by the Argentine Air Force after discussions with Air New Zealand. To pioneer new routes the Air Force runs a special airline, Lade, which is staffed partly by civilians, and has military air crews.

Early in December 1973, a long-range Air Force Hercules made the first flight over the South Pole from Argentina to Australia. It left Buenos Aires for Vicecomodoro Marambio on December 4, and arrived at Canberra on December 6. On December 8 it flew from Canberra to Christchurch, and took off to Vicecomodoro Marambio on December 9. From Seymour Island it flew to Rio Gallegos and on to Buenos Aires.

Two Hercules aircraft flew over the same route early in December, 1974. On the flight from Christchurch to Vicecomodoro Marambio the aircraft stopped at McMurdo Station for three hours. One flew first to Christchurch over the South Pole from Vicecomodoro Marambio. It was joined at Christchurch by the second Hercules which had flown from Sydney after a 22-day instructional flight to countries round the Pacific with officer cadets from the Argentine Air Force Academy.

Search for Strategic minerals

Research for strategic minerals on the Antarctic Peninsula was carried out by Argentine scientists last season, according to a report in the Buenos Aires newspaper, "La Nacion". A map printed in the newspaper showed the area of research as the Tabarin Peninsula at 63deg S/56deg W.

An elaborate programme of mineral research and exploration had been planned by Fabricaciones Militares, the Argentine national military equipment manufacturing organisation in collaboration with the Argentine Antarctic Institute. The report stated that this was the first of this type to be conducted by Fabricaciones Militares.

Logistic support for the project was provided from the Argentine Army base, Esperanza, and also from naval ships and Air Force aircraft. The research team was reported to be led by Lieutenant-Commander Arnaldo E. Rolando, assisted by three geologists, Vicente Mendez, Norberto Pancetti, and Victor Viera, and a topographer, Osvaldo Otero.

Tabarin Peninsula, which is about 22.5km long and 16km wide, lies south of the trough between Hope Bay and Duse Bay, and forms the southern portion of the north-east extremity of the Antarctic Peninsula. It is at 63deg 30min S/57deg W, and was discovered by the Swedish Antarctic expedition, 1901-04, under Nordenskjold. It was charted in 1946 by the Falkland Islands Dependies Survey, and named after Operation Tabarin, the naval code name for FIDS from 1943 to 1945.

U.S. research costs

Antarctic environmental research cost the United States National Science Foundation $4,145,000 in the 1978 financial year — October 1, 1977, to September 30, 1978, and $1,830,000 was spent on mineral and marine resources research.

Total expenditure on Antarctic projects amounted to $48,233,000. Direct support of scientists in the field took $7,100,000, and base level support (stations, aircraft, ships etc) cost $26,583,000. Major construction or purchases of supplies and equipment cost $8,075,000, and $500,000 was spent on information and advisory services.

ANTARCTIC

is published quarterly in March, June, September, and December. It is the only periodical in the world which gives regular up-to-date news of the Antarctic activities of all the nations at work in the far south. It has a worldwide circulation.

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Overseas subscribers are asked to ensure that their remittances are converted to New Zealand currency.

NEW ZEALAND ANTARCTIC SOCIETY (INC.)

The New Zealand Antarctic Society was formed in 1933. It comprises New Zealanders and overseas friends, many of whom have seen Antarctica for themselves, and all of whom are vitally interested in some phase of Antarctic exploration, development, or research.

The society has taken an active part in restoring and maintaining the historic huts in the Ross Dependency and has been involved in the establishment of a national Antarctic centre at the Canterbury Museum, Christchurch.

There are two branches of the society and functions are arranged throughout the year.

You are invited to become a member, South Island residents should write to the Canterbury secretary, North Islanders should write to the Wellington secretary, and overseas residents to the secretary of the New Zealand Society. For addresses, see below. The yearly membership fee is NZ$4.00 (or equivalent local currency). Membership fee, overseas and local, including "Antarctic", NZ$10.00.

New Zealand Secretary

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Branch Secretaries

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Wellington: P.O. Box 2110, Wellington.


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