

Eric Boden—en natuurlik ook die Voorsitter en lede van die Komitee, geluk te wens met die sukses wat hulle hiermee behaal het. Natuurlik moet ons ook die Departement van Vervoer en die Weerburo gelukwens met die sukses wat behaal is met die oprigting en instandhouding van SANAE. En dan is daar ook die Departement van Buitelandse Sake, die naamlose krag agter die skerm. Volgens die inligting wat ek kon bekom, beloop ons jaarlikse uitgawes sowat R200,000. Dit is maar betreklik klein in vergelyking met Australië se uitgawes van R1,420,000 per jaar, en dié van Amerika wat R20,000,000 per jaar oorskry, maar dit is tog nie sleg vir 'n klein landjie wat maar onlangs eers die gebied van Antarktiese navorsing betree het nie.

Ek wil weer beklemtoon dat die niveau van ons Antarktiese navorsing deur die Regering bepaal word. Hierdie Vereniging het daarmee niks te doen nie. Daar bestaan ook wetenskaplike instansies op wie die verpligting rus om na die besteding van die fondse om te sien en te sorg dat die dienste wat as teenprestasie daarvoor gelewer word, sover moontlik aan die Regering se doel beantwoord.

Wat dan is die rol van hierdie Vereniging? Dat daar 'n behoefte aan so iets is, besef ons almal. Daarvoor is ons teenwoordigheid vanaand hier bewys genoeg. Maar ek kry tog die indruk dat ons 'n bietjie rondtas, dat daar verskillende opvattinge is oor wat ons eintlik beoog.

Tot dusver het ek probeer verduidelik wat dit *nie* is of behoort te wies nie. Dit is tog uiters negatief en dit is allermins 'n geleentheid hierdie om 'n negatiewe houding in te neem. Ek wil dus die geleentheid te baat neem om die Vereniging, en veral ons Sekretaresses geluk te wens met die sukses wat reeds behaal is in wat ek persoonlik as die regte rigting beskou.

Hiermee bedoel ek die bekendmaking onder die algemene publiek van ons Antarktiese bedrywighede. Hier voel ek dat daar 'n groot leemte bestaan en dat die Vereniging hom hierop moet toespits. Weliswaar is daar in hierdie rigting reeds veel bereik. Ek dink hier aan die verskyning van die "Antarktiese Bulletin", die

instelling van 'n Suid-Afrikaanse Antarktiese Medalje, en die instandhouding van 'n uitstalling in die Museum vir Wetenskap en Industrie van Suid-Afrika.

Nou wil ek aan die hand doen dat daar nog groter pogings aangewend moet word om die bevolking van Suid-Afrika in die algemeen meer Antarktikabewus te maak. Enersyds kan gesê word dat die sukses van ons pogings van mense afhang en, hoe groter die belangstelling in Antarktika en die eilandweerstasies, hoe groter die moontlikheid dat die regte tipe jongmanne daarheen getrek sal word. Andersyds, kan gesê word dat ons as volk nie genoeg in die see belangstel nie. Ons sit hier aan die suidpunt van Afrika en alhoewel ons eeu lank die oë op die binneland gerig gehou het en ons vooruurs en ander pioniers steeds die binneland ingebeer het, is dit, vir my altans, 'n uitgemaakte saak dat ons in die toekoms 'n volk van seevaarders gaan word. Ons Vereniging kan dus 'n diens lewer deur die bevolking meer bewus te maak van die see om ons en die verkenners op die eilande en in die verre suide.

Om dit te kan bereik, moet ons spesiaal daarvoor ingerig wees. Dit is betreklik maklik om lesings te reël waar mense wat reeds belangstel, bymekaar kom om regstreeks te hoor van ondervindings in Antarktika, maar dit is heelwat moeiliker om die algemene publiek te bereik. Ons leef in 'n tydperk waarin ons oorweldig word deur massakommunikasie-middels en, om die aandag van Jan Burger te trek, moet ons ook van hierdie massakommunikasie-middels gebruik maak. Ek dink hier bv. aan rolprente wat in die bioskope op die gewone programme vertoon word—of selfs aan foto's van hoë gehalte vir plasing in tydskrifte, koerante, ens. Hiervoor is die dienste van deskundiges nodig. Dit kos alles geld—somer baie geld. Maar dit is iets waarvoor die Vereniging hom kan beywer.

Daar is nou vir u 'n uitdaging!

Ek wens u alle sukses toe!

Nogmaals, hartlik dank vir die eer wat u my bewys het deur my uit te nooi om by hierdie geleentheid as spreker op te tree.

## SURVEYING IN THE ANTARCTIC

Sean Kavanagh, surveyor of SANAE III (1962), supplied the following summary of his talk before the Association on 24th February, 1964:

The purpose of surveying in the Antarctic falls into three definite categories:

- (1) Surveying with a view to the compilation of maps of a given area;
- (2) Surveying as applied to some particular field of study, such as glaciology or the study of refraction;
- (3) The supply of survey control for a variety of scientific programmes, such as gravimeter traverses, geomagnetic studies, meteorology and ionospheric studies.

Whenever a large area is to be mapped the method employed is that of mapping from aerial photographs. However, before these photographs can be utilised ground control points have to be obtained. This then is the task of the surveyor. Suitable points have to be identified on the photographs and fixed accurately in latitude and longitude. The photographs are usually available to the surveyor in the field, but if the two operations are being carried out at the same time, the surveyor has to resort to fixing all prominent points instead of a few selected points only. This means that large areas have to be covered and long distances traversed in order to complete the surveying. The field party would require at least two tractors as well as one or more helicopters in order to move about freely in the field; a light aircraft would be required in order to ferry supplies between the base and the field. Further aircraft and other facilities are required for taking the aerial photographs.

The above requirements would give rise to an expedition many times the size of the present South African expedition. It is for this reason that it was decided not to undertake any mapping in the Antarctic. Having made this decision, South Africa stopped sending a surveyor to the Antarctic. This is a pity because mapping is only one of the surveyor's three main functions in the Antarctic.

Most of the survey work carried out in 1962 was in connection with the study of ice movement. As the South African base is situated on an ice-shelf it is ideally placed for the study of relative ice movement. A base line two kilometres in length was measured in the vicinity of the base and was expanded by both triangulation and trilateration, giving a network of twenty points covering an area of approximately 400 square kilometres.

It was found that over a period of six weeks various angles in the network subtended by sides of about five kilometres in length were changing at the rate of  $1\frac{1}{2}$  seconds of arc per day. Various distances changed by as much as five metres over a period of three months. Most important, though, the increase or decrease in the angles or distances followed a fixed pattern, showing quite clearly that points which were nearest the edge of the ice were moving fastest.

Tellurometers were found to function well under all weather conditions encountered, even in temperatures as low as minus forty degrees Celsius. Difficulty was experienced in carrying out triangulation using a T2 theodolite as mirage and shimmer effects were at all times extreme. On one occasion the meteorological tower, which is six feet wide by eighty feet high, could not be seen from a distance of one kilometre. Generally conditions for triangulating over distances of from three to five kilometres were found to be suitable on only about two to three days per month.

The position of the base was determined from star observations carried out at a temperature of minus thirty degrees Celsius. Difficulty was experienced with the theodolite as both the object glass and eye-piece became covered with ice.

Survey information was supplied to the Geomagnetist, the Geologist, the Ionospherist, the Meteorologist and the Radio Technician. The value of the azimuth supplied to the Geomagnetist was found to change by 90 seconds of arc over six months due to ice movement.