

Obituary

Reginald Harry Clarke BA, MSc, DSc 1914-1990

Australian meteorology enjoys a high international scientific reputation. Few have contributed more to this achievement than Reg Clarke.

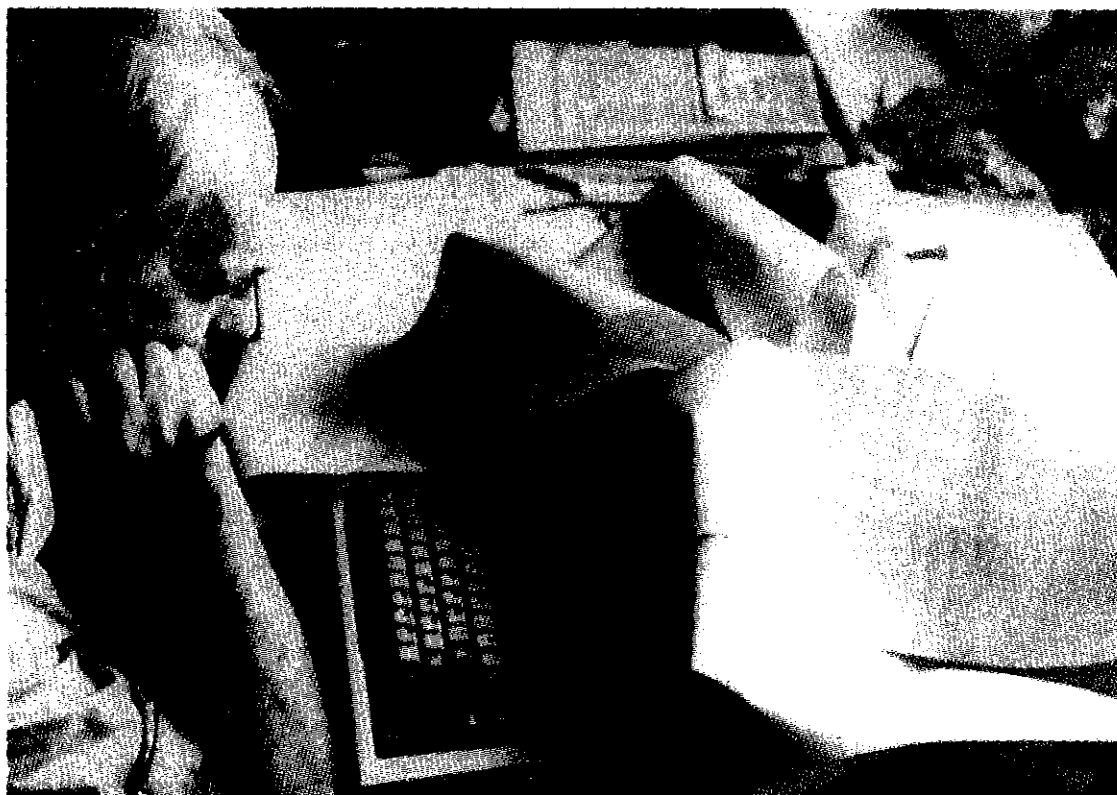
Reg Clarke passed away, after a long illness, on Monday, 12 June 1990.

He was born on 1 December 1914, the eldest of a family of eight children, and spent his early life on a farm at Melrose in the mid north of South Australia. He was a student at Gladstone and Adelaide High schools and won scholarships to Adelaide University where he received his Bachelor of Science and Bachelor of Arts degrees. He later received a Master of Science degree from Melbourne University. Reg taught at Quorn High School from 1939 to 1940 when he joined the Royal Australian Air Force's Meteorology Branch. In 1946, at the end of the war, he continued with its successor, the Commonwealth

Bureau of Meteorology, as Officer-in-Charge of the Canberra Meteorological Office. From 1949 he was a meteorologist in the Air Mass and Frontal Analysis Section in the Bureau's Central Office in Melbourne. In 1957 he joined the CSIRO Division of Atmospheric Physics under Bill Priestley at Aspendale. In 1974 Reg was appointed Officer-in-Charge of the Australian Numerical Meteorology Research Centre (ANMRC), a post he held until he retired from government service in early 1978.

His career did not end there. For a while he worked as a Senior Research Fellow at Melbourne University, and was awarded a Doctor of Science degree in 1983 for his scientific work in meteorology. He was actively engaged in research up to his death.

Reg's first wife Catherine (Kit) died after some



thirty years of marriage in which they had two sons and a daughter. He married his second wife, Els, in 1973.

The above curriculum vitae does only partial justice to Reg. He was not only a meteorologist and scientist par excellence, but had wide interest in literature, philosophy and life in general.

In meteorology, Reg found a discipline which matched his keen powers of observation and logic with his desire to understand the rigorous physics of problems. While in Canberra, using his own time and his precious ration of petrol, he tracked the sea-breeze between the coast and the Capital Territory. This began a life-long series of field observation projects for which Reg gained a reputation second to none. These projects were characterised by being carefully focused on specific phenomena, meticulously planned and executed, with a high degree of innovation and usually within very tight budgets. While with the Bureau he followed up his study of the Canberra sea-breeze with one in 1955 on the Esperance Doctor which penetrates in as far as Kalgoorlie. In 1956 Dr Berson of the CSIRO organised an expedition to Mount Gambier for the study of the summer cool changes, and Reg collaborated for three days. This area of his activities consolidated when, having become a member of CSIRO, he played the main part in studies of cold fronts at Coonalpyn and Renmark in 1959 and 1961. We will return to these projects a little later.

Although the basic physics seemed to describe in general terms some of the features of what he was observing, he became concerned that 'he couldn't solve these rotten equations by any way other than numerical'. And so during 1965 and 1966 Reg spent time with Smagorinsky's group at the NOAA Geophysical Fluid Dynamics Laboratory at Washington D.C. and later Princeton University. Here he worked with primitive equation models, and in particular performed some of the first integrations for the southern hemisphere. This laid the ground work for much of his future work with numerical models. As OIC of ANMRC this was of course most important, but much more significant was his use of numerical models to describe and understand mesoscale phenomena. In particular he used numerical approaches to assist in working out the mechanisms of sea-breezes which he had so meticulously observed. But we are running ahead.

Reg mounted two field experiments recognised internationally as providing amongst the most important data ever on the boundary layer. The first, Wangara (which means west wind in an Aboriginal language) was conducted near Hay during 40 days in July and August 1967. The basis of the experiment was a belief that angular momentum was transported from upper westerlies to the surface mainly by cold fronts. In fact the belief was disproved by the data. Nevertheless,

the data set obtained has been used in many studies of the boundary layer. It has been particularly useful in providing parametrisations for use in numerical weather prediction and general circulation models.

The second field program was Koorin (east wind) run over 29 days in July and August 1974, near Daly Waters. The site was at lower latitudes and with a rougher surface, so allowing boundary-layer parametrisation to be further refined. The area was also known for a low-level jet phenomenon and for the infrequent occurrence of a 'sea-breeze' type event. Just the kinds of things for Reg to get his teeth into.

From 1974 to 1978 inclusive Reg served a four-year term as Officer-in-Charge of the Australian Numerical Meteorology Research Centre, in which he was jointly responsible to the Chairman of CSIRO and the Secretary, Department of Science. Building on the work of its predecessor, the Commonwealth Meteorology Research Centre, ANMRC succeeded in providing numerical meteorology with the firm foundation that was required for its future in Australia. The full story, in the form of a contribution from each of the professionals involved, was published in 1984 under the title CMRC/ANMRC Valedictory Report 1969-1984.

Reg also was drawn to study the morning glory, a roll cloud in the vicinity of the Gulf of Carpentaria. Soon after retiring from ANMRC he and Els undertook an expedition, reminiscent of his Canberra and Esperance projects. They observed the morning glory at Normanton and Burketown. This was the catalyst for the Monash University led programs in the area. His work with numerical models then led to the explanation of the mechanisms behind the morning glory. The results were presented in this journal. That paper resulted in Reg being awarded the 1985 Priestley Medal of the Royal Meteorological Society (Australian Branch).

During his time at Melbourne University he was able to draw much of his lifetime's work together. He used numerical models to produce insights and explanations of many of his observations. He even was able to participate in the Cold Fronts Research Program at Mount Gambier, lending freely his great knowledge to the project.

As can be seen, Reg made enormous contributions to Australian meteorology, not only in increasing our understanding, but also in turning this knowledge into practically useful products, and being willing to step out of the purely scientific world into that of administration to do it. Reg was always keen to support the local meteorological effort. It is interesting to note that he published a paper in the first issue of this journal in 1952, and also has his last paper in this issue. He was the Chairman of the Australian Branch of the Royal

Meteorological Society from 1976 to 1980, and made a personal endowment to the Society. With Els' agreement the Council of AMOS has decided that the annual R.H. Clarke Memorial Lecture is funded from this.

But as well as being a person of science, Reg had many other interests. He was exceptionally well read and knowledgeable on a very broad range of topics. Although not politically active, he took a keen interest in the politics of Australia and particularly how they affected the ordinary person.

He had a number of letters published in newspapers which reflected his views.

Those who knew Reg will remember him as a kind, warm, humble and generous man. He was universally respected both as a meteorologist and a person. Reg Clarke brought the highest possible standards to our science and our country. We owe him a debt which we must all try to honour. A truly great Australian.

Vale Reg Clarke