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- (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 gepos.

AANSOEK OM LIDMAATSKAP

Suid-Afrikaanse Antarktiese Vereniging

Naam

Adres

REDAKSIONEEL — EDITORIAL

Onlangs is daar hernude belangstelling deur die publiek in die *Bulletin* en die aktiwiteite van die Vereniging getoon. Meeste vergaderings wat deur die Vereniging gereel was, was goed bygewoon en by een geleentheid hierdie jaar was die saal stampvol.

Sedert die laaste uitgawe van die *Bulletin* het al die direkteure van Suid-Afrikaanse Antarktiese Navorsingsprogramme by die Vereniging aangesluit.

Verder word artikels, wat 'n breë veld van Antarktiese hoedanighede dek, gereeld ontvang. Daar is ongelukkig 'n tekort aan artikels in Afrikaans en 'n poging van lesers om artikels in Afrikaans aan te vul, sal hoog op prys gestel word.

PHOTOGRAPHIC COMPETITION

Readers are invited to send in black and white photographs for our photographic competition. Good colour slides may also be submitted, but a little quality may be lost in copying onto black and white film, but this has been done quite successfully in the past. The best photograph received will be printed on the front cover of the *Bulletin*. Photographs not used on the cover may be used to illustrate articles appearing in the issue.

COVER PICTURE

Winner of the photographic competition for this issue is Hans Loots of the Department of Physiology of the University of Pretoria. The iceshelf near Otto Bukta with frozen bay ice in the foreground.

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

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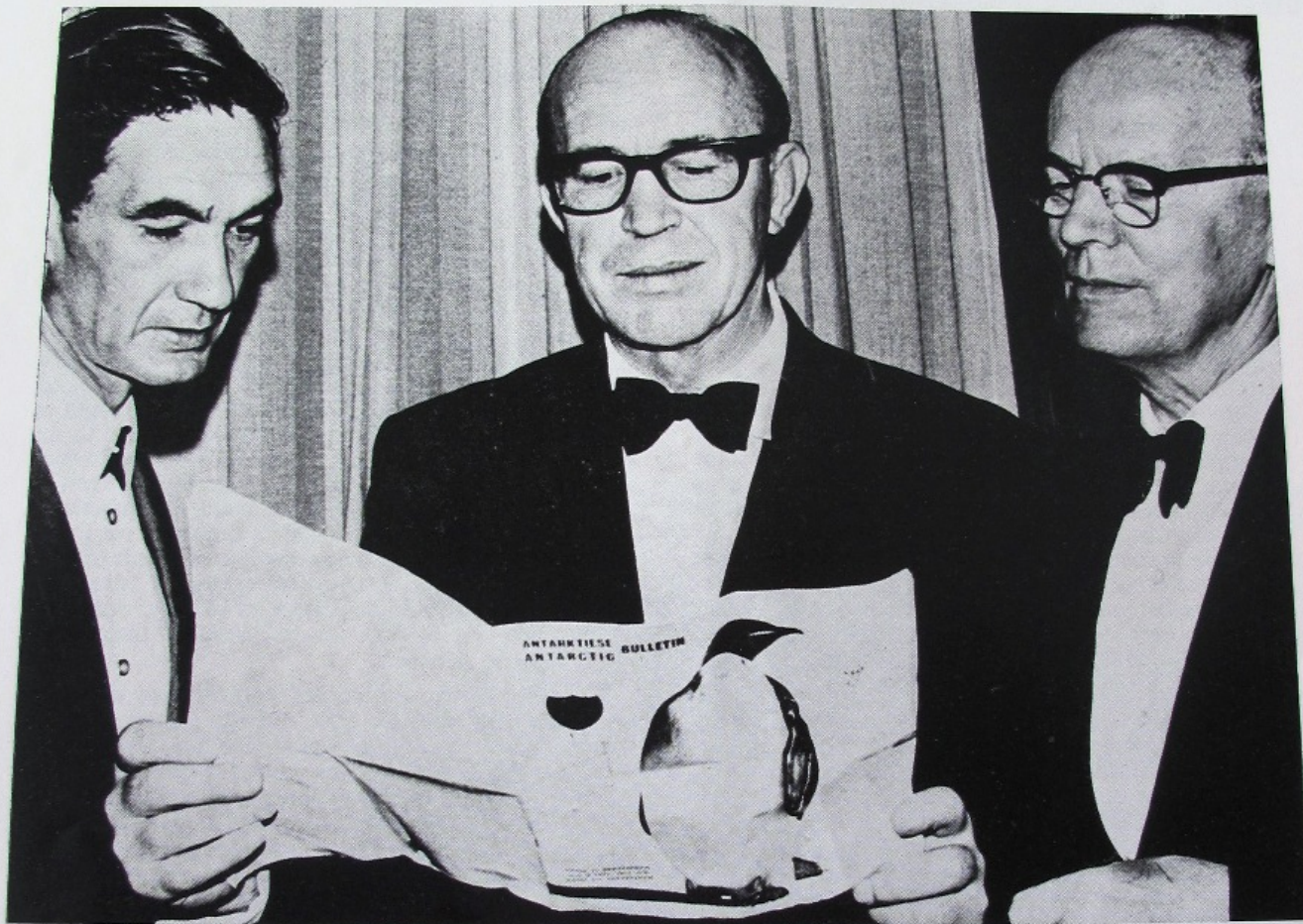
MARION AND PRINCE EDWARD ISLANDS

(An address delivered by Prof. E. M. van Zinderen Bakker to the South African Antarctic Association on the occasion of the Annual Dinner held on 18th March, 1972)

I am very pleased indeed, Mr. President, to have been invited to speak on this special occasion. In accepting the invitation I should, however, have warned you that I do not belong to the true Antarctic branch of people. I am a member of the "sub-Antarctic gang", the people who are interested in those small islands which are scornfully called the banana islands by your people who live underground or should I say "under-ice" in deep freeze. I hope to explain to you that this matter of jealousy has no scientific foundation and that our problems and the scientific mysteries of the Antarctic are so closely related that they cannot be separated.

From the scientific and especially the biological point of view the geographical position of the Republic of South Africa is very favourable. It is very gratifying that during the last 20 years the full opportunity of this position has been grasped and that South Africa is one of the active members of S.C.A.R.

The scientific problems which face us in the south are of an imposing nature and hold the answers to such questions as the origin of our land masses and the present-day patterns of ocean currents in the Southern Hemisphere, the earth's climate, the migration and



Mr. Henry Fulton (left), recipient of the 1971 Antarctic Gold Medal, Mr. D. G. Kingwill, chairman of the S.A. Antarctic Association and Prof. E. M. van Zinderen Bakker, guest speaker on the occasion of the Annual Dinner of the Association. Professor Van Zinderen Bakker was leader of the 1965/1966 expedition to the sub-Antarctic Islands and a co-editor of the comprehensive work Marion and Prince Edward Islands.

(Photo: Pretoria News)

Government that it acts as a very conscious and proud warden of this heritage of nature. In this connection I want to clear my reputation of an imputation in your *Antarctic Bulletin* of March 1971, Mr. President, where it said in a report from Marion Island that I introduced trout to the island. I have never done so and I will never do anything which can upset or destroy the delicate balance of these miraculous and rare ecosystems. I have been fighting with as much tact as becomes a loyal citizen of our "banana islands" the willows and the pines which have been introduced to their shores as well as the small greenhouse, the fowl, the sheep and all those things which may become a danger to the vulnerable equilibrium of the biota of these islands. I think that we have been doing very well on our islands if I compare their virgin state with the entire destruction which took place on other islands through the introduction of goats, rabbits, swine and reindeer.

As I said beforehand, our research is at present of an experimental nature. We do not only want to know *what* is living on the islands but *how* these plants and animals live there. This means sophisticated chemical analysis of rocks, soils and plants, determination of the cycle of such elements as nitrogen, tolerance of climatic influences, primary production of food material and the cycle of food in the complicated webs of interdependent organisms. Four young scientists equipped with the best instrumentation have started this new approach. A small, new and modern laboratory will make it possible to continue this and other research in years to come.

At the same time there are many other problems which ask our attention and I would like to touch shortly upon one of them. Geographically our islands Marion and Prince Edward lie halfway between Antarctica and Africa surrounded by a system of cold ocean currents. The climatic regime which is responsible for the ecological setting of these islands has changed greatly in the course of time. The history of Antarctica has probably played a major part in these changes especially since about 4 million years ago when Antarctica changed from a

temperate-subtropical continent into a glacial desert. It is a burning scientific question to know when and how these changes took place and how they can be correlated with the never-ending climatic evolution of our entire globe. The study of these problems is like fitting the pieces of a gigantic jigsaw puzzle together. This is a difficult and tedious game when a number of important pieces are missing. But every new piece that can be put into place assists us in making the picture more clear.

The main problems we are concerned with are the age of the ice ages at the two poles and in other regions of the world, their causes and the influences they had on the energy that drives the circulation pattern of the atmosphere and subsequently of the oceans. It is now widely appreciated that atmospheric processes in all parts of the world are interconnected. An important source of evidence for the Southern Hemisphere is supplied by glaciologists who study the Antarctic ice sheet.

A deep core hole which has been driven through the Antarctic Ice Sheet at Byrd Station revealed extremely interesting information. The age of this 2 164 m core is estimated from measured accumulation rates and is nearly 100 000 years. This enormous ice mass which gradually moves to lower levels is separated from the underlying rock surface by a water layer. The core has provided an unusual opportunity for stable-isotope study especially of the O^{18}/O^{16} and D/H ratios. The values which have been obtained show that in the course of time the temperature has varied considerably. The curve thus constructed reveals the extremely interesting fact that during a long period from 75 000 to 11 000 years ago the temperature in Antarctica was lower than today. This cold glacial period reached its maximum about 17 000 years ago when the temperature decrease can be estimated to have been 7-8°C. This data is of very great importance as research in many different fields has established that the well-known last glaciation of the Northern Hemisphere had the same duration as the cold period of Antarctica. This evidence strongly supports

continued on page 70

*Marioneiland:
Kildalkey Baai met
Greenhill in die agtergrond.
Op voorgrond Macaroni
pikkewyne en in agtergrond
Konings pikkewyne.*

Foto: E. M. van Zinderen Bakker)



A Day in the Life . . .

by A. C. Woods and D. W. L. Scorgie

(SANAE II)

FRED BLOGGS was up till 0230 this morning. He had hoped to have an early night, but the Whistler's micropulsations had showed definite signs of activity, and then the Geomag had come downstairs shouting, "Aurora! Aurora!" Knowing how quickly auroral activity can subside, Fred screamed up the ladder with a half-frozen tripod under his arm and his trusty old camera slung stranglingly around his neck. Unfortunately, in his haste he omitted to don windproofs and Onitsuka boots, essential items for anything but the briefest sojourn outside when the temperature is 40 below.

Reaching the hatch, Fred heaved himself out and collapsed onto the cold, crisp snow. Several minutes passed while he regained his breath after the exertion of hoisting his heavily laden bulk the 14 metres to the surface.

Eventually Fred was able to take an interest in his surroundings. The Met boys were launching the evening's balloon and the skivvy¹ was shovelling snow down the chute to the snow-melter. Nobody seemed aware of any aurora, and no wonder, for Fred had to search the sky intently before he found the disappointingly faint glow on the horizon to the south. "Oh well, I guess it'll come again just now. It always does." Or so thought our hopeful, but unbeknown to him, the micropulsations had pulled a fast one on him and had quietened down completely by then.

Meanwhile, there stood our hero in iced-up slippers with everything set up, waiting for the fancy pulsating lights. For two hours he jumped up and down and ran around, tripping over sastrugi in the dark, in a vain attempt to keep warm. With still no sign of anything spectacular, he decided to take a photo of the dull glow, having gone to all the trouble of setting up his camera and tripod in the first place. "Let me see now. Twenty seconds exposure should be okay," he estimated, and pressed the cable-release, counted to twenty and then released it. However, there was no encouraging "cluck" of the reflex mirror returning to position. "Dammit, stuck again!" Fred exploded. Hoping the mirror might jump back, he tried cocking the camera, but he was cold and tired and cocked too fast, with his clumsy frozen fingers. With a sickening jerk the film tore, and muttering quite unquotable profanities, Fred packed up and headed for the hatch.

Back inside the base, Fred stowed camera and tripod in an empty food crate in the snow passage, and hurried to the kitchen-cum-dining-room-cum-living-room. The room was deserted except for the Sanae and Borgia leaders, who sat poring over the chess board, and the



Aurora! Aurora!

(Photo: JARE 67-68)

duty meteorologist relaxing contentedly in a chair before the stove, his stockinged feet in the oven. Acknowledging the grunts of those present, Fred headed for the stove, where he immediately proceeded to thaw out his numbed fingers, after which he fixed himself a mug of steaming coffee and joined the pair at the chess board. This was the third and final game against the neighbouring Novolazarevskaya Station, the first game having gone to the Russians, the second to Sanae. Scenting blood the chess experts in the team were now doing their utmost to win the series. If they succeeded, it would be the first time in the history of Sanae.

To Fred's polite inquiry concerning the progress of the game, the Borgia leader, with a predatory gleam in his eyes, promptly predicted the imminent defeat of the Russians. A sceptical Fred was soon embroiled in an involved argument over the optimum reply to the Russian's latest tactic, which had to be transmitted the 500 km to Novolazarevskaya at the next radio sked.

Presently they were joined by the Beeswagter², out of phase as usual, looking disconsolate and uttering dark threats against a certain 15MHz oscillation, which was apparently ruining the digestion of his ionosonde. The conversation thereupon took such an engrossing turn, that it was past two when Fred next noticed the time. With a cry of dismay he jumped up, took his leave of the night-owls, and beat a very hasty retreat in the

Poring over the chess board.

(Photo: D. G. Torr)

direction of the sleeping quarters, resolving to sleep until 1130 and really settle down to some work the next day.

At 0230 Fred crawls into his sleeping-bag with a sigh, but he cannot sleep – he has forgotten to visit the Palace.³ Grunting and groaning, he heaves himself erect, stumbles into the snow passage and trying to remain as drowsy as possible, makes a lightning 100-metre dash to the Palace and back, hitting his head three times on protruding wooden beams on the way and getting showers of ice crystals down the back of his diesel-stained vest in the process. Completely wide awake as a result, he takes three hours to fall asleep, and is just nodding off when a voice in the darkness calls out, "Lunchtime! Lunchtime!" Fred gropes for his watch: it is 0900. "Good grief! How can they have lunch in the middle of the night like this?" he protests, and turns over. "No, I'm darn hungry," he reflects, "and after all, there was fish for lunch yesterday, so at the very worst it can only be pork luncheon roll today."⁴ Let's go!"

He drags himself out of bed and staggers around looking for the pullcord for the light, which he left out of reach by mistake last night. However, in fumbling about, he upsets the elaborate system of tins and pipes he constructed a week ago to stem the rising tide of cold water caused by the leaky roof of his room. The whole sleeping quarters echoes to the sound of falling beer cans, overturned paraffin tins, and gushing water, followed by a string of obscenities from the room next door, where the Bees has only just got to bed.

Twenty minutes later, with his room again semi-seaworthy, Fred heads down the corridor, only to be halted by a voice from the doctor's "insulting" room: "Hey, don't forget to weigh yourself!" Swearing quietly to himself, our hero turns into the bathroom, sheds his clothes and stands naked and shivering on the scale, while fresh Antarctic air, at an invigorating -30 Celsius, wafts over him from a rent in the inlet to the Wanson heater.⁵ Through bleary eyes, and with not a little dismay, he notes that he has put on yet another 5 kg.

At length Fred arrives in the kitchen, half-dressed, dishevelled and late. The boys are already tucking into a delicious meal of braised steak and spaghetti. With nostrils dilated and stomach rumbling loudly at the



sight of all this lovely nosh, Fred lunges for his fork as the skivvy obligingly deposits a huge helping in front of him. But Fred has been followed into the kitchen, and immediately the familiar phrase, "Ah! Another victim!" freezes him. "Oh ghrieks, it's blood and spit today,"⁶ he remembers reluctantly, and curses the Bloodsucker's injunction not to eat anything before these "appointments". Not one to give up easily, Fred tries a little cunning: "Hell Doc, I've already had something to eat. What about tomorrow?" The Doc is too smart for that. "Bad luck!" is his rejoinder, and off goes another victim.

In the hospital, Fred must first chew a tasty morsel of paraffin-wax, its delicate flavour suggestive of gunpowder and sennapods, dribbling the liquid thus generated into a small bottle. He then has half his blood supply tapped off for shipment back to the Republic, and finally is ordered to preserve some less-precious liquid in a mid-stream sample. After the ordeal, face drained of all colour by the loss of such enormous amounts of fluid, Fred crawls back into the kitchen, eyes his ice-cold food for a moment, and storms out, having lost all desire for solid nutriment!

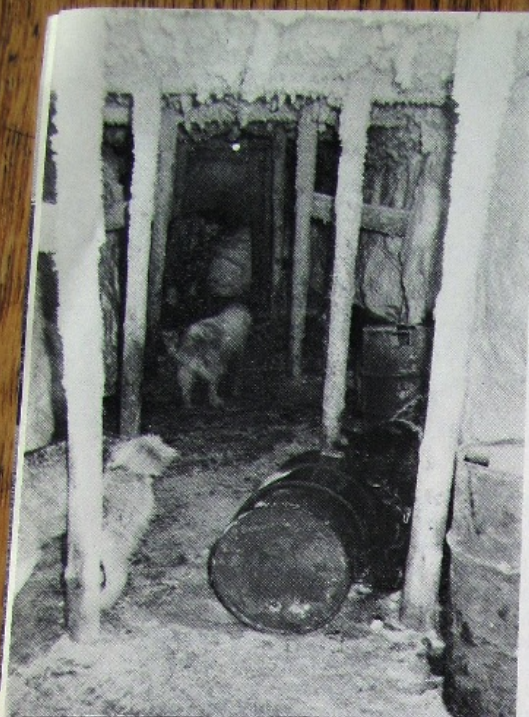
After this traumatic experience we find Fred in his office, where he works until teatime preparing data for transmission to his University. "Should I risk going to tea?" he wonders. However, by this time he has built up a tremendous appetite, and the thought of some toast and honey is irresistible. Fred trots along to the kitchen and makes straight for the "squeak-squeak" machine, a device known in much warmer climes as a breadslicer. Poor Fred! There are only a few hard crumbs left. "Damn those midnight-snackers! Well some coffee would be nice." He skates across the diesel-coated floor to the stove and grabs the kettle on the way past. Owing to the marked slope of the floor at this end of the kitchen,⁷ even the most prodigious running on the spot doesn't help him maintain his position next to the stove, and he glides down to the sink, with the coffee-pot in one hand, mug in the other, pouring all the way. After three minutes of violent exercise, he manages to overcome gravity and the coefficient of viscosity of diesel-fuel, climbs back past the stove and dives into a chair before the slope can recapture him.

At this juncture the duty baseworkers⁸ troop in, eddies of chill air swirling about them, stamping snow from their boots with shouts of "Tea! Tea!" Gloves and

Night-owls.

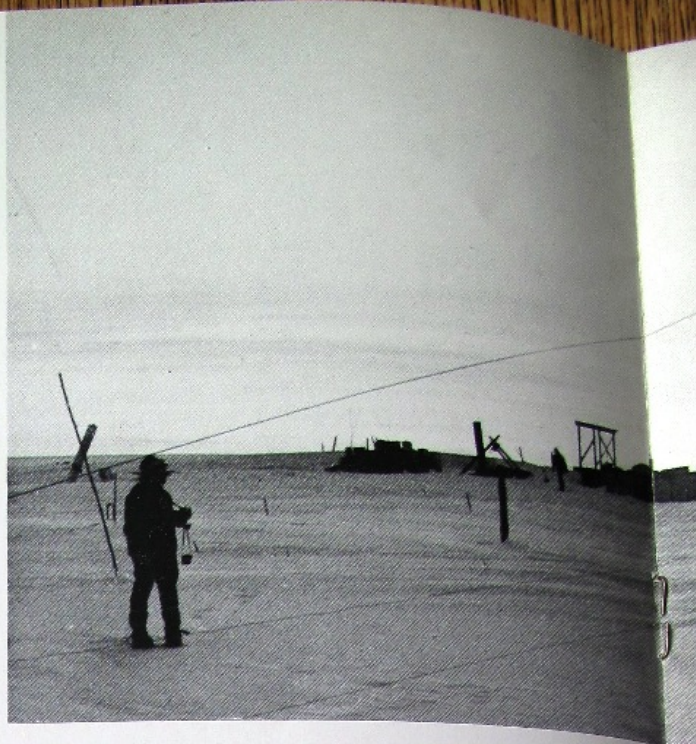
(Photo: D. G. Torr)





Snow passage.

(Photo: D. G. Torr)



Sanae Base.

(Photo: D. W. L. Scorgie)

balACLAVAS are shed, the latter only after considerable travail, due to the large amounts of ice glueing beards to the wool. Ungainly in outside Onitsuka boots, bulky clothing and winter anoraks, the boys slump tiredly into chairs, while a solicitous cook brings on mugs of strong, hot tea, and a large tin of biscuits. While rapidly demolishing tea and biscuits, they complain bitterly of the insidious behaviour of drift snow in Antarctica. At the emergency base, about 1,5 km from the main base, they have been endeavouring to clear the two short passages, completely blocked with snow from floor to ceiling. This unfortunate situation arose as a result of several snowstorms, when the drift snow filtered in through narrow cracks between the corrugated iron walls and roof of each passage.

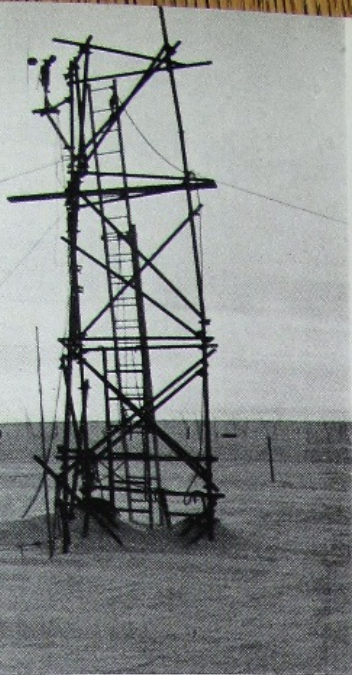
In one's and two's the remaining members of the team arrive for tea, except for the odd few who are out of phase and will not be roused from a sound sleep. The atmosphere in the kitchen is suddenly warm and congenial; there is much friendly banter and swopping of apocryphal anecdotes, even after the baseworkers and those with pressing duties have dispersed. Fred is just settling back with a second mug of tea, when the Doc saunters up, and, his face lighting up, enquires gently, "Doing anything after tea?" This innocent remark throws Fred into a violent fit of choking and coughing. "Oh Blimey, not again!" he complains, spluttering tea all over the place. He does not need to be told that he is required for the dark adaptation test,⁹ and admitting defeat, he is led off by the Doc.

The hospital is pitch black and Fred sits at one end of a large wooden box looking at some small hazy objects at the far side. "Just tell me which way the three E's are pointing" the Bloodsucker says. An hour later, eyes completely strained by this nightmarish work, Fred stumbles out of the hospital and feels his way down the corridor towards his room in the sleeping-quarters, all lights naturally having been carefully removed by the good physician. Before he has gone two paces, the silence

of the hospital zone is shattered by the sound of a fire-extinguisher bouncing along the floor. Fred follows in a horizontal position, his forward motion impeded by the heavy bathroom curtain, and ultimately brought to a clattering halt by several empty paraffin tins, used for carrying bath water. As he staggers to his feet, Fred is harangued for his intrusion by a pale, plump, hairy apparition sitting in five centimetres of tepid water. It is the skivvy enjoying his hard-earned, fortnightly bath. Mumbling his apologies, Fred limps off to his bedroom, flops onto his bunk and contemplates the pin-ups on the wall, in an effort to untangle his knotted nerves.

When the skivvy calls him to supper, Fred's spirits are revived somewhat by the sight of the scrumptious tucker laid on for the evening meal. "Gee, fresh meat and wine! Great!" The dinner is excellent and over coffee, replete and satisfied, Fred adds his voice to those yelling, "Sticks, sticks!" and attempting to drown out the counter-cries of, "After bridge, after bridge!" from the card fanatics. The two pastimes are mutually exclusive because of the lack of space – hence the fierce competition. Suddenly a familiar voice breaks through the general babble, "Ahum. I won't be a moment, but before you start anything, I'd just like to measure your skin thicknesses."¹⁰ All thoughts of snooker are abandoned, and our hero doffs his shirt and joins the grumbling queue. At length the Doc is finished and picks up his calipers, specially pre-chilled in the snow passage for the occasion, and departs.

The worthy medical gentleman has no sooner left when a shout of "Lights! Focus!" rings out and is met with an enthusiastic reception. "Ah, movies!" thinks Fred, and while the projector is set up, he joins in the argument over the relative merits and demerits of "Bachelor in Paradise" and "Where the Boys are". But alas! At this moment the Doc returns with a pile of Personnel Research Questionnaires.¹¹ There is a loud collective groan from everyone. "Alright, alright," says the Doc. "It won't take you a minute to fill them in."

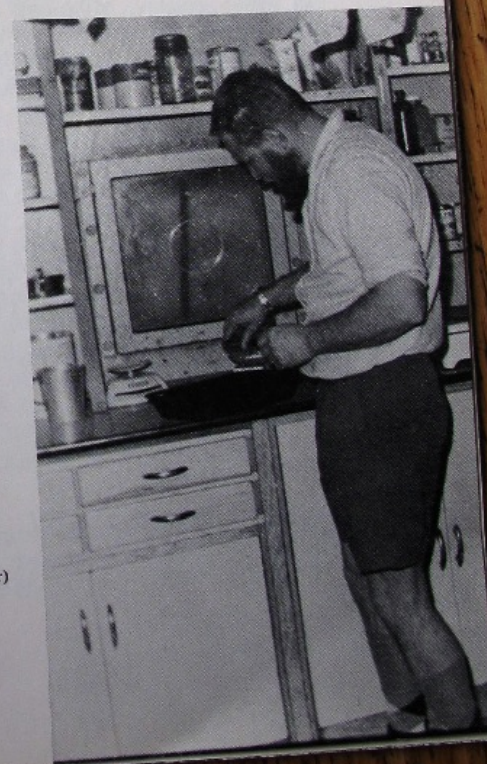


And he's right, it takes more than a minute. By the time Fred has completed the odious task, he is ready for bed. As he hands in his papers, the Sanae leader reminds him that he is on basework detail tomorrow - shovelling snow at the emergency base. All that poor Fred can manage by way of reply is a weak croak. And to add insult to injury, the junior diesel mechanic sees his discomfiture and with a really malicious sense of humour, points out that his three-day cooking turn is due in a few days, and that he is skivvy for the day immediately following. Before any further disasters can befall him, Fred says a firm goodnight to his team-mates laughing at his bad luck, and goes to his room, via the Palace, his day completely ruined. It is fortunate, Fred reflects, that such days occur only once a month.

Explanatory Notes

1. Turns are taken in rotation by every team-member at being skivvy, or general house mouse. His duties include (amongst others) cleaning the base, laying and serving at table, pumping diesel fuel to the stove and various building heaters, and shovelling snow into the snow melter to ensure adequate provision of water for the day. In return for his labours, he may bath and wash his clothes that day, provided of course that he doesn't leave the snow-melter empty as a result!
2. The Ionosphericist at Sanae is fondly known as Beeswagter. This results from the fact that his instrument, the ionosonde, causes interference to the radio services while it is operating and hence has come to be known as the "Beast" by the radio personnel. Conversely, the Beeswagter can only service and repair the Beast when radio schedules are not being kept. Hence he usually works during the night shift and is thus "out of phase" with most of the other team-members working normal day-shift.
3. Otherwise known as the Toilet.

4. Although there is a large variety of tinned and fresh meats available and a very large number of ways of preparing them, inevitably there must be a fair amount of repetition of various types throughout the year.
5. Most buildings are heated by huge diesel-fired heaters, which draw cold air through a ventilation shaft from the snow surface 14 metres above the roof.
6. Amongst his other duties, the doctor takes monthly samples of blood, saliva and urine for analysis by medical research authorities in an attempt to ascertain the body's reaction to extremes of temperature and long periods of isolation.
7. The heat of the stove and the hot water in the sink caused the floor in that part of the room to sink slightly with respect to the rest of the building.
8. There is a tremendous amount of work to be done in an Antarctic base. Food supplies for two years and fuel drums for the power generators, vehicles and heaters (approximately 1 500 of them), spare parts and building materials - all these have to be kept reasonably accessible, and dug out regularly from under the tons of drift snow covering them after blizzards. In addition there is a great deal of maintenance work to be done, and for these purposes days are set aside, when all members of the team participate in this "basework".
9. Another of the doctor's duties. At intervals of a few months, team members have to accustom their eyes to the dark and then try to distinguish various objects as their light intensities are increased. This experiment is aimed at ascertaining whether the eyes adapt to the dark as a result of the long winter months in Antarctica.
10. Skin-fold thickness is measured at regular intervals to see whether this varies as the body adapts to the cold.
11. The doctor was also responsible for supervising the completion of "Personnel Questionnaire Forms" which were again handed out every few months in order to determine whether there are any psychological changes during long periods of isolation.



Lunch in preparation.

(Photo: D. G. Torr)

News Letters - Nuus Briewe

SANAE NUUSBRIEWE/NEWSLETTERS

October 1971

The 23rd October proved a rather fatal day for the ionospheric program. The 70F antenna was damaged in a strong surface wind, gusting to 80 knots at times. A backbreaking job awaited Ray, who had to dig up the groundpost of his antenna, where accumulation during the year was nine feet.

Gustav, Mike and Johan reached Grühnegna on the 18th where they were met by a very excited Borga team. It was the first time in nearly ten months these five fellows saw other faces. On the 28th the Borga team left on the first leg of their summer program from Grühnegna base where they stayed the whole winter. They left in the direction of the Viddalen Glacier, where Trevor will do some echosounding runs to determine the depth of the glacier. Gustav's party proceeded deeper into the mountains to the Borga base - about 140 km from Grühnegna. This trip took them only 20 hours and they travelled right through the night.

Theo, Howard, Carl and Tom left for Draaipunt, at the beginning of the hinge area, on the 27th, reducing the manpower at Sanae base to six people. They have since then returned and were away only six days.

The Huskie population has increased by 12. Unfortunately four of the pups did not survive.

A lonely skua was sighted a few days ago and one or two petrels.

We all suddenly realised how short our time is still here at Sanae.

December 1971

Although we had no severe storms during December, the weather remained in general cloudy with a relatively high occurrence of snow and driftsnow. Bad visibility and the influence of the soft snow on the surface delayed progress of the field parties considerably.

A further setback came on the 3rd when the caterpillar in which Gustav, Mike and Johan were travelling fell into a crevasse near Marsteinen. All other field parties had to aid them in retrieving the caterpillar which fell in rather badly. On the 10th the caterpillar was safely out

of the crevasse, luckily without sustaining serious damage. At this stage two-thirds of the team was in the field while only six remained back at the main base.

Mike and Johan returned to Sanae base on the 20th after being away for 95 days. Gustav and Louis arrived late on Christmas Eve with the dog team after travelling in rather unpleasant weather to reach the base before Christmas.

The people in the field spent Christmas day in two separate parties. The one party spent most of the day travelling in the vicinity of Muskeg Depot, thus making full use of a break in the weather, while the other party, consisting also of four, were at Fasetfjellet doing geological work.

Back at Sanae the year was ended on a rather high note by digging out 700 drums of diesoline and petrol in four days.

Januarie 1972

Januarie het besondere goeie weer opgelewer en was die maand met die kalmste winde van ons hele verblyf op Sanae.

Dit was egter net die wind wat kalm was want andersins was Sanae behoorlik in rep en roer. Op die nag van die 20ste het die *RSA* aangekom in Otterbukte nadat dit vir vier dae gesukkel het om deur die pakys te kom. Aflaaiery het enkele ure na aankoms begin.

Die Borgaspan is op die 26ste terug verwelkom by Sanae na elf maande van veldlewe. 'n Baie suksesvolle jaar vir sowel die geologiese as eggopeilingsprogram.

Sanae 13 is op die 29ste amptelik op Sanae verwelkom. Die feit dat hulle uitsien na die jaar se werksaamhede wat voorlê kan niemand betwyfel nie want Gordon, die nuwe senior werktuigkundige het vir Mike bygestaan om die ete vir die geleentheid te berei en beide Senior werktuigkundiges is ongetwyfeld net so vaardig voor die stoof as voor een van die Deutz masjiene in die kragkamer.

Alhoewel niemand dit wil glo nie kan die besondere goeie weer miskien toegeskryf word aan die oorvloed van weerkundiges wat tans hier teenwoordig is. Behalwe vir die normale ses van Sanae 12 en 13 is hier nog Colin Read, 'n Britse Antarktiese waarnemer wat twee jaar

Entrance to Sanae mechanical workshop.

Photo: D. W. L. Scorgie





Husky puppies romp in the snow outside the entrance to Sanae old base.

(Photo: D. W. L. Scorgie)

op Halley Bay deurgebring het as weerkundige en ook Ian Norton wat vir 'n paar maande by die weerburo in Pretoria gewerk het. Ian sal verantwoordelik wees vir 'n seetravers op pad terug.

Ons wens vir Sanae 13 'n baie voorspoedige en gelukkige jaar toe op Sanae.

February 1972

After a fairly easy passage through the pack-ice, the RSA arrived at Otter Buckta on the 20th January, Unloading of the ship was completed within a week. This was followed by a rather chaotic take-over period and on the 6th February we bade farewell to the old team and the RSA. The new team quickly settled down to the daily routine of Antarctic life.

Gordon, our senior mechanic, somehow got involved in a fight with a diesel drum and had to admit defeat when the drum claimed a piece of finger.

On the evening of the 13th February the Borga team got away to a flying start and 13 days later we were informed that they had arrived at their destination in record time.

Many attempts have been made at taking the dogs for a run but as yet the doctor and his helpers haven't succeeded in progressing more than half a mile from the base.

Weatherwise nothing spectacular has happened except on the 19th of February when the pressure dropped 25,1 millibars in 24 hours but no more than a moderate easterly wind was experienced the following day. Antarctica seems full of surprises for us all.

MARION ISLAND/EILAND NEWSLETTERS/NUUSBRIEWE

September 1971

Die maand September word gekenmerk deur die koms van die lente wat vir ons beteken dat die voëls, see-olifante en pikkewyne begin terugkeer, 'n teken dat die somer net om die draai is. In teenstelling hiermee is die gemiddelde temperatuur van 3,1 grade Celsius laer as dié van laas maand. 'n Minimum temperatuur van 6,5 grade Celsius is op die 17de gelees, dit is sover as wat ons kan nagaan die laaste temperatuur in negentien jaar. Iemand wat definitief nie baie beïndruk was met

hierdie lae temperatuur nie is John, want nie minder as sewe waterpype kon nie hierdie koue weerstaan nie.

'n See-olifantbul is al vroeg hierdie maand op "Boulder Beach" opgemerk. Sy grootte het die meeste van ons verwagtinge ver oortref. Later die maand het Henk en Koos op 'n uitstappie na "Bullard Beach" op elke strand 'n bul en 'n paar koeie gesien. Len het ook teen die einde van die maand reeds die eerste see-olifant-kalfie opgemerk.

Die skuas verskaf baie vermaak met hul grasie en spoed en kos na hulle in die lug opgegooi word. Dit is niks snaaks meer om iemand te hoor sê dat hy sy skuas gaan voer nie. Dit is seker geen wonder dat 'n stuk of dertig skuas permanent by die basis bly nie.

Twee verjaarsdae is hierdie maand gevier, Fanie op die sewende en Koos se mondigwording op die negende. Aangesien die datums so na aan mekaar lê is een groot partytjie op die negende gehou. Fanie, Greg en Henk het hul talent as banketbakkers getoon en suksesvolle koeke is gebak. Almal het hand gegee en 'n vyfster hotel ete is die aand voorgesit. Uitgevat in die beste klere tot ons beskikking, met das en al, is die verjaarsdae op gepaste wyse gevier.

Ons is seker Fanie en Koos sal hul verjaarsdae op Marion nog lank onthou.

Vrye tyd word hoofsaaklik bestee aan "Operasie basis opruim," en fotografie. Met die terugkeer van die dierelewe kan die fotografe meer van onderwerp verander. Len bestee van sy vrye tyd aan die bou van 'n outomatiese weerstasie; sy planne is in goeie ontwikkeling. Allen is die man wat hom oor die skape ontferm; ons weet nie of dit sy aptyt vir skaapvleis is wat hom gereeld die skape laat terugbring kraal toe nie of dat hy voel hy het so bietjie oefening nodig nie.

Die meeste Gentoo pikkewynkuikens is al uit die nes. Nog geen Rockhopper- of Macaronipikkewyne is terug nie en ons sien uit na die koms van die parmantige Rockhoppers volgende maand.

Groete aan al die manne op Sanae en Gough.

October 1971

The gradual improvement of the weather during the month was welcomed by everyone after being house bound for several months.

High pressure systems prevailed sometimes for several days resulting in calm cloudy days and occasional partly cloudy days. On these wonderful days everybody, except the cook of the day, would be out wandering around enjoying the pleasant sunshine, even the two cats stretched themselves out on a catwalk and slept happily.

Around Marion house the numbers of Skua's which had increased during the month entertained often with spectacular air shows. A piece of meat held in out-stretched fingers would be neatly snatched as a Skua manoeuvred into position and hovered for a few seconds. Tempers would flare up when a dozen or more Skua's competed for a scrap of food on the ground. The strongest would drive off the others, stretch out his wings backwards and cry his defiance - meanwhile a sneaky Skua or some paddies would have run off with the titbit while his back was turned.

Opportunities for repair work to instruments and general maintenance and cleaning up has also increased with the coming of fairer weather. The sheep enclosure was torn down as there were only five sheep left and in the future frozen meat would be kept in deep freeze refrigerators.

Odd bits of news concerning the French ship *Gallieni* reach us now and then. The possibility of four biologists joining the team in December is welcomed by all who long for new faces and fresh conversation.

To the new "Goughs" we the Marionites - Len, Henk, Allen, Greg, Fanie, John and Koos - wish them a pleasant stay. We hope those chaps who are staying for their second year enjoy it just as much.

Greetings to all the boys at Sanae.

January 1972

The new year was welcomed with much merriment and talk generally centred around the three remaining months which everybody thought would fly by swiftly. All too soon, we said, the *RSA* would be anchoring in Transvaal cove again. Since New Year's day was a pleasant sunny day, everybody chose to spend it outside. Fishing was the main activity of the day and by the afternoon enough fish had been caught to enable us to have a fish and chips supper. For the occasion John produced two bottles of excellent late harvest wine which complemented the fish dish excellently.

Soon after new year the biologists left on an exploratory excursion to Crawford Bay about a quarter of the distance around the Island. Here they established a food depot for their later circumambulation of the Island. They arrived back at the base a few days later much enlightened concerning weather conditions and the terrain they would have to negotiate.

Soon after their return John and Allen set off to circumambulate the Island following the coast as far as possible. Radio contact was established with them regularly and their progress was followed with much interest. Their progress was slow and they faced a fair amount of adverse weather. Seven days later they came ambling in looking like a pair of muddy tramps. Their excursion had been difficult but interesting. They brought back a rusty rifle and other relics left by the last of the sealers at Mixed Pickle Bay.

The surprise of the month was the sighting of a ship on the night of the 9th. Koos signalled it for identification but to the amazement of all it dowsed most of its lights and sailed on without signalling back. It was thought

that it was probably an Antarctic supply ship or fishing vessel. The suggestion that it was a spy ship of a "certain foreign power" cannot be ruled out either.

Another celebration was held on the 13th when Ant pointed out that to the day it was two hundred years since Marion-Dufresne discovered Marion Island on the 13th January, 1772. Marion-Dufresne was toasted loudly with champagne.

The second half of the month went by practically uneventfully. The weather generally had been more pleasant than during December and the first half of January.

We wish to extend our wishes for a successful and a pleasant stay at Sanae to the new team. Greetings to all on Gough and to friends and relatives.

February 1972

The presence of several high pressure systems during the course of the month resulted in some exceptionally pleasant days. The relentless march of successive frontal systems with rain and gale force winds, however, continued to hamper the biologists in their field work. On the morning of the 19th, one of those rare thunderstorms occurred. This was of an intensity that had not been experienced before by those of us that knew thunderstorms of Marion standards. Over 39 mm were recorded in three hours. During the night of the 20th and the morning of the 21st 48.5 mm of continuous rain fell in a period of 17 hours. Rainfall of this intensity is also rather rare.

One period of favourable weather occurred from the 4th to the 6th. This was fortunately chosen by Johan for a trip into the mountains. The aim was to collect biological samples and to "conquer" President Swart Peak. Johan, Ant, Val and Len set off and camped at the foot of First Red Hill. The evening was perfect and the beauty of the escarpments and coastal plains stretched out below them as the moon rose over the sea.

The rising of the sun brought with it another perfect day. Over rugged lava and bleak plateaux they continued till they reached the snow line. Here sunglasses were donned. They continued past Bald Peak and Jan Smuts Peak and the final climb to the summit of President Swart Peak. The panoramic view was unbelievable. That the forces of nature could have wrought such beauty in monuments of lava rock is beyond comprehension. Like children, four grown men played in the snow. Some had never even seen snow close-up. Much enjoyment was derived from sliding down slopes in oilskins. It was rather a pity that they eventually had to leave.

An important cricket match was played one Saturday afternoon. It was the "second test match". Whom each side was representing was obscure, but good fun was had bowling, fielding and slipping in the mud. Some fielders, in the form of Skua's, however, wanted to fly off with the ball.

Koos chased a large white cat one evening - only to find it was a sheep. Koos was the hero of the day. However, this sheep had a shrewd idea about the glint in some team members' eyes. He made a rapid departure the following morning at sunrise. But Koos, not to be outdone, found him and Fanie promptly curtailed his roving days. That day Koos won his second medal.

Looking around one notices that the young of the various birds are rapidly reaching independence of their parents. The adult birds are more free to fly or swim as in the case of penguins. Soon the migration of the

sterk winde sal vergemaklik. Daar is ook vir die eerste keer (sover ons weet) veiligheidsligte in die ballonkamer geïnstalleer.

Die bolug afdeling het 'n baie sterk aanval van "gremlins" ondervind. Hul gewildste front was middernag opstygings. 'n Heel paar ballonne het skaars die vereiste hoogte bereik, en die nuwe outomatiese ontvanger het soveel probleme gelewer dat ons die oue van die RSA afgehaal het slegs 'n paar uur voordat die skip sou vertrek.

Die hoogtepunt was natuurlik toe 'n C130 van die S.A. Lugmag hyskraanonderdele per valskerm op die Eiland neergelaat het. Almal hier het die reëlings wat getref is met belangstelling gevolg. Tydens die vlug het ons vir Les van radio bediener tot lugverkeersleier bevorder. Die weer, wat ons grootste kommer was, het saamgespeel. Die valskerms met die houers het almal baie na aan die teiken geval en twee dosyn fotografie

was hoogs tevrede. 'n Paar dae later was die hyskraan weer herstel en ons kon met die aflaaier voortgaan. Die verantwoordelikheid van Gough weer is bewys toe ons minder as 'n halfuur na die vlug QBI was.

Op die 21ste het ons die vertrekkende RSA met gemengde gevoelens dopgehou. Bly om weer die basis vir ons self te hê, maar jammer om afskeid te neem van die twee vertrekkende spanlede en 'n D.O.W. span met wie ons baie goed saamgewerk het.

Nou word daar elke dag hard gewerk om die Gough Hotel weer tot op 5-ster standaard te bring.
Groete.

J. R. van der Merwe

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

continued from page 61

the idea that during the ice ages the entire globe sustained lower temperatures. The real problem now is that the Antarctic Ice Sheet is much older than the sequence of five glaciations we know from the Northern Hemisphere. The ice cover on Antarctica started to grow about 4 000 000 years ago while the total age of the northern glaciations is estimated to be only 700 000 years. We must in this connection, however, realise that the growth of a glacier not only depends on a lowering in temperature but also on the availability of water vapour for the accumulation of the ice sheet.

The age of the Antarctic glaciation and its consequences is studied in detail by oceanographers who investigate the microfossils such as diatoms, forams, and radiolarians which are found in deep cores taken from the ocean bottom. The age of these cores is assessed with isotope analysis such as K/Ar determinations or with the palaeomagnetic studies of the cores.

The very interesting point now is that the results of our work on Marion Island and also in the whole of Africa is underlined by these new findings. Several years ago Dr. Coetzee in our Palynological Research Unit at Bloemfontein made a study of changes of the former vegetation on the tropical mountains of Africa. She found a strong correlation between the temperature variations of the Northern Hemisphere and tropical Africa. During the last glaciation of the Northern Hemisphere the average temperature in Africa was estimated to have been about 5°C lower than at present. Our study of the former vegetation on Marion Island a few years ago led to similar conclusions for the last 17 000 years. The geologist of our expedition to Marion Island, Professor Verwoerd, described from geological evidence a glaciation which must have covered most of the island roughly between 100 000 and 15 000 years ago.

I strongly feel that from this and more evidence from other parts of the world we can now conclude that the last ice age left its marks over the entire globe at the same

time. This conclusion is of much importance for our understanding of the changes which took place in the oceans. This last glaciation which lasted from about 70 000 to 10 000 years ago is known by different names. In Europe it is called the Würmian or Weichsel, in America the Wisconsin, in Asia the Valdai and in Africa we proposed the name Kenya Glaciation as the important evidence was first discovered there with our pollen analysis.

Research in this field will eventually give us very valuable information on different fields of study such as geology, soil science, climatology, oceanography, geobotany, zoogeography and also on the life and origin of man. I am very happy that we can discuss the physical problems of these questions this year at an international conference which I am organizing for SCAR in Canberra. These conferences are organised by the "Group of Specialists on the Quaternary of the Antarctic". The valuable data we possess from Marion and Prince Edward will be of much use for our discussion because of the geographic position of these "banana islands" between the greatest ice box of the world and the tropical continent of Africa.

Meneer, die President, ek het probeer om u 'n kort skets te gee van die wetenskaplike betekenis van ons Suidpooleilande. Ek het nie die tyd gehad om diep op die betrokke punte in te gaan nie, maar het probeer om te skets dat baie belangrike basiese ondersoek gedoen is en kan gedoen word oor die talle vraagstukke wat aan wetenskaplike probleme van wêreldomvang raak. Hierdie soort van navorsing kan ons alleen doen omdat ons die medewerking het van die Regering en in die besonder van die Departement van Vervoer, van die W.N.N.R. en die Wetenskaplike Komitee vir Antarktiese Navorsing, die Universiteite en ons wetenskaplikes en ook die morele steun van die Suid-Afrikaanse Antarktiese Vereniging. Dit maak dit vir ons moontlik om ons plek vol te staan tussen die hoogontwikkelde lande wat in goeie samewerking met ons streef na die edel doel om

die wonders van ons natuur te leer verstaan. Die wetenskap het 'n voortdurende kontak oor die landsgrense nodig sowel deur geskrifte as deur persoonlike ontmoeting. Ek wil die outoriteite dankie sê vir die ruim geleentheid wat ons in hierdie opsigte in ons antarktiese navorsing gebied word.

Monsieur Le Président c'est la coopération avec nos collègues dans les autres pays de SCAR qui est de très grande importance pour nous. Je pense à nos amis et

confrères de l'Angleterre, des Etats-Unis et de tous les autres pays, mais surtout aux savants français avec lesquels nous avons une relation très cordiale. Il me donne une grande satisfaction d'exprimer ici mes remerciements profonds pour le transport de notre équipe scientifique à l'île de Marion, île qui est nommé, comme beaucoup des îles dans l'océan du sud d'après son explorateur français.

Baie dankie Meneer die President.

NUWE BOEKE - NEW BOOKS

Dr. C. v. d. M. Brink, President van die WNNR, oorhandig 'n eksemplaar van die boek Marion and Prince Edward Islands aan mnr. B. J. Schoeman, Minister van Vervoer. Die boek bevat 'n verslag oor die Suid-Afrikaanse biologiese en geologiese ekspedisie na die twee eilande gedurende 1965 en 1966. Die Departement van Vervoer sorg vir die finansiering en die logistiek van die land se wetenskaplike ekspedisies na Antarktika en die Suidpoolgebiede. Die WNNR is Suid-Afrika se lidorganisasie in die Internasionale Wetenskaplike Komitee vir Antarktiese Navorsing (Scientific Committee for Antarctic Research - SCAR). As sulks tree die WNNR op as adviseur oor die Antarktiese navorsingsprogram waarvan die betrokke ekspedisie deel was. Dr. F. J. Hewitt, Adjunk-president van die WNNR, is ook voorsitter van die S.A. Wetenskaplike Komitee vir Antarktiese Navorsing wat verantwoordelik is vir die wetenskaplike beplanning van Suid-Afrika se Antarktiese navorsing.



MARION EN PRINCE EDWARD EILANDE

'n Prag-uitgawe oor die biologie en die geologie van die Suid-Afrikaanse eilande, Marion en Prince Edward, het pas verskyn. Hierdie twee eilande is van die min plekke op aarde wat nog nie deur die mens bederf is nie.

In 1965/1966 het die Suid-Afrikaanse Wetenskaplike Komitee vir Antarktiese Navorsing (WKAN) 'n ekspedisie daarheen gestuur onder leiding van prof. E. M. van Zinderen Bakker, die bekende paleoëkoloog van die Universiteit van die Oranje-Vrystaat. Hierdie eerste ekspedisie het hoofsaaklik die geologie en die biologie van dié interessante sub-antarktiese eilande bestudeer. 'n Omvattende monografie oor dié werk is pas gepubliseer.

Ryklik geïllustreerd

Die ryklik geïllustreerde werk is geredigeer deur E. M. van Zinderen Bakker, J. M. Winterbottom en R. A. Dyer. 'n Groep van 40 wetenskaplikes uit verskillende lande het gehelp met die verwerking van die waarnemings wat deur die ses ekspedisieledes gemaak is. Eksemplare van die boek is onlangs oorhandig aan die Minister van Vervoer, mnr. B. J. Schoeman, en ander hooggeplaastes van die Departement wat verantwoordelik is vir die finansiering en

logistiek van Suid-Afrika se wetenskaplike ekspedisies na Antarktika en die Suidpoolgebied.

Die eerste en belangrikste oogmerk van die ekspedisie was om die fisiese en biologiese aard van die eilande te bepaal, skryf prof. Van Zinderen Bakker in sy inleiding tot die monografie. Hoewel sekere gegewens reeds ingesamel is deur vroeëre wetenskaplike besoekers aan die eilande, was die twee eilande, veral Prince Edward, tot 1965 toe nog feitlik onbekend aan die wetenskaplike wêreld.

Hierdie taak is afgehandel deur die ekspedisieledes en die groot aantal kollegas uit ander lidlande van die Antarktiese Verdrag wat met die verwerking gehelp het. So is 'n belangrike leemte in die kennis van die sub-antarktiese gebied aangevul.

Hopelik, sê prof. Van Zinderen Bakker verder, sal die resultate van die Suid-Afrikaanse ekspedisie verdere navorsing op hierdie eilande stimuleer en dalk lei tot die vestiging van 'n moderne navorsingstasie op Marion sodat wetenskaplikes van verskillende lande 'n bydrae kan maak tot die kennis oor hierdie twee ongeskonde eilande. Soortgelyke stasies bestaan reeds op ander eilande in die Antarktiese gebied onder beskerming van die Britse, Australiese en Nieu-Seelandse regerings.

Scientiae Desember 1971.

MARION AND PRINCE EDWARD ISLANDS

A monograph on the 1965/66 South African expedition to these islands.

Editorial Committee: Dr. R. A. Dyer, Prof. J. M. Winterbottom and Prof. E. M. van Zinderen Bakker. Publishers: A. A. Balkema, 93 Keerom Street, Cape Town, South Africa. Price R22,50.

An expedition financed by the South African Government, was made to these sub-Antarctic Islands in 1965/66. A small team of geologists and biologists stayed on the islands for three and fifteen months respectively and collected as many data as possible. Marion and Prince Edward islands were previously little known to science and the results obtained by the expedition have revealed important information on the origin, the age and the geological history of these islands and on their flora and fauna.

Accurate maps of the islands have been drawn and their volcanic origin has been studied in detail. The glacial history gives valuable information on the world-wide lowering in temperature that occurred during the Würm-Wisconsin ice age and also on the age of the animal and plant life. The biological work, which was primarily concerned with taxonomic studies, is important for the understanding of the dispersal problems in the sub-Antarctic region, while extensive botanical investigations have given an insight into the ecology of the vegetation which is poor in species.

The general survey of the avifauna of these bird paradises is of great value, as the islands are completely protected. For instance, an analysis of the behaviour of the Gentoo penguin has provided a great many new details of the life of this bird species.

Many specialists have been working on the material collected by the expedition. The data on some of the groups such as the fresh water algae, the lichens, and diatoms have not yet been analysed, and some collections are still awaiting attention. This monograph covers the first stage of the biological-geological investigations of these islands.

The book contains 496 pages, 153 figures, 89 black and white photographs and 25 colour plates.

The list of contents is as follows:

Foreword: F. J. Hewitt.

The South African Biological and Geological Expedition: E. M. van Zinderen Bakker Sr.

Introduction: E. M. van Zinderen Bakker Sr.

PART I: GENERAL

1. *The climate of Marion Island*, B. R. Schulze.
2. *Topographic survey*, O. Langenegger and W. J. Verwoerd.
3. *Geology*, W. J. Verwoerd.

4. *Palaeomagnetic study of some recent lavas*, C. Snape and J. A. Retief.
5. *Geochronology*, Ian McDougall.
6. *Geochemical features of lavas*, E. J. D. Kable, A. J. Erlank and R. D. Cherry.
7. *History of the vegetation*, H. J. W. G. Schalke and E. M. van Zinderen Bakker Sr.
8. *Vegetation*, B. J. Huntley.
9. *Comparative avian ecology*, E. M. van Zinderen Bakker Jr.

PART II: BIOGEOGRAPHY AND SYSTEMATICS - BOTANY

10. *Musci*, B. O. van Zanten.
11. *Hepaticopsida*, R. Grolle.
12. *Preliminary microbiological studies*, J. J. Joubert.

PART III: BIOGEOGRAPHY AND SYSTEMATICS - ZOOLOGY

13. *The position of Marion Island in the sub-Antarctic avifauna*, J. M. Winterbottom.
14. *Birds observed at sea between Prince Edward Island and Cape Town*, E. M. van Zinderen Bakker Jr.
15. *Behaviour analysis of the Gentoo penguin* (*Pygoscelis papua* Forster), E. M. van Zinderen Bakker Jr.
16. *The genus Diomedea*, E. M. van Zinderen Bakker Jr.
17. *Pisces*, A. P. Andriashev.
18. *Echinodermata*, I. Bernasconi.
19. *Holothuroidea*, D. L. Pawson.
20. *Mollusca*, J. M. Gaillard.
21. *Araneida*, R. F. Lawrence.
22. *Oribatei*, R. van Pletzen and D. J. Kok.
23. *Ixodoidea*, Gertrud Theiler.
24. *Insecta*, Ph. Dreux.
25. *Diptera*, E. Séguy.
26. *Lepidoptera*, L. Vari.
27. *Curculionidae*, G. Kuschel.
28. *Mallophaga*, K. C. Emerson.
29. *Entomostraca*, W. A. Smith and R. L. Sayers.
30. *Tigriopus angulatus* Lang, J. R. Grindley.
31. *Isopoda*, J. J. Cléret.
32. *Polychaeta*, J. H. Day.
33. *Oligochaeta*, R. W. Sims.
34. *Hirudinea*, R. Ph. Dollfus.
35. *Hydrozoa*, N. A. H. Millard.
36. *Actinaria*, Ch. E. Cutress.
37. *Rhizopoda*, Th. Grospietsch.

Topographical and Geological Maps of Marion and Prince Edward Islands.

Scientiae December 1971.

RSA'S BLEAK YEARS IN THE FROZEN SOUTH

THE ETERNAL ICE, by Captain Kenneth McNish

Cape Town: Tafelberg

RSA, South Africa's hardy little ice-breaker, left on her maiden voyage to Antarctica in January, 1961. Two months later the ship was beset. Ice threatened to crack her bright red hull or imprison her for a full Antarctic winter.

RSA survived. She returned recently from her 11th voyage to SANAE - South Africa's base on the international continent. Captain McNish is still in command.

RSA operates beyond the reach of normal rescue. She must make her own way to Tristan da Cunha, Gough Island, Marion Island and, each January, to the ice.

When the ice closed in during March, 1961, the nearest help was in New Zealand - the American ice-breaker Glacier. It would have taken a month to reach the RSA.

Captain McNish tells of the endless days, running the ship back and forth across small pools of open water surrounded by ice, unable to break out. Each day brings winter a little closer.

The story begins with the building of the RSA in Japan and her maiden voyage to Cape Town.

Loading delays follow and the ship steams south in terrible weather. Petrol drums secured to the foredeck break loose night after night. Deck-hands, officers and scientists battle waist deep in icy water to secure the rampaging drums.

Unloading on to the ice shelf is no less laborious. The ship must make her own moorings and unload with her own cranes. Tractors and men can easily be lost in a few kilometres.

A new base is built: a series of pockets linked by ice tunnels. Exhaust heat is used to turn snow into usable water.

Delays are the great danger. The Antarctic summer is brief. Work is not complete when the ice begins to seal off the channels to the north.

Trapped, the ship is carried back and forth in drifting ice. Eyes hunt for a "water sky" - the reflection of open sea on clouds. Young men face a second year away from home.

What happens is Captain McNish's story of the Eternal Ice.

- G.S.
Rand Daily Mail