

# Introduction

The *South African Journal of Antarctic Research* came into being because active scientists involved in the South African Antarctic Programme felt that there was a need

- to present the aims and achievements of the National effort as a whole, as opposed to publications scattered throughout the journals of various scientific disciplines. This was envisaged in the form of annual or biennial reviews of the advances made in each discipline
- for a rapid publication medium for preliminary results of special interest
- for a journal which could provide a publication medium for papers which did not warrant the wide circulation offered by a journal such as the *Journal of Geophysical Research*, but which would be of interest to a limited number of specialists in the field of Antarctic research.

## First Ten Years of South African Antarctic Research

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South African interest in Antarctic research dates back many years. During the International Geophysical Year (IGY) 1957/58, this found expression in participation in the British Commonwealth Trans-Antarctic Expedition under Sir Vivian Fuchs, and acceptance by South Africa of responsibility for the southern atmosphere weather analysis project. South Africa was one of the 12 member nations of SCAR\* and a signatory to the Antarctic Treaty.

This set the stage for more active research by South Africa, and the first South African National Antarctic Expedition sailed from Cape Town in December 1959 under the leadership of Mr Hannes la Grange of the South African Weather Bureau – who had been a member of the Fuchs Expedition. Through the courtesy of the Norwegian authorities the wintering-over expedition was able to occupy the base which the Norwegians had maintained during the IGY on the Fimbul Ice Shelf off Queen Maud Land. Since then, South Africa has maintained a station continuously in Antarctica. A new South African base, known as Sanae (70°18'32"S, 02°21'30"W), was built in 1962 some 21 km from Norway Station. All geological and traverse investigations were carried out from SANAE until 1969 when an additional wintering-over station was established – Borga Base, a four-man, inland station in the Ahlmann Ridge area (72°58'S, 03°48'W) some 350 km south of SANAE.

South African Antarctic activities are managed by the Department of Transport which also operates the Weather Bureau. The Department is responsible for maintaining weather observing stations on Marion Island (40°52'34"S, 37°51'40"E) and Gough Island (40°21'00"S, 09°52'40"W) and the Antarctic Station, Sanae, is a logical extension of these activities. In 1962 the Department acquired its own relief vessel the M.S. *RSA* (1572,92 tons) built to the Department's specifications in Japan.

Initially, the main scientific activities carried out at Sanae were those associated with a full range of weather observations including upper air observations. In developing a full Antarctic research programme, the Department has been advised by the Council for Scientific and Industrial Research (CSIR) which is the South African national member of ICSU and also of SCAR. A system of budgeting for five-year periods was instituted in 1963 and the co-

The form of the Journal has been specifically designed to meet these requirements. As the amount of material available for publication is likely to be limited, it was felt that more than one issue per annum was not warranted. To meet the second requirement above, it was decided that papers warranting rapid publication would be printed as separate issues of the Journal immediately on acceptance. To avoid the usual delays experienced in publishing scientific literature, these would be type-set with office composing equipment and reproduced by photo-lithography. Special covers will be used and figures and tables will appear in the text, thus ensuring that the irregular issues will not be mistaken for the unpublished preprints that have become common. These papers will also be included in the annual volume and a suitable page-numbering system is being designed to facilitate referencing.

The Journal will also welcome contributions from non-South African sources.

operation of the Government and the Department of Transport in providing funds on this basis has contributed much towards the long-term planning and stability of the programmes.

When the South African Antarctic research programme was initiated it was decided to concentrate on transient phenomena in the field of terrestrial physics as part of the South African contribution to the programme of the International Years of the Quiet Sun (IQSY) 1964/65. The fortuitous situation of Sanae in relation to the southern radiation anomaly was discovered in 1961 and led to a concentration of effort on the ionosphere, cosmic ray, airglow, geomagnetic and meteorological programmes. Continuous observing programmes have been maintained and these have improved and developed with experience of instrumental techniques in the inhospitable Antarctic environment.

The second five-year period has seen a marked expansion in the earth sciences programme, i.e., geology, glaciology, seismology and structural geophysics. The geological mapping has led to the recognition of the most ancient (older than 1 700 million years) platform deposits hitherto discovered in Antarctica. The scope of this programme has been greatly extended by the establishment of Borga Base from where the last remaining virgin mountain areas in Queen Maud Land were mapped during the summer of 1969/70.

Cartographic work has been limited mainly to support of geological, glaciological and geomagnetic programmes – largely because of financial limitations – but the possibility of a more positive contribution in this field is being examined.

The biological programme has been concentrated on the Marion and Prince Edward Islands. The main effort has been a biological/geological expedition to these islands, the results of which are being published in a monograph.

Oceanographic research has been limited mainly to recordings made on the relief voyages to Marion and Gough Islands and those to SANAE which have been extended along the Princess Martha Coast. Development of the oceanographic programme is being reviewed in the light of the possibility of participation in the proposed internationally co-ordinated Southern Oceans Project.

In the field of the human sciences a limited co-ordinated programme has been undertaken in relation to psychological adaptation of the teams as well as studies of virology and bacteriology in the Antarctic situation.

All these research programmes have been developed as extensions of well-established programmes at South African research institutions and universities. Reasonable permanence is assured through the system of budgeting for five-year programmes.

\*The Scientific Committee for Antarctic Research set up during the IGY by the International Council of Scientific Unions (ICSU).