

Penguins keep their distance

Mawson & Hobart

By next summer, Australia's Antarctic stations will be linked into a computer network system allowing year-round automatic data collection. At present, each base is linked to the outside world through four telephone channels. Two are direct-dialling telephone lines; one is a data circuit, operating at 4.8 kilobits, which is linked to the VAX computer network at the Antarctic Division headquarters in Hobart for the storage and retrieval of data, the transfer of meteorological data to the world's weather networks and the transfer of electronic mail; the fourth is a private PABX-PABX tie-line for the transfer of official calls and facsimile messages.

By next summer, this analogue satellite system will be upgraded to digital, according to Peter Magill, engineer-in-charge of telecommunications at the Antarctic Division. "The present four analogue voice channels to each station will be replaced by a single 512 kilobit digital carrier. A first for Antarctica, this will allow the data circuits to be quadrupled to 19.2 kilobits with the remainder used for between 8 and 10 public telephone lines at 32 or 64 kilobits each."

Fibre-optic Ethernet Local Area Networks are to be installed at the stations, creating a network of computers linked by satellite to VAX computers in the Antarctic and in Hobart. Scientists on the Antarctic continent will be able to talk directly to institutions linked into the network. The network will allow transmission of data from field stations all the year round.

WOMEN'S PLACE

Still an embattled minority

Mawson & Davis

Of the four station leaders holding the most senior position in the Australian Antarctic this year, two are women. According to Martin Betts, manager of planning and coordination, the Antarctic Division is making a conscious effort to boost the numbers of women on the Antarctic stations.

While the division denies a policy of positive discrimination, Betts admits that "when we query a person's suitability for a position — if it's a man we are likely to reject him, if it's a woman we are likely to say yes".

Many occupations at the stations, particularly the rebuilding programme, involve few women. However, in a survey of medical staff between 1984 and 1990, 22 per cent were female doctors, the same percentage of women doctors on the Australian Medical Register for this period.

Louise Crossley is one of two women selected for the positions of station leader. The other nine on the short list were men. "My impression is that the Antarctic Division are trying to increase the number of



The penguin weighbridge and custodian.

There will also be some environmental benefits. One of the first projects to be automated will be an Adélie penguin recording system on Bechervaise Island, near Mawson. The system, which records and weighs individual penguins as they move to and from their breeding colony, was developed by a team led by Knowles Kerry, a senior research scientist at the Antarctic Division.

Transponder tags, the size of a domino, will be implanted under the birds' skin. Each tag is powered by batteries that can process and download via VHF radio. Penguins arriving at the beach at Bechervaise Island must cross a detector and weighbridge to reach their colony. "Once this system is working, there will be no need to have researchers lumbering around the colonies weighing penguins and generally interfering in their lives", says Kerry. **T.E.**

women to the point where we represent half of the Antarctic population."

The Australian National Antarctic Research Expeditions (ANARE), the administrative arm of the Antarctic Division, is, according to Crossley, strongly paramilitary and traditionally male but is constrained by public service guidelines. "ANARE is a branch of the public service so the issues of sexual harassment and equal opportunity are, theoretically, covered by legislation. However, there are always sexual overtones. Some men on the station have never worked for a woman and find it hard to accept — particularly in such an isolated situation."

Of the 158 residents at the three continental bases this summer, 19 were female. On her second visit, Anitra Wenden, a doctoral student at Davis, found life easier. "The second time I felt less isolated because there were more women on the station. But the amount of attention on a small number of women is enormous and often the pressure is unbearable. This situation will always exist while there is such a large discrepancy in the sexes." **T.E.**

Long-distance flying

Melbourne

IN the summer of 1987, a self-confessed adventurer, Dick Smith, flew a modified light, fixed-wing aircraft to Australia's Antarctic stations, a distance of almost 3,500 km. Apart from being the world's first direct flight between Hobart and the Australian Antarctic Territories, the stunt provided support for those seeking an airlink to the Antarctic.

Of all the nations operating in the Antarctic, Australia has the longest supply lines, at present serviced by two icebreakers. The eight-week round-trip by sea is time-consuming and deters senior scientists from visiting the bases. All three continental stations are predominantly manned by junior scientists, students and volunteers. Many believe a system of intercontinental and intracontinental flights would improve the quality and scope of Australia's Antarctic research.

Opponents of the scheme, however, believe the distances travelled and the weather conditions would make an air support system hazardous and expensive.

In the summer of 1989-90, an attempt was made to build an airstrip at Casey. A freak snowstorm damaged vehicles and halted construction. The project was abandoned (see *Nature* 346,4; 1990). But tests, conducted that winter, simulating landing a 72-tonne Hercules aircraft on the compressed snow runway, were a success.

Casey is the only Australian station at the point of safe return — long-range aircraft can carry enough fuel for the return to Australia if a landing is impossible. Davis and Mawson lie beyond this point.

Professor Bill Budd, from the department of meteorology at the University of Melbourne, has recently prepared a feasibility study on an air service to East Antarctica for the US Cold Regions Research and Engineering Laboratory. Budd believes that with large planes landing at a compressed snow runway at Casey, light fixed-wing aircraft could proceed to Mawson and Davis. "There is an area of solid blue ice 20 km inland from Mawson, which, with a little preparation, could become an airstrip. At Davis we could use the landing strip at the Russian base, Progress, 80 km away, ferrying the passengers back on helicopters."

Budd sees an air system opening up Antarctica to new areas of research and an increase in senior scientists travelling to the continent. "Few senior scientists will take six weeks off for a few days' sampling. With planes we could bring these researchers in, not only in summer but throughout the year, if the weather is right."

But the director of the Antarctic Division, Rex Moncur, is less enthusiastic. "Any airstrip means additional support facilities and