quency. Since the particles appear to be directly created in nuclear interactions, it would be reasonable to assume that they are strongly interacting. If so, when arrested in solid substances, they would be expected to produce observable disintegrations. Very few such disintegrations have been found, although many laboratories have made a well-directed search.

It is difficult, at present, to make a reliable estimate of the ratio of the number of heavy mesons decaying to the number producing a recognized nuclear interaction because of the different methods of search employed in different laboratories, but a conservative estimate suggests that it is at least five to one. If the particles observed to decay are all positive, it then follows that only about a fifth of the negative heavy mesons, when arrested in photographic emulsions, produce effects due to nuclear capture comparable with those due to negative π-mesons. Alternatively, some of the particles may be weakly interacting so that, as with μ-mesons, some of them, even when negative, may decay.

Neutral Heavy Mesons

Of the neutral particles less massive than the proton, it is now established that there is one type which decays into two charged mesons, one of which is a π-particle, and probably both : $\theta^0 \rightarrow \pi^+ + \pi^-$; $Q = 214$ MeV. The mean lifetime of these particles is $\sim 10^{-10}$ sec. If the secondary charged particles are both π-mesons, the mass of the parent particle $m_{\theta^0} = 971 \pm 10\ m_e$, a value equal to that of the τ-meson within the limits of experimental error.

There is evidence for other types of heavy neutral particles, referred to as V_3^0, which appear to decay into a heavy meson and a light meson (π or μ), but it remains to be confirmed.

The conference gave an impressive demonstration of the great profit to be derived from meetings between representatives of different scientific traditions. The presence of many experts in the various experimental methods ensured a most informed and critical approach to the important questions which were reviewed, and the conference was memorable for the very serious level of the discussions, and the cordial relations between its members.

C. F. POWELL

PROGRAMME OF AUSTRALIAN ANTARCTIC EXPLORATION

By SIR DOUGLAS MAWSON, O.B.E., F.R.S.

DURING the past six years, the Commonwealth Government of Australia has, through its organization known as the Australian National Antarctic Research Expedition, prosecuted scientific investigations in the Far South. As long ago as 1939 tentative plans were formulated to continue with the scientific exploration of Antarctica. At that time it was proposed to organize such work under the ægis of the Australian universities, with the expectation of maintaining one or more shore research stations on the Antarctic mainland, there to be serviced from Australia by employment of the *Wyatt Earp*, which in 1939 the American explorer Lincoln Ellsworth had disposed of to the Commonwealth Government. However, the advent of war postponed such proposals and the *Wyatt Earp* was placed under the care of the Royal Australian Navy.

At the termination of hostilities the matter was again pressed, representations to the Government being made by the National Research Council.

Eventually, early in 1947, the Government agreed to meet the cost of refitting the *Wyatt Earp* as required for explorations in Antarctica and to establish and conduct research stations in the sub-antarctic on both Macquarie Island and Heard Island : the former about 900 miles S.S.E. of Hobart, the latter about 2,500 miles S.W. of Perth. Group-Captain Stuart Campbell, who had had Antarctic experience as chief aviator of the B.A.N.Z.A.R. Expedition of 1929–31, was seconded to be chief executive officer in command of the undertaking. Much was accomplished in that first year. On Macquarie Island and on Heard Island well-equipped stations were established and operated during the year 1948. Also in the summer of 1947–48, with Campbell on board and a staff of several scientists, including Mr. P. G. Law, the *Wyatt Earp*, manned by a naval crew under the command of Commander Karl Oom, made a short, late-season cruise into the pack-ice, including a visit to the Balleney Islands.

The report furnished at the conclusion of the cruise indicated that the *Wyatt Earp* was too small for the undertakings planned, her capacity being barely sufficient for the naval crew, leaving insufficient accommodation for the transport of shore-station staff and their equipment. The antarctic section of the programme was then suspended until a suitable vessel of greater capacity should be made available. The sub-antarctic stations, which were at that time being serviced annually by a naval L.S.T. vessel, were in the meantime to continue in operation.

Group-Captain Campbell returned to his post-war assignment in Commonwealth Civil Aviation Controls, and for several years since has been on duty in Siam as Commonwealth officer on loan to help reorganize civil aviation in that country.

In the meantime, the Department of External Affairs established an Antarctic Division to take care of Australian activities in the Far South. Mr. P. G. Law is the officer in charge.

The stations at Macquarie Island and at Heard Island have continued to function without a break, the personnel being relieved each year by the transport of new staff and supplies. The meteorological programme has been specially stressed, since it is hoped that by a detailed study of the movements of air masses between Antarctica and Australia the possibility of forecasting the weather of southern Australia may be enhanced.

Considerable attention is being given to geophysics, radiophysics and cosmic ray studies, and there is ample provision for cartographical, biological and geological activities. Already there has been amassed a very substantial and valuable addition to knowledge of the sub-antarctic in the Australian region.

What is now due to be undertaken is the extension of this programme to the antarctic mainland. This depends upon the provision of adequate transport. The design of a vessel especially to meet the needs of exploration within the pack-ice zone was submitted through the Navy Department, but, on account of cost, has been shelved. Nevertheless, provision has now been made for the establishment next summer of a base station on the antarctic mainland. Final approval and an outline of plans was recently notified by the Right Hon. R. G. Casey, Minister of External Affairs.

A Danish vessel, the *Kista Dan*, designed for navigation in the Greenland seas, has been chartered as a transport. As this vessel has also to relieve the Heard Island staff during the same antarctic cruise, the party to be established on the mainland will comprise not more than nine or ten men.

This antarctic mainland party will undertake during 1954 reconnaissance operations preparatory, it is hoped, to more extended developments in succeeding years. Scientific operations during the first year of occupation will be concerned mainly with geographical land exploration, geology and meteorology.

It is anticipated that the shore station will be established on the MacRobertson Land coast, where several suitable sites are known. Two Auster aircraft will be taken on the *Kista Dan*. Shore operations will be undertaken with the aid of mechanical transport, 'weesels' and with dog-drawn sledges. The sledge dogs have been under training at Heard Island.

Robert G. Dovers, a son of George Dovers of the Queen Mary Land party of the Australasian Antarctic Expedition of 1911–14, is to be leader. For the work ahead he has already had good experience, as he was cartographer to the Heard Island party of occupation during 1948 and continued thereafter an active member of the expedition staff. Dovers as observing officer for A.N.A.R.E. at the invitation of the commander of the French expedition, spent the year 1952 in Adelie Land gaining first-hand information in sledging operations.

Attached to Dovers's party during 1954 will be a French representative as observer.

The Planning Committee expects to extend greatly the scientific programme of the mainland station during subsequent years. Ice-cap seismic-sounding will then receive special attention.

OBITUARIES

Dr. W. A. R. Dillon-Weston

William Alastair Royal Dillon-Weston, chief plant pathologist in the eastern province of the National Agricultural Advisory Service, died in Cambridge on August 20, at the age of fifty-four. A West Countryman by birth, he was educated at Bristol Grammar School and St. Catherine's College, Cambridge, where, after gaining honours in Part I of the Natural Sciences Tripos, he took a diploma in agriculture in 1922. Shortly afterwards he was appointed by the University as one of the provincial advisory mycologists to the Ministry of Agriculture and Fisheries, stationed at the School of Agriculture, Cambridge. His subsequent working life of nearly thirty years was spent in serving the farming community of East Anglia, for although he left the University for the National Agricultural Advisory Service when it was established in 1946, his duties remained unchanged and his new station was but two miles from his old one. He took his M.A. in 1925 and a Ph.D. in 1929.

Dillon-Weston was a sensitive artist, full of stimulating and occasionally unusual ideas, kindly disposed to others, hospitable, and always ready to give a helping hand. Yet his restless impetuosity and sense of the dramatic, together with a tendency to brook no interference with his affairs, at times induced exasperation even among those who knew and admired him most. This conflict of qualities was reflected in his work and in his wide and changing interests. He combined research and advice in a manner that enhanced the value of both, and published nearly one hundred scientific and semi-popular articles on mycology and plant diseases, half of which were concerned with diseases of cereals and fungicidal treatment of cereal and other seeds. His early research was carried out on fruit tree diseases, notably apple scab; but he became increasingly interested in the rusts and smuts of cereals, particularly following on an exchange of posts for twelve months during 1930–31 with Dr. Craigie of the Dominion Rust Research Laboratory in Winnipeg. Shortly after his return from Canada he and Dr. J. R. Booer began an intensive study of the fungicidal action of mercury compounds. As a result of this and subsequent work, Dillon-Weston's name will long be linked with the advances made in fungicidal seed treatment in Britain. But he also investigated diseases of potato, sugar beet, clover, beans and other crops that came to his notice during his advisory work. He was interested in the theoretical as well as the strictly practical side, and his contributions ranged from the effect of ultra-violet radiation on fungus spores to the significance of 'black spot' in eggs.

His spare-time hobbies were many and varied, but mycology crept into most of them. When an enthusiastic airman, he studied the fungus flora of the upper air; later, as an expert glass-blower, he made many beautiful glass models of fungi; and as an artist he painted plant diseases, designed posters and film strips, directed films on potato blight and cereal seed disinfection and, with Ann Murray's assistance, issued pictorial life-cycles for many pathogenic fungi. In 1948 he published three popular booklets on diseases of farm and vegetable crops, and his book "The Plant in Health and Disease", written in conjunction with Dr. R. E. Taylor, appeared the same year. He was married and is survived by a widow and two children. W. C. Moore

Mr. T. Raymont

The death, in his eighty-ninth year, of Thomas Raymont removes one of the last survivors of that group of pioneers who at the turn of the century were establishing a livelier and more liberal conception of the training of teachers, in association—precarious at first—with the newer universities. Others among them were John Adams, and later Percy Nunn, at the London Day Training College, and J. W. Adamson at King's College in London, J. J. Findlay in Manchester, James Welton in Leeds and Mark Wright in Newcastle.

The greater part of Raymont's working life was concerned with teacher training, first for fifteen years as professor of education at Cardiff, and then for twenty-two years at Goldsmiths' College in New Cross, London. As vice-principal on the men's side and later as warden of the College, he had much to do with the development of that anomalous and adventurous institution, in which the so-called Day Training Department was advantageously part of a larger whole. Among his achievements was the establishment of general degree courses in arts and science for a proportion (about one-fifth) of the students in the Training Department, a number of members of the College staff being 'recognized teachers' of the University of London.