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Die Redakteure van die *Antarktiese Bulletin* verwelkom bydraes oor enige onderwerp in verband met Antarktika, veral in verband met Suid-Afrikaanse bedrywighede in Antarktika. 'n Onlangse lesersopinieoorsig het die onderstaande volgorde van gewildheid van onderwerpe aangedui:

- (1) Populêre wetenskaplike artikels.
- (2) Ekspedisies.
- (3) Verblyf- en werksomstandighede in Antarktika.
- (4) Geskiedkundige nuus.
- (5) Artikels oor dierelewe.
- (6) Sosiale nuus.

Bydraes moet aan die redakteure by die bogenoemde adres gestuur word.

Die Bulletin word kwartaaliks gepubliseer en word gratis aan lede van die Suid-Afrikaanse Antarktiese Vereniging gestuur. Die koste vir lidmaatskap beloop R2,00 per jaar. Indien lidmaatskap van die Vereniging verlang word kan op die onderstaande of soortgelyke vorm voltooi word en aan die bostaande adres geops.

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**REDAKSIONEEL — EDITORIAL**

Gedurende Maartmaand dié jaar was daar 'n gerug versprei dat die twee Sanae huskies, Jomo en Vrystaat, van kant gemaak sal word vir montering as museumstukke. Die *Bulletin* was bly om te verneem dat die nuusberigte nie volledig was nie. Die honde het met 'n reeks Sanae ekspedisies saamgewerk en ekspedisieledes het nie net versot op hul viervoetige vriende geraak nie, maar die honde het selfs uitstekende diens op Sanae gelewer. Dit sou 'n uiters onbekwame vergoeding vir 'n lewe van diens gewees het.

Die versekering dat Jomo en Vrystaat nou kan uitsien na jare van gesonde lewe was deur Die Stigting van Onderwys, Wetenskap en Kuns aan mnr. Laurie Bernstein, voorsitter van die Suid-Afrikaanse Federasie van Verenigings vir Dierbeskerming, asook aan die Pretoria Dierbeskermingsvereniging gegee. Die honde is albei in gesonde toestand en sal nou hul dae op 'n plaas kan uitleef.

**PHOTOGRAPHIC COMPETITION**

(COVER PICTURE)

Winner of the photographic competition of this issue is Peter Sutcliffe of the Magnetic Observatory, Hermanus. The photograph was taken by the light of the midnight sun on the frozen sea-ice of Tottam Bukta on the night of January 8th, 1970. Silhouetted in the 'driver's seat' of the dog sledge is 'the doctor' (Alphie Grobler).

**Information for Contributors**

The Editors of the *Antarctic Bulletin* welcome contributions on any subject pertaining to the Antarctic and in particular to South African Antarctic Activities. According to a recent opinion poll, readers place subject matter in the following order of popularity:

- (1) Popular scientific articles.
- (2) Expeditions.
- (3) Living and working conditions in Antarctica.
- (4) Historical articles.
- (5) Articles on animal life.
- (6) Articles of social interest.

Contributions should be submitted to the editors at the above address.

The Bulletin is published quarterly and is free to members of the South African Antarctic Association. The charge for membership of the Association is R2,00 per annum. Should you wish to join the Association please fill in the form below (or supply the equivalent information) and send it to the above address.

**APPLICATION FOR MEMBERSHIP**

**South African Antarctic Association**

Name .....

Address .....

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# Shackleton's Journey from the *Endurance* to Elephant Island

by D. G. Torr - Sanae 4



*Ice-flowers formed by a lead opening in the ice and then rapidly freezing over. From South.*

On 27th October, 1915, Shackleton's ship, the *Endurance*, was crushed in the pack-ice of the Weddell Sea at latitude 69°S, and shortly afterwards sank. The party camped in tents on the ice, which after a northward drift of 500 miles, occupying nearly six months, broke up about 70 miles south of Elephant Island, one of the most easterly of the South Shetland group. After a six day boat journey, partly in the pack-ice and partly in the open sea, the party landed without loss on the north coast of Elephant Island on the 15th April.

I read the account of Shackleton's voyage when I was in Antarctica and naturally my surroundings made their

experiences extremely real to me. The part I found most interesting was the journey from the *Endurance* to Elephant Island. The ship was abandoned on 27th October, 1915, and that night many people had to sleep on bare snow. Shackleton decided to trek for Paulet Island, 342 miles away. Each man was allowed the clothes he wore, two pairs of mittens, six pairs of socks, a sleeping bag, one lb. tobacco and two lb. of personal gear. To set an example, Shackleton threw his own personal treasures on to the snow, including his Bible

*Continued on Page 38.*

## Results of Reader Opinion Poll

It is now approximately four months since the opinion poll was distributed in Vol. 2, 1970, of the *Bulletin*. Of the replies received, 44 per cent were from ex-Sanae members; 41 per cent from Antarctic Association members; 10 per cent from teachers and 5 per cent from librarians. No replies were received from schoolchildren, although a large proportion of the *Bulletins* are distributed to schools through the periodical *Spectrum*. It is likely that these go into school libraries and that no one takes the initiative in returning forms. However, we would like to hear from pupils reading the *Bulletin*, as we have no real information as to whether they find the material interesting. The number of replies received from Antarctic Association members exceeded the number of paid up members of the Association. This may be due to the fact that the Association has recently conferred honorary membership on all ex-Sanae team members. So if you are an ex-Sanae member and have not heard from the Association (or if you know of someone who hasn't), it means that we do not have your present address. Sets of back issues of the *Bulletin* were sent to all team members that we could trace, but approximately 25 per cent were returned marked 'address unknown'.

Ninety-five per cent of those replying to the questionnaire read the *Bulletin* fully and an average of three people read each copy. It appears that articles of scientific interest are the most popular, although we have had relatively few of these in recent issues. So those of you who have been in charge of a scientific programme at Sanae, please let us have some information on the programme and the results obtained during your year. We will start the ball rolling by printing articles of a general nature on some of the scientific programmes being carried out at the base. Second in popularity are articles on expeditions from the base and for these we rely almost entirely on the geologists. These are followed by articles on life at the base itself. There are a large number of ex-Sanae members who could let us have something of interest here. Then came historical articles and finally articles on animal life and articles of social interest concerning team members.

Eighty-three per cent of those returning the form said that they are satisfied with the *Bulletin* in its present form. Some of the comments received are given below.

*"I would like to see an annual report on highlights of the events at Sanae and the Islands."*

This could well be supplied by the leader of each returning expedition.

*"A more modern format is required."*

We have tried to improve the appearance of the *Bulletin* beginning with this issue. We welcome any comments from readers.

*"A few more photos would be welcome."*

*"More photos of the base and team members - I suggest that 80 per cent of the Bulletin should be photographs."*

We recently appealed to those with good black and white pictures to let us have some of these and we have had some response to the photographic competition. The winner of the first 'print-of-the-issue' is Peter Sutcliffe (Sanae 11) and this print appears on the front cover of this issue.

*"I have great difficulty in trying to understand articles written in Afrikaans."*

This was a frequent comment from overseas readers. We have therefore decided to add an English synopsis to each article in Afrikaans. We will then undertake to send an English translation of the article to anyone requesting this.

Some of the comments, like -

*"I would like to receive the Bulletin monthly"*

*"All articles should be in both Afrikaans and English"*  
and

*"Colour photographs instead of black and white"*

are a little too ambitious for us at present. The *Bulletin* is financed by a grant of R2 000 a year from BP Southern Africa. This just covers four issues a year in the old format. (This issue comprises two numbers combined into one of twice the usual length.)

*"I would like to see news and articles from foreign Antarctic expedition members."*

So let's hear from the overseas readers. Perhaps those members of the Sanae teams who have made contact with their counterparts in the teams of foreign expeditions could persuade them to write an article for us.

Finally, the best comment, which came from an overseas reader, was:

*"On the whole, I think you publish a wonderful Bulletin, possibly in the first three of the nations participating in Antarctica."*

# Antarctic News from Around the World

## Tourists in Antarctica

*Antarctic*, the news bulletin of the New Zealand Antarctic Society, reports that it was recently decided to appoint caretakers for the historic huts at Cape Royds and Cape Evans, now that tourism has reached Antarctica. Michael Orchard and Peter Skellerup were the first two to be sent to Cape Royds on a two week trial basis.

Their home for this period was a small orange hut close to the Shackleton Hut. In the first 24 hours they were visited by 11 people in four different parties who often just seemed to appear from nowhere. Shackleton's Hut, built in 1907 in the shadow of Mt. Erebus, is much the same inside as it was originally left. In a corner are unopened boxes marked 'British Antarctic Expedition 1907' and tinned foods looking almost new. On the bunks are old sealskin sleeping bags and some of the original clothing, while on the table there is a copy of *The Illustrated London News* for November 1909. Outside, tins of food are gradually rusting away, but the hay bales used as pony fodder are in remarkably good condition. The signature 'E. H. Shackleton' written in ink on a piece of paper is at the head of one of the bunks.

A few hundred yards away from the hut is an Adèle penguin colony, the most southerly in the world. Near the end of their two week stay, on the 10th Anniversary of the Antarctic Treaty, helicopters began flying a shuttle service between McMurdo Sound and Cape Royd. Some 30 people were shown around on this morning and the caretakers had to restrain some from approaching too close to the penguin colony and to prevent them from removing historic articles from the hut.

During the course of their stay they erected signs requesting visitors not to disturb the penguin colony as it is in a state of delicate balance. In the 12 years of man's occupation it has been reduced to one-fifth of its original size. It is evident that in future when tourists visit the area, someone will need to be on hand to safeguard the colony.

## Japanese activities in the Antarctic 1969-70

Twenty-eight expedition members, one press reporter and two huskies (one of which died on April 12) occupied Syowa station in 1969. Research programmes included an aerophoto survey with a Lockheed Lasa-60. This ended when the aircraft damaged its nose and twisted a propeller in a forced landing on the sea ice landing strip which broke away suddenly. The Soya Coast, Riiser-Karsen Peninsula and the Yamato Mountains were covered by the survey. Seven flights covering about 850 km were made.

Field surveys near Syowa included geological and geomorphological studies of exposed rock area, marine biological studies, physiological studies of fishes, limnological study of fresh and salt lakes, flow rate measurements of glaciers, sampling of rock, biota, water and ice. An aeromagnetic survey was made from a helicopter using a proton magnetometer.

The launching of high altitude large balloons for observing auroral X-ray intensities was successfully accomplished between January 14 and February 14.

Ten flights were made in all, three of which covered the magnetically conjugate points Syowa and Reykjavik, Iceland.

Routine observations, such as synoptic and upper-air weather, vertical sounding of the ionosphere, station seismology, geomagnetism and tide registration were continued.

The longest journey ever made in the Antarctic was the traverse from Syowa Station to the South Pole and back by a party of eleven men led by Mr. Masayoshi Murayama. They covered 5 182 km in 141 days.

Mid-winter's Day on June 21 was observed with many festivities, including a Japanese tea ceremony, a Haiku (short poem with 17 letters) contest and go-go dancing at midnight after a typical French dinner. It is difficult to make really good Japanese dishes because of the required fresh and raw ingredients, tedious cooking and a large variety of tableware. However, sukiyaki, sushi, tempura and Yakitori were enjoyed several times.

To celebrate the return of the sun, a soccer game was held on July 14th. The game was played on the sea ice and the air temperature was 20° below zero.

On December 10th a Soviet IL-14 flew over the station and dropped fresh fruit the next day.

On January 2nd, 1970, the relief party led by Dr. Tatsuro Matsuda arrived. On February 10th the first sounding rocket was successfully launched and the second was fired on February 17th. They reached a height of about 90 km and measured electron density and ozone concentration. On February 20th, an official change over of teams was held and members of the 1969 expedition returned to the Fuji by helicopter. The Fuji encountered a very consolidated ice pack and broke her starboard propeller on February 25th.

The Japanese Government asked for American and Russian help and on March 7th the Russian ship Ob arrived near the Fuji but was unable to penetrate the pack. On March 18th the Fuji freed herself and reached Cape Town on March 29th.

— Extracted from: *Antarctic*

## Antarctic Stamps

Antarctic stamps and covers are greatly sought after by philatelist specialists in this field. The number of such collectors appears to be surprisingly large. The Polar Postal History Society of Great Britain has a journal, *The Polar Post*, and *Ice Cap News* is the journal of the American Society of Polar Philatelists. We do not know how many philatelists there are in South Africa interested in this particular branch and would like to hear from anyone who can let us have more information.

The following details on the first Antarctic stamp are extracted from *Ice Cap News*, January-February, 1971.

Philately came to the Antarctic at the turn of this century. A cancellation-type marker was used by Scott on the 1901 Discovery Expedition. In addition, a special label was prepared. The first cancellation actually applied to mail at a post office south of the 60th parallel

was the *Orcadas del Sud* postmark on 20th February 1904. On that day the South Orkney station was transferred to the Argentines by the Scottish National Antarctic Expedition. Regular Argentine postage stamps were used on the mail.

The first postage stamp issued expressly for use in the Antarctic was the New Zealand 'King Edward VII Land' overprint. Late in 1907 Ernest Shackleton, as leader of the 2nd British Antarctic Expedition, was sworn in as a postmaster by a New Zealand magistrate and given a stock of the specially prepared stamp. The green overprint was applied to 24 000 copies of the red one-penny stamp.

In addition to the stamps, Shackleton was provided with a canceller inscribed: 'Brit. Antarctic Expd. NZ'. The cancel was first applied in green on January 1, 1908,

on the day of the expedition's departure from Lyttelton. In order to conserve coal the polar ship Nimrod was in tow by the steamer Koonya. On January 15th pack-ice was encountered and the ships parted company. The Koonya sailed north with the expedition's first mail cancelled on 15th. From that date on the cancel appeared in black.

The first Antarctic landfall was at Cape Royds, Ross Island, on February 3rd, and mail was postmarked for the occasion aboard the Nimrod. A branch post office was set up on land at the Cape and only the date February 27, 1908, appears on that mail. The final use of the postmark by the second expedition was in the following year on March 4th, 1909, the day that the Nimrod sailed for home. Later dates of the same cancel were used by Scott during his ill-fated 1910-13 expedition.

## AMERICAN SOCIETY OF POLAR PHILATELISTS ANNOUNCES GROUP OF FIRST DAY COVERS FOR ANTARCTIC TREATY STAMP

ASPP, one of the leading organizations for collectors of cold-water philately, announces plans for a series of 'Antarctic Treaty' Stamp First Day Covers. As a leader in its field, ASPP is giving polar collectors the chance to obtain unusual covers when this stamp is issued on June 23. Three different covers will be available. All will be multi-coloured, and printed, and/or engraved on high quality rag envelopes. All will be standard 6½ envelopes.

Cover No. 1 will show an embossed map of the Antarctic Continent surrounded by embossed flags of the twelve original signatory nations: Argentina, Australia, Belgium, Chile, The French Republic, Japan, New Zealand, Norway, Union of South Africa (now the Republic of South Africa), USSR, United Kingdom of Great Britain and Northern Ireland, and the United States of America. Czechoslovakia, Denmark, Poland and The Netherlands acceded to the Treaty later but are not properly considered signatories. It will be remembered that the Antarctic Treaty, which became effective on June 23, 1961, pledged the South Pole region to peaceful uses and scientific co-operation unknown in other parts of the world.

Cover No. 2 reproduces a photograph of the Chief of the United States delegation signing the Antarctic Treaty on June 23, 1961. Other delegates are shown standing in the background.

Cover No. 3 pictures a portrait of Nathaniel Brown Palmer, the discoverer of the Antarctic Continent 150 years ago. This portrait now hanging in the offices of the American Geographical Society in New York City shows Capt. Palmer as a young man since he was only 21 when he discovered the Antarctic mainland. Captain Palmer was master of the 45-ton sloop, 'Hero'. The Captain and his crew of only five steered his 47-foot ship through perilous seas to the Antarctic Continent, a feat which astonished more mature explorers, many who had

tried for years to achieve this goal. Today, the northern peninsula is designated on many maps as Palmer Land.



These special ASPP First Day covers are available for 35c each, three for one dollar and may be mixed or matched. Address labels will be appreciated. Any orders received after June 17 and orders for unaddressed covers should include a large SASE with 8c postage for each three covers. Overseas orders should include one International Reply Coupon for each three covers. All orders should be sent to: ASPP, P.O. Box 245, Lambertville, Mich. 48144, USA.

# NUUS VAN SANAE EN DIE EILANDE

## Sanae Nuisbrief vir Oktober 1970

Oktober was vir almal 'n besondere en besige maand gewees. Die eerste voëls het dan ook hulle verskyning gemaak in die vorm van klein swerms Antarktiese swaeltjies wat op 'n baie hoë hoogte op pad na die suide waargeneem is. Waarheen hulle op pad was en waarvan hulle gelewe het in die barre yswoestyn het almal aan die gis gehad. Die spreekwoord lui dat een swaeltjie nie die somer maak nie maar vir ons was dit 'n baie goeie teken dat die somer nie meer baie ver was nie.

Ons het dan ook 'n paar dae gehad wat die weer eenvoudig onverbetel was. Op so 'n dag het van die spanlede na Fakawi Bukta toe gegaan om robbe vir honde kos te gaan haal. Die temperatuur was minus twintig en daar het nie 'n luggie beweeg nie, so kalm was dit. Met hulle terugkoms van Fakawi Bukta af het die robbe grawers met trots vertel dat hulle in staat was om met kaal bolywe die grawe werk te kon doen. Hulle het dan ook aan almal hulle sonbrand gewys wat as bewys gedien het. Hulle was dan in werklikheid so effe rooi gebrand gewees.

Met die veldpartye het dit ook besonder goed gegaan. Die twee Muskegs was herstel en hulle was reg gewees om na die basis te vertrek. Toe 'Vaaljapie' onklaar geraak het tussen Jekselen en Muskeg depot nadat Stark en Grundling die geoloë by Jekselen gaan aflaai het, moes Willie en Sandor hulle gaan help. Die fout was nie groot nie en met geringe herstelwerk kon hulle weer voortgaan met die reis. 'Vaaljapie' is by 'Windholte' gelos en met die twee herstellde Muskegs het hulle terug gekom basis toe om voorrade te kom haal. Met die terugkoms het hulle drie keer in ysskeure beland maar kon gelukkig sonder baie gesukkel weer uitkom. Dat hulle benoude oomblikke belewe het, het geblyk uit die stories wat vertel is en die skyfies wat vertoon is van hulle avonture.

Met een geweldige poging is die noodbasis nou heeltemal vry van ys en sneeu. Daar is een dag die hele dag lank spandeer om die noodbasis skoon te kry. Dat daar hard gewerk is, is nie te betwyfel nie. Almal wat gehelp het met die grawery het vir 'n paar dae lank gekla van seer lywe en stywe spiere.

Mrs. Campbell het die trotse moeder geword van 'n vierling. Ongelukkig is die een kleintjie na 'n paar dae dood. Dit is dan ook die eerste kleintjies hierdie jaar en is iets besonders.

— SANAE 11

## Marion Island Newsletter for October 1970

With the prospects of a ship visiting the island in November everything seems greener and full of life. Mr. C. van Rensburg, head of the General Section of the Department, will be paying us a visit. Therefore much cleaning is to be done, a job one dreads. This fact, however, is overlooked for the reason of seeing new faces and also the prospects of receiving parcels from home. The *RSA* has left for Gough Island and Tristan Da Cunha and will also call at Marion on this round trip.

Animal life has returned to normal with the addition of rockhopper penguins to this society. Icebergs were spotted on two occasions, southeast of the island moving with the west wind drift in an easterly direction.

Weather showed her friendlier face to us this month. On some days maximum temperatures of over ten degrees were recorded. On these days everybody was basking in the sun as if recharging after the long winter months. Winds stronger than gale force were only recorded on one occasion.

The 'Mountaineering Club' which now consists of only two members (Johann, our medic, has withdrawn from the club after last month's trip to Jan Smuts Peak) was quite active this month. They 'conquered' the highest peak on the Island, State President Swart Peak, of just over 4 000 feet. They left base at dawn one morning at half past three. When they reached the summit of the peak their sight of the island was again hindered by the presence of low cloud covering the island, but anyhow, it now seems that they are satisfied with their experience and no urge remains for another venture like this. They returned to base late that afternoon.

Fanie, our radio technician, suddenly developed an interest in radio amateur work. He has contacted hams all over the world. The furthest place away he has worked so far is Midway Islands. We celebrated his birthday at the end of the month.

Regards to all our colleagues.

## Gough Newsletter for October 1970

Weatherwise Gough Island has endowed us with enough rain to literally 'Float the Navy' and wind with which to blow it along. There is only one ship that occupies all hearts at present: A greater sight we shall never see again.

The automatic raingauge packed up, the hydrogen plant blew up and the relief was delayed too. It definitely wasn't our month. However, the sun, a rare sight, did shine through with a fiercer warmth of late.

The seals have returned to seal beach, skua chicks have hatched and the tempo of life has definitely quickened. Our two visitors *Tristania* and *Gillian Gaggins* were extremely welcome sights around the Island, but their rapid departure after only a week in these waters was a disappointment to all. Strange ships lights were sighted for a few days but identification was impossible, even during daytime. They were too far away.

The house is clean inside and out, and ready for occupation by our colleagues, whom we hope to see very soon indeed. Our thanks are hereby extended to all the sections for their wonderful co-operation and effort to make this expedition the success it was.

Let's hope we are back in South Africa by the time this report is published. To Marion "HOU MOED" and to Sanae farewell from the boys on Gough.

— G. Reynolds, Leader

### Sanae Newsletter for November 1970

November was the most pleasant month this year weatherwise. Temperatures were near zero on many occasions and there was very little wind.

On one such pleasant day the whole team left for the sea to examine the condition of the buktas and to bring back some of the diesoline supplies at Fakawi Bukta. During the digging operations, the weather became so warm that shirts could be removed, and as a result Pieter had to be treated for sunburn the following evening. Eugene fared rather badly and had to remain in bed for two days as a result of snowblindness. Fortunately, he recovered in time for his cooking turn.

Peter and Tony took the dogs for a walk to Blaksimen and had to remain in the veld for two days because of bad weather. They had a great deal to say on their return about the beautiful view from the top of Blaksimen.

Mrs. Campbell was put out of the 'house' - children and all - and placed in a run made of chicken netting. The pups really enjoyed being out on the snow and it brought home to us just how well suited huskies are for their cold environment. Shortly after Mrs. Campbell's ejection, Else was brought in and gave birth to four puppies. This is the second litter of huskies this year.

Gert suddenly found himself in the predicament of being the cook on his own birthday. Fortunately Peter was willing to assist by changing cooking turns with him.

At the end of the month, several of us witnessed the phenomenon of the midnight sun for the first time, which provided a wonderful opportunity for photography.

The field party left again for the mountains. The large caterpillar had to be used to transport supplies as far as Draai-Punt because, on the soft snow surface, the load was too great for the Muskegs. The party were most fortunate in crossing the crevasse area as they only experienced one collapse of the surface. Sandor was the driver of the Muskeg involved. After that incident they were delayed for another two days when Willie became snowblind. He had to remain in his sleeping quarters for two days with his eyes covered with bandages. Fortunately, he recovered and they set out again.

Helgo, Pat and Dusan had reached Jekselen by this time where a tragedy almost occurred. Dusan fell 80 feet down a crevasse, but fortunately was not seriously injured. Helgo and Pat managed to throw ropes down to him and to pull him out using the toboggan. The first thing Dusan asked when he regained his breath was, "What has happened to my rock samples?"

As a result of very soft snow surfaces, a great deal of supplies had to be left at Muskeg Depot. With the lighter load, they were able to reach Borga Base for the first time this season which is the second time this year. The field party plan to salvage the Muskeg which fell into a crevasse 80 km south of Borga Base last year. With the experience that they have with crevasses, they stand a very good chance of pulling both the Caboose and Muskeg out.

All the members of Sanae 11 wish you a very merry Xmas.

*(Hierdie brief is in Engels vertaal weens die aantal briewe wat van oorsese lesers ontvang is wat Engelse vertalings van die nuusbriewe vra. Ons het daarom besluit om die*

*meer interessante briewe in Engels te publiseer. Die oorspronklike Afrikaanse briewe sal nog beskikbaar wees vir diegene wat afskrifte daarvan wil he - Die Redaksie.)*

### Marioneiland Nuusbrief vir November 1970

November was 'n maand van wisselende aard. Die besoek van die RSA is afgestel. Die blye nuus is intussen ontvang dat ons 'n besoek van 'n Franse skip, die *Gallieni*, in Desember kan verwag. Die *Gallieni* doen hier aan op weg na die Franse weerstasies op Crozet-, Kergeulen-, en Amsterdameiland. Die skip het die eiland al twee maal besoek die laaste twee jaar.

Alhoewel somer alreeds in 'n gevorderde stadium is, was die weerstoestand sodanig dat 'n mens liever dit sou vergelyk het met winterweer. Temperature deur die maand was onder die normaal. Windstote het byna die 100 m.p.h. merk behaal, 'n windstoot van 97 m.p.h. is waargeneem. Geen noemenswaardige probleme is ondervind met werksaamhede nie. Die diere bevolking is nou voltallig. See-Olifant kalwers is alreeds gespeen en strande is verlate. Die strande word nou eger ingeneem deur groot getalle koningspikkewyne. Die Kuifkoppikkewyne is hard besig om te broei. Makaroni Pikkewyne is terug na hul afwesigheid gedurende die winter en hul broeiplekke is alreeds volgepak. Jong Albatrosse van verlede somer leer nou om te vlieg. Volwasse Albatrosse is nou weer besig om nes te maak. Moordenaarsvisse (Killer Whales) kan gereeld in Transvaalbaai opgemerk word. Op een geleentheid is fotos na hartelus van die visse geneem toe hulle naby die landingsplek rondgeswem het.

Soos dit die grampmaker onder ons toekom het ons Andre se verjaardag die 30ste op 'n baie prettige en paslike wyse gevier.

Ons wil graag van die kans gebruik maak om al ons kennisse en kollegas langs die weg 'n geseënde Kersfees en 'n voorspoedige Nuwe Jaar toe te wens. Groete, Marion 27.

### Sanae Newsletter for December 1970

As far as the weather was concerned, December was one of the most pleasant months of the year. On several days the temperature tended more towards the positive than to the negative side, and this in addition to little or no wind.

Shortly before Christmas we had a few days of strong wind which reached storm-velocity on occasions. The temperature remained relatively high, however, and this weather was thus still quite bearable.

During this weather it was decided that a start should be made to haul the fuel supplies from the Buktas to the base. Working in shifts around the clock, we excavated and transported drums for four days non-stop. Progress was so good that the day before Christmas all the drums at Pikkewyn had been moved to the site of the new base. Only a few drums remained at Fakawi Bukta and these will be fetched in the near future.

All the field parties, except the geological team, were back a week before Christmas.

Willem was in charge of the kitchen on Christmas day, and as becomes a leader, he set a good example of how things should be done. The meal was truly excellent and once again everyone was more than able to satisfy his appetite.



In the field things are still going well with the geologists and their support men. They had a very quiet Christmas. Helgo and Dusan are very pleased with some of their finds and their work is progressing very well. They shall soon have to think of heading back to the base, however, as the ship is scheduled to leave the Cape shortly.

The end of the year has arrived and everyone is looking forward to being in the Republic.

All members of Sanae 11 would like to take this opportunity of wishing everyone in the Republic a very prosperous New Year.

#### Marion Nuusbrief vir Desember 1970

Die laaste maand van 1970 was vir ons 'n heel aangename maand wat lank deur ons onthou sal word. Die weer was sodanig dat geen buitengewone verskynsel plaasgevind het nie. Sonnige windstil dae kom al hoe meer voor, iets wat Marioniete terdeë geniet. Dit is genoeg om droombeelde van sonnige, goue strande, ens. voor jou te laat opspring.

Die Franse skip *M.S. Gallien* het die middag van die 19de hier aangedoen opweg na die Franse Eilande oos van ons. Geen wolke was oor die Eiland sigbaar nie, en hulle het die Eiland met sy sneebedekte kruine op sy beste gesien. 'n Aantal van die Franse wetenskaplikes het per helikopter aan wal gekom. Voorrade en pos is in 'n japtrap afgelaai. Die taalprobleem was egter 'n struikelblok, maar met gebare, hier en daar 'n woord wat verstaan kan word, en André se 'Frans', kon ons mekaar darem verstaan het.

Die feit dat ons na twee en 'n half uur weer alleen was het ons nie gepla nie, want daar was 'Pakkies van die huis af', iets waarna ons al weke lank na uitgesien het. Fotos van die familie en vriende is aan almal gewys. Johann is nie min trots op sy groot seun nie, vir wie hy nou vir die eerste keer kon sien.

In teenstelling met al die opgewondenheid van die skip se aankoms, het ons Kersfees stil-stil deurgebring. André en Roy het vir 'n Kersmaal van uitstaande gehalte gesorg. Die Nuwejaar is ingegaan met gelukwensings en jolyt, maar 'n mens kon sien waar die gedagtes was.

Koos en André het 58 jong albatrosse gebring. Meeste van die albatrosse leer nou om te vlieg. En om te sien hoe die jong voëls leer vlieg in 'n sterk wind is 'n hele petalje. Talle forelle is opgemerk in die varswaterstroom ten noorde van die basis. Die forelle is waarskynlik daar geplant gedurende 1964 deur die span onder leiding van prof. Van Zinderen Bakker.

Roy en Allan, ons groot krieketgeesdriftiges, moes nou die dag sien terwyl hulle krieket met 'n tennisbal gespeel het, hoe 'n veldwerker in die gedaante van 'n skua meeu met die bal in sy bek met 'n hele klomp 'Veldwerkers' agterna in die rigting van Tripod verdwyn het. Hulle was glad nie beïndruk deur die goeie 'Veldwerk' nie.

Ons beste wense aan ons kollegas en bekendes in die Republiek.

#### Gough Newsletter for December 1970

After a month on Gough the boys are feeling quite at home and working full steam. With the alternate rainy and sunny days, the sunshine has been greatly enjoyed.

Towards the beginning of the month the ship *Tristania* was cray-fishing in these waters and it was at least a comfort to know that we were not altogether alone. Johann Coetzer's recent effort at modern art was severely criticised by the other members of the team with the result that he is now in search of a new hobby. A fair amount of crayfish was caught and tastily prepared by Les Genlroud and Steyn Basson. Dries Wannenburg got the rough end of the stick when a skua effectively dive-bombed him. There were two birthday celebrations this month, those of Les Genlroud who turned 21 and Steyn Basson 22. Christmas was quiet but nevertheless enjoyable. 'Shorty' Moolman's problem in reading instruments in the Stephenson's screen was ingeniously solved with one large box.

The albatross are mating and many chicks have already been observed. The boys enjoyed a trip to Seal Beach and were surprised to see how indifferent the seals were to human presence. Photography is very popular and the art of developing has already been learnt.

#### Sanae Nuusbrief vir Januarie 1971

Januarie was 'n maand van besonder hoë temperature. Al die vuil sneeu wat buite op die oppervlakte was, het van die son energie ge-absorbeer en gesmelt. Die oppervlakte het op sommige plekke tot met ses voet gesak, veral waar roet afkomstig van die skoorstene, met die sneeu gemeng was. Rondom die skoorstene en die sneeusmelter en die skag het groot openings verskyn wat van die oppervlakte tot op die basis gestrek het. Niemand het dit baie naby aan die openings gewaag nie.

Die RSA is vir die eerste keer na 'n jaar op die 16de weer gesien. Almal was dit eens dat dit iets besonder was om te aanskou - vir 'n verandering het ons die skip sien kom en nie soos laaste keer sien vertrek nie.

Die heel aangenaamste was om werklike pakkies van familie, geliefdes en vriende te ontvang. Ook om werklike briewe uit werklike koeverte uit te haal en te lees. Sommige van die spanlede het wat nie briewe genoem kan word nie, ontvang, maar 'n laat uitgawe van die huis af. Etlike honderde bladsye was glad nie 'n uitsondering vir 'n brief se dikte nie.

Met die aflaai van die skip het dit sommer baie goed gegaan. Daar is in skofte gewerk met die gevolg dat vir 24 uur afgelaai is.

Die span DPW onder leiding van Jaap Kotze, het gou aan die werk gespring met die bou van die basis en baie dae is daar van 18 tot 20 uur op 'n dag gewerk. Dit is dus glad nie verrassend dat hulle so goeie vordering gemaak het nie.

Op die 26ste het 'n jagsneeustorm, wat twee dae geduur het, baie van die boumateriaal vir die basis onder etlike voete sneeu toegewaa. 'n Voltydse span is aangestel om die toegewaaide boumateriaal uit te grawe.

Dit is nie meer lank nie en dan draai die RSA sy boeg na die noorde met al die lede van Sanae 11 aan boord. Ons wens al die lede van Sanae 'n baie suksesvolle en voorspoedige jaar toe. Ons hoop van harte dat hulle veilig sal terugkeer na families en geliefdes aan die einde van hulle tydperk op Antarktika.

#### Main points of interest (translation)

Hot weather was experienced which caused the surface in some places to sag by as much as six feet and also

cavities to appear around the exit shaft and snow melter. The *RSA* arrived on the 16th and news and parcels from home were gratefully received. Offloading of the ship is underway and the Department of Public Works has commenced construction of the new base, working a 20-hour shift. On the 26th a snowstorm buried all the building material and a team of men had to be assigned the full-time job of excavating everything. The old team wishes the new team a happy and successful year.

#### Marion Nuusbrief vir Januarie 1971

Daar was nie veel afwisseling van die gewone eiland roetine nie. Dit is soveel merkbaar na die opwinding van verlede maand. Die vordering van die aflos op Sanae word nog steeds goed dopgehou.

Oor die weer het ons geen klagtes gehad nie. Die wind het egter een oggend die loslaat van ballonne aan bande gelê. Rukwinde van 67 knope was net eens te veel vir die vernuf van Koos en Roy om die ballonne suksesvol weg te kry. Sterk temperatuur-skommelings het voorgekom. Op een stadium het die temperatuur binne 10 minute 'n styging van 7,5 grade getoon. Met die interessante verskynsel kon gesien word hoe miswolke so gou vanuit die noorde verdwyn het dat die sigbaarheid in die rigting byna 100 persent was, waar dit in die teenoorgestelde rigting so was dat voorwerpe op 'n afstand van twintig tree nie sigbaar was nie. Mis toestande het op 13 dae gedurende die maand voorgekom.

Die bestee van vrye tyd word deesdae meestal gebruik om boeke te lees, tel van orige dae en te debatteer daaroor, en die maak van foto afdrukke, die kwaliteit van die fotos is uitstekend as 'n mens die aanvanklike kennis van fotografie van elkeen hier in aanmerking neem.

Die 6de het ons die laaste verjaardag op die Eiland gevier (hopelik). Dit was die verjaardag van Leon, ons Radio-operateur. 'n Yslike verjaardagkoek is spesiaal vir die geleentheid gebak deur Johann onder toesig van Leon self. Die aand is deur almal baie geniet, tussen al die grappe en 'toesprake' deur. Al bekommernis van Leon is dat hy nou te vinnig oud word, sy hartewens is egter dat hy nog op die ouderdom van 100 jaar met sy branderplank in die branders kan baljaar.

Die asemwolkies van walvisse is 'n paar myl van die basis af opgemerk. Ongelukkig kon daar niks van die groot visse gesien word nie. Die broeiseisoen van die albatrosse het nou in alle erns begin en die wit spikkels van die voëls teen die nou grasgroen Eiland, is baie opmerkbaar. Die kuifkop pikkewyn het reeds klaar gebroei en om die ouer pikkewyn te sien weggaan laat 'n mens nou met daardie wete dat die winter die Eiland stadig maar seker bekruipt.

Dit is dan met gemengde gevoelens dat daaraan gedink word dat daar nie weer vir ons 'n Marion-winter voorlê nie.

Baie groete aan al ons vriende in die Republiek, op Gough en op Sanae.

#### Sanae XII Newsletter for February 1971

The weather during the last month was marked by two storms from the west and not from the east as usual. There were only a few days, however, with strong winds and bad conditions generally.

The team moved into the new base about the middle of the month and we all agreed that it was wonderful to live in the new base after having stayed in the old one for about two weeks.

The *RSA* sailed for Cape Town on Friday the 19th and base-work for the Sanae XII members began, namely by transporting 1 137 drums of diesel, petrol and paraffin to the base. For this operation the team was divided into two groups and we worked around the clock, one team resting while the other worked. A storm which lasted two days began just as the last of the drums were being offloaded. After the storm the team started clearing the snow passages and the name 'Mega Spades' was quickly adopted by the members of the spade brigade, indicating the extent of the task. It took the team two days to clear the passages of snow and to close up the eastern part of it, when yet another storm struck from the west with the result . . . 'Mega Spades'. From then on diesel drums were carried in and 620-odd drums are now stacked in the passage for the winter.

The Borga team of five men left us on the 24th for their traverse and we made use of the opportunity for giving them a grand farewell party. From their radio reports we gather that things are running smoothly.

We would like to thank the Sanae XI team for their help during our stay together at Sanae. Many thanks chaps and we hope to hear from you from time to time.

Our team consists of the following members:

Gustav Nel . . . . .	Leader
Louis Wessels . . . . .	Doctor (Vice-Leader)
Mike Martin . . . . .	Mechanic
Theo Kruys . . . . .	Mechanic
Peter Bennett . . . . .	Mechanic
Evert Scholtz . . . . .	Meteorologist
Johan Koch . . . . .	Meteorologist
Tom Potgieter . . . . .	Meteorologist
Andy Paterson . . . . .	Geologist
Jan Bredell . . . . .	Geologist
Trevor Schaefer . . . . .	Radio Echo Sounder
Carl Mischke . . . . .	Cosmic Rays
Ray Haggard . . . . .	Ionosphere
Howard Thompson . . . . .	Electronics Engineer
Dries Muller . . . . .	Geomagnetism
Frik Ludik . . . . .	Medical Orderly
Johan Bothma . . . . .	Radio Technician
Rutger van Mazijk . . . . .	Radio Operator

#### Marion Newsletter for February 1971

Summer has eventually shown her real face. We have felt completely out of place with the warm sunny days that we have encountered. A maximum temperature of 17,8 degrees centigrade was measured which was the highest temperature so far this year. The absence of wind too, was a rarity. Although we experienced the warmer weather it can be seen that winter is on our doorstep as the days are becoming shorter and there is a noticeable decrease in the numbers of Penguins.

The surprise of the year came one afternoon when a whaler was sighted three miles offshore. Despite attempts to make contact with her, she calmly sailed by and much

to our disappointment disappeared behind East-Cape, without returning a call.

The *R.S.A.*'s every move has been watched very carefully and morale is running very high for now we are certain that we are next on the list.

Two kittens have made themselves part of the family and many hours that would have otherwise been dull have been brightened by their presence.

Packing and cleaning around the base has begun with great zest and everyone is looking forward to the arrival of our relief team.

#### Gough Newsletter for February 1971

This month we experienced for the first time the type of weather which we expected to have on Gough. During the first few months, the weather reminded us very much of the Cape weather. Considerable rainfalls have been experienced and the days were colder than the previous months.

Our new system of weekly cooking and household duties seems to make the time go by a lot quicker.

Weightlifting is popular and hard work is done with homemade weights. Peet Ludwick, our medical orderly, celebrated his 21st birthday on the 13th of this month. A number of cakes were baked for the occasion and in the evening we had an enjoyable 'braaivleis' with 'mieliepap' which would have made any Transvaler's mouth water.

We are all looking forward to the *RSA*'s arrival at the end of April. A PWD work-party will be paying a visit and of course, parcels from home will be expected. Snooker and photography remain very popular and snooker competitions are often held. Plenty of fish and crayfish were caught during the month and tastily prepared.

*(Die Nuusbriewe is goedgegunstelik deur Die Departement van Vervoer aan die Bulletin voorsien.)*

## SCIENCE

### THE IONOSPHERE

#### Part 1 - What is the Ionosphere?

This article is the first of three parts which deal with the ionosphere and research in this field at Sanae. Here we hope to give the reader a brief idea of what the ionosphere is and why it is studied. In the next issue the importance of Sanae as an ionosphere observatory will be discussed and some of the interesting results arising from the ionosphere programme will be described in the subsequent issue.

High frequency radio waves still play a major part in long-distance communications despite recent developments in satellite technology and intercontinental cables that have vastly improved the quality, capacity and reliability of communication systems. High frequency radio waves are transmitted around the earth by reflections from the earth's surface and from the ionosphere - the 'radio mirror' above the earth's surface where there is sufficient ionization to return radio signals to earth. This part of the atmosphere, starting about 50 km above the earth, where the air is ionized by ultra violet rays and other effects from the sun and where reflection of radio waves takes place, is made up of a number of different bands or layers marked by special properties. The basis of the division into layers is the variation in electron density from one level to another.

The D-region (40 to 90 km above the earth) is very weakly ionized, but because of the relatively high density of the neutral gas and the high collision frequency of electrons in this region, a great deal of energy can be removed from a radio wave passing through the region.

The E-region lies between about 90 and 130 km. Above this are the F1 and F2 layers from about 130 up to 170 km and 170 km upwards, respectively. The E, F1 and F2 layers reflect radio waves typically used in communications.

First indications of the existence of the ionosphere appeared in 1901 when Marconi succeeded in sending wireless signals from Cornwall to Newfoundland. This resulted in considerable speculation as to the mode of propagation of the waves around the curved surface of the Atlantic. Calculations showed that diffraction (suggested initially) was quite inadequate to explain the observed bending of the waves. In 1902, Kennelly in America and Heaviside in England almost simultaneously postulated the existence of a conducting layer in the upper regions of the earth's atmosphere and suggested that this layer might reflect radio waves and force them to follow the curvature of the earth.

The ionosphere is generally probed from the ground using an ionosonde - essentially a radar instrument which automatically records the heights of reflections of pulses from the ionosphere while sweeping through the high frequency band of radio waves. Some other methods of probing the ionosphere are depicted in the figure.

One of the reasons why ionospheric research at Sanae is important is because observing stations are relatively scarce in the southern hemisphere. The large areas covered by the Indian and South Atlantic oceans are unmonitored. Such gaps could lead to major errors in the world maps of ionospheric characteristics, with serious results for high frequency radio communication. Theoretical calculations indicate that these maps are, in fact, misleading in some regions. Further reasons for the importance of Sanae as an ionosphere station will be discussed in the next issue.

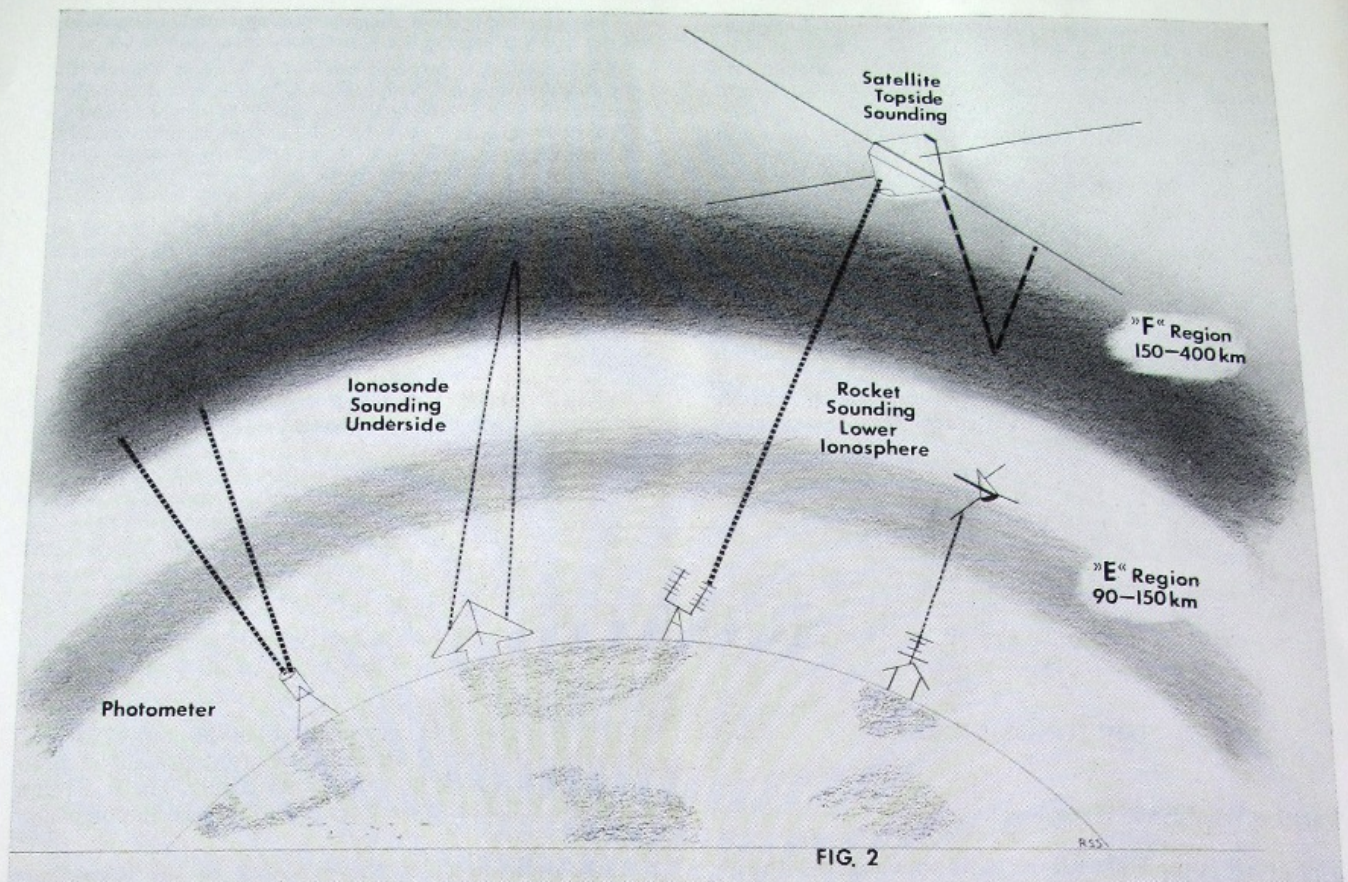


FIG. 2

## AURORAL DISPLAYS CREATED

Plans to leak electrons and charged atoms, or plasma, into space from a satellite about 20 000 miles above the earth's surface have been announced by the United States Department of Commerce. The aim is to simulate on a small scale the disturbances which take place when naturally occurring plasma gets trapped by the earth's magnetic field and spirals down into the atmosphere. When these plasma particles collide with molecules and atoms in the air, they produce colourful auroral displays, radio transmission disturbances and fluctuations in the size of the earth's magnetic field.

Many of the charged particles near the earth are trapped into radiation belts. These belts were almost eliminated for a year or two by the Starfish high altitude nuclear explosion which was set off in 1962 but the new attempt to interfere with the belts will be on a small and controlled scale. The tiny particles which find their way into the atmosphere are expected to produce their spectacular results for only a few minutes before they lose all their energy.

The precise position at which the orbiting satellite will release its small charged payload is expected to be in the shadow cast by the earth in the solar wind. This 'wind' is a stream of high velocity charged particles originating at the sun and distorting the characteristic magnetic field pattern of the earth so that the so-called

magnetosphere is blown into a long tail on the earth's dark side.

The relative shortage of charged particles in this tail makes it the best place to release extra particles because they will scatter the faster naturally-occurring plasma particles quickly into the upper atmosphere. Geophysical research stations around the world will be warned when the plasma is about to be released and the effects should be well studied and documented. In particular, charged particles entering the upper atmosphere will collide with air atoms or molecules, which will be given extra energy or will become electrically charged.

As these air particles return to normal, their excess energy will be given out in the form of multi-coloured light - the auroral displays. The shape and extent of the aurora would give interesting clues to the nature of the magnetic field in the region of the satellite and also to the way the charged particles get into the atmosphere. Small artificial magnetic storms may also be created and a careful study of these could help future predictions of the larger, naturally occurring storms which often upset radio communications and radar. The study may also help in developing a method of controlling these storms.

- Nature-Times News Service

## NEW SANAE COAT OF ARMS

### NUWE SANAE WAPEN

Recently the Department of Transport adopted a new Coat of Arms for Sanae.

Die verduideliking van die wapen is soos volg:

*Skild:* Die wit leegheid van die skild simboliseer die leegheid van Antarktika, en die drie blou punte simboliseer ysberge met die blou see daaragter.

*Helmteken:* Die pikkewyn is die aanvaarde simbool van Antarktika, die 16-puntige ster simboliseer die son van Suid-Afrika, en die horisontale oranje, wit en blou bane is die kleure van die Suid-Afrikaanse vlag.

Helm, wrong en dekklede het geen besondere simboliese waarde nie, maar is deel van die heraldiese tradisie. Outydse ridders in pantser geklee, het die son ondraaglik warm gevind en het gevolglik 'n mantel gedra wat vasgemaak was aan 'n ring wat bo-op die helm gepas het (die wrong). Die kled is toe vir beweeglikheid geskeur en om identifikasie te vergemaklik, is dit in die hoofkleure van die skild gekleur. Die wrong en dekklede weergee dit en is gevolglik silwer (of wit) en blou.

*Skildhouders:* Die pikkewyn is die simbool van Antarktika, en in hierdie geval is die Koningspikkewyn gekies omdat dit die mooiste is. Die twee pikkewyne staan op 'n ysgrond, wat weer eens 'n kenmerk van Antarktika is.

*Wapenspreuk:* Sterker deur Eenheid.

*Arms:* Argent, a fess of three demi-lozenges conjoined, points downward, Azure.

*Crest:* A roundel tierced fesswise Tenné, Argent and Azure upon a sixteen-pointed star Or, over all a King Penguin statant proper, the whole upon a hurt edged Or.

*Wreath and mantling:* Argent and Azure.

*Supporters:* Two King Penguins proper.

*Motto:* Unitate Fortior.

Goewermenskennisgewing No. 2163 soos verskyn in Staatskoerant No. 2937 van 4 Desember 1970.  
Aansoeker: Sekretaris van Vervoer. (H4/3/3/18)



*Frank Hurley's (official photographer of Shackleton's expedition) most famous photograph of the Endurance beset. Photo by flashlight in the winter of 1915. From South.*

*Continued from Page 27.*

presented to him by Queen Alexandra. He kept only the prayer she had written and the twenty-third psalm. They set off with minimum food and gear. It was terrible going over the huge blocks of ice and snow. The progress was less than a mile per day. So Shackleton decided to set up camp on a large floe and wait for the ice to drift. A party was sent back to the ship to salvage supplies. They had to hack a hole through the deck which was three feet under icy water. This took a whole day, and three and a half tons of stores floated up through the hole they had made – sugar, rice, flour, barley, lentils, vegetables and jam; three months supply. On the 21st November the ship disappeared. They were left completely alone.

After one month on the ice, boredom began to become a serious threat to morale and Shackleton decided to move on. They abandoned the extra supplies and by the 31st December had covered nine miles after terrible suffering. It was decided to set up camp again. By January 13th food was getting short and Shackleton decided to shoot the dogs. Reactions ranged from simple resignation to outraged shock. To some it was a catastrophe.

The floe began to melt and camp was shifted once more. Food was cooked on a stove made from an old petrol drum using seal blubber fat for fuel. On 19th



January a gale arose. Winds rose to above 70 m.p.h. and this took them to within 170 miles of Paulet Island. After this there was no further progress for several weeks. By 9th February there was enough food for 10 more days. Men dug up old refuse heaps. Flippers and decapitated heads of seals were scraped to obtain blubber fuel. Rations were: one cup of warm seal soup and one cup of hot powdered milk per day. Each man received his last cube of cheese on that day. On the 17th February, with the situation desperate, somebody saw a flock of 20 penguins. Men seized any weapon at hand. That day they ate stewed penguin, including the head, heart, eyes, tongue and toes. After that penguins and seals became more plentiful, as the northward migration had begun.

So they drifted into March, their greatest enemy being monotony. Greenstreet the first officer wrote: "all topics of conversation are exhausted." On 9th March they felt the first swell, a strange rhythmic creaking in the pack. Great excitement broke out amongst the men. It meant that the ice must be approaching open sea. On the 16th March nearly all rations were finished; there was only seal and penguin meat to eat. Blubber fuel was short and was used only to melt ice. The temperature was a bitter  $-10^{\circ}\text{C}$  at night.

*Shackleton, 1915.*

*Wild, second in command, beside the Endurance during her final break-up.*



On the 23rd March they realised they would miss Paulet Island and were heading for the most storm torn ocean on the globe, the dreaded Drake Passage with two lonely sentinel-like outposts of the Antarctic continent – Clarence and Elephant Islands. Beyond was nothing. The next morning the floe cracked. After continued breaking up, Shackleton ordered: “man the three boats.” The pack was still too thick to row, but further attempts to set up camp were abandoned when a floe cracked directly under a tent and four people fell into icy water. To save their lives they had to be kept moving until they were dry. After that only the cook would board a floe with his stove at meal times.

On the 10th April they struck open sea and sails were hoisted. They were continually plagued by foggy weather and Worsely could not get a fix. When he finally did, they were 22 miles off course. The news was heart-breaking to the men. The change from pack to sea was breathtaking. They would be struggling up a mountain of water whose face was a quarter mile long. At its summit the wind shrieked, blowing the spray into thin feathery lines. Then they started down a slow but steep descent into the valley leading to the next swell. They made a pitiful sight, three little boats packed with the odd remnants of what had once been a proud expedition. For several days they sat huddled together with their

feet squeezed between equipment and water below zero, ankle deep at times. (The unfortunate stowaway had to have one foot amputated on Elephant Island.)

Ten miles from Elephant Island they struck a terrible gale. The inexpressible relief at seeing the island was shortlived as cliffs loomed up with gusts of wind sweeping down and striking the sea at perhaps 100 m.p.h. Worsely had collapsed from exhaustion at this critical stage, but they managed to revive him. Eventually they found a place to land and a few moments later were chewing ice greedily. Fortunately the Island was populated by seals and penguins.

The South African Antarctic Association was most fortunate in having an article written for the *Bulletin* by a member of that expedition, Prof. R. W. James, the physicist. This short article gives some idea of the life on Elephant Island that winter. It appeared in July, 1964, *Bulletin No. 4*.

#### **Acknowledgements**

The photographs presented here were copied from the book *Shackleton* by Margery and James Fisher with the kind permission of the Royal Geographical Society.

This article formed the subject of a talk given to the Society for Adult Education, Johannesburg, after the film ‘Return to South Georgia’.



*Ocean Camp; Shackleton and Wild in the foreground.*