married Bateson; and this partnership led to the field study in Bali (1936–1939) which they claimed, with some justice, to have been a major advance in anthropology.

In Bali they were faced with a complex oriental civilisation very different from primitive New Guinea, though, as before, their concern was primarily with culture-learning, the ways as they put it 'living persons embody their culture'. Their main innovation was the huge and minutely detailed photographic documentation that foreshadowed the post-war rise to prominence of the ethnographic film. Their fieldwork concentrated on interpersonal relationships and interactions, particularly of parents and children in the context of child-rearing and socialisation processes that were central to Dr Mead's interests. Her imaginative psychological commentary on the photographic record in their book *Balinese Character* (1942) and in other publications, provoked controversy but also stimulated new approaches in ethnological psychology. The 'anthropology of the body' is a new field of research concerned with problems of the cultural specification of postures, gestures, and body images and processes, and it owes much to the pioneering work of Bateson and Mead.

World War II brought unexpected challenges to American anthropologists. Dr Mead worked with various governmental agencies concerned with the war effort. But most important was the leading part she played in the international team of specialists assembled by Ruth Benedict to compile reports on the 'national character' of the belligerents. Field work being ruled out, they resorted to studying 'culture at a distance', through interviews with immigrants and analysis of literary, film and archival sources. As the publications of the team showed—notably Benedict's celebrated study of the Japanese, *The Chrysanthemum and the Sword* (1946) and Mead's passionate morale-booster *And keep your Powder Dry* (1943)—the method was remarkably effective, so much so that the project was continued until 1951 (with 120 participants!) under the auspices of Columbia University.

The war and especially, by Mead's own account, the shock of Hiroshima, brought home to her the urgent need for a new social and moral vision in western, especially American society. The war had broken down the cultural isolationism which she had helped to expose in her popular books. It had also, she learned, produced unprecedented changes in New Guinea. This led her, in 1953, to return to Manus, accompanied by a student couple.

She found the community completely transformed. Partly owing to the war and to Australian government agencies, but mainly to the charismatic leadership of one local man, the people had abandoned their entire traditional way of life and were rapidly adopting western institutions and ideals. Examining these changes in her *New Lives for Old* (1956) Dr Mead concluded that a unanimous primitive community, once convinced of the desirability of western cultural ideals and institutions, can, given inspired leadership, radically change its way of life in a generation. Thenceforth she advocated the wholehearted support by anthropologists of speedy westernisation in primitive communities with the right leadership and aspirations. She visited the Manus thrice again thus keeping benevolently critical track of their progress in self government, in family life, and in personality development, until 1975.

Watching Manus inspired in Dr Mead an abiding concern with the problems of changing society. Thus orientated, between 1953 and 1975 she also visited the other groups in which she had earlier worked, as well as the growing urban centres in New Guinea. Preoccupied now with the problems of reconciling continuity and change in cultural development (as in her book *Continuities in Cultural Evolution, 1964*) she travelled widely in America, the Caribbean, Europe and the Southern Hemisphere, often enough to participate in academic or policy-making activities, and so to enlarge her understanding of urgent world issues. The key to a more enlightened and humane future, she believed, lies in the way the culturally specified relations of successive generations of grandparents, parents and children, where character is shaped and culture is transmitted, are managed. She stressed in particular the models of the alternatives anthropology has revealed for handling the universal problems of intergenerational conflict.

Never hiding her light under a bushel, Margaret Mead yet disdained pretensions to originality. On the contrary she constantly stressed her indebtedness to others, friends, famous scholars, students and predecessors. But as the long list of visiting professorships, honorary degrees, other academic distinctions, and awards and prizes conferred on her testifies, the pre-eminence of her scientific achievements, her devotion to America and her dedication to the ideals of human betterment were widely esteemed. A phenomenon like Margaret Mead could perhaps not have emerged in any other country than modern America. From her base in the American Museum of Natural History, where she worked, and taught from the time of her appointment as an assistant curator in 1925 to the end of her days, she exercised a decisive influence both on the development of the social and human sciences in America and elsewhere, and on American educational, and moral values and cultural ideals. But she will undoubtedly be best remembered, as she would herself have wished, as one of the most creative anthropologists of this century.

Meyer Fortes

Bernard Halpern

BERNARD N. HALPERN, one of the first workers on antihistamines, died in Paris on 23 September 1978, after suffering for several years from an incurable and painful illness.

Born in 1904 in Russia, Bernard Halpern came to France after some very difficult childhood years, to complete his advanced studies for a degree of Doctor of Medicine (1936). In order to study, he worked for several years as a technical assistant in the physiological laboratory at the Ecole pratique des hautes Etudes, under the direction of J. Gautrelet.

In 1937, Halpern took over as director of the pharmacodynamic research laboratory of the Société Rhône-Poulenc. He left this position in 1945 to join, as a research worker, the Centre National de la Recherche Scientifique and to direct the Pasteur-Vallery-Radot laboratory at the Broussais hospital. In 1949, he was nominated Director of Research at the CNRS; ten years later, he added to these functions those of Director of Laboratories at the Ecole pratique des hautes Etudes. In 1961, Halpern was awarded the Chair of Experimental Medicine at the College de France, a chair formerly held with distinction by Claude Bernard, and was elected a member of the Academie des Sciences in 1964.

After early work with J. Gautrelet on the action of snake venoms, Halpern devoted himself from 1942 onwards to the study of synthetic compounds behaving as antihistamines, at the Rhône-Poulenc laboratories

This research topic was, it must be said, initiated some years earlier (1937) by G. Ungar, J-L. Parrot, and D. Bovet, who used in their experiments compounds belonging to the sympathomimetic and sympatholytic groups obtained from E. Fourneau's laboratory at the Institut Pasteur. In the same year (1937), D. Bovet and A. M.

Staub had detected the same antihistamine properties in thymoxyethyldiethylamine (929 F) and, some years later, the study of some derivatives of phenylethylenediamine and aminopyridine showed equally favourable properties. As a result of other work by A. M. Staub (1939), Halpern proved in 1942 the relatively high antihistamine effect of N-(2-dimethyl aminoethyl)-N-benzylaniline or Antergan on spasms in unstripped muscles and pointed out the possible use of this compound in human therapy.

In 1944, another compound appeared, Neoantergan, equally suitable for human application which, while chemically similar to Antergan, was more active (Bovet *et al.*, 1944). Still more important appeared to be the N-alkylamine derivatives of phenothiazine, among which Halpern noted the efficacy of Phenergan (1946). It is well known that, apart from its antihistamine effects, this compound was found by doctors to be a psychodepressant and formed the starting point for many neuroleptic derivatives currently used in psychiatry.

From 1950, following research by Jancsö, the work of Halpern and his collaborators took another direction: the functional study of the reticulo-endothelial system (RES). Profiting from the granulopoietic activity of this tissue, they investigated the removal from the blood of various colloids as a function of time. These data once established, the authors found that stimulation of the RES increases the level of immunity of the organism against various infections.

In 1959, Bernard Halpern showed, for the first time, that administration of BCG increases the resistance of the organism to malignant tumors.

In 1964, he described the outstanding immuno-stimulatory properties of *Corynebacterium parvum* on the reticulo-endothelial system. This effect is shown by the increase in the phagocytic index of macrophages and by the increase in liver volume and of splenic cells. Later, Halpern established that the administration of *Corynebacterium parvum* inhibits the development of grafted malignant tumours and their propensity to metastasis. In May 1974, he chaired the first international conference on *Corynebacterium parvum* and its use in oncology, a conference which has led us to revise our ideas of the relations between the host and the malignant tumour. *Corynebacterium parvum* has been employed for several years in human therapy in the treatment of cancers in combination with antimitotic chemotherapy and the results of this method appear promising.

G. Valette

W. O. James

PROFESSOR WILLIAM OWEN JAMES, FRS, who died on 15 September 1978 will be remembered as one of the leading British plant physiologists of this century.

The major part of his academic life as a scholar, teacher and author (from 1929 to 1958) was spent as Demonstrator and then Reader in the Department of Botany at Oxford University. He was elected to the Royal Society in 1952. Latterly from 1958 until his retirement in 1967 he was an innovative Head of Botany at Imperial College, London at a time when the college was rapidly expanding.

During his professional life of over 50 years, W. O. James made many distinguished contributions to several different fields of plant physiology including photosynthesis, mineral nutrition, anaerobic and aerobic respiratory metabolism, alkaloid metabolism and to the understanding of the function of subcellular organelles. His endeavour was always to discover and understand the biochemical events responsible for the physiological functions of plants and to account for these responses quantitatively. He wrote with exceptional clarity and his many scientific papers and several books reflect his scholarly analysis of plant physiological phenomena and his imaginative application of contemporary experimental techniques as aids in understanding them. He retained an enthusiasm for plant biology to the end of his life and was always particularly delighted to hear of progress in the several areas of research in which he himself had been involved.

W. O. James brought to the study of the many-faceted problems of the physiology of plants incisive thought and great care in the design and execution of experiments. These qualities were already manifest in his first paper on the external factors affecting photosynthesis reporting his studies as a graduate student under F. F. Blackmann in Cambridge in the mid 1920s. James demonstrated departures from the limiting factor form of the curve for photosynthesis and explained why they were to be expected. During his postdoctoral years, spent from 1925 in V. H. Blackmann's unit of Plant Physiology at Rothamsted, his interest in mineral nutrition of plants, particularly of potassium, developed, and on his move to Oxford in 1927, the effects of potassium deficit on extractable enzyme activity and respiration rate were among the first problems he tackled. He soon realised that useful interpretation of the experimental effects of mineral nutrition on plants was severely limited by lack of understanding of the respiratory processes occurring in normal plants and he and his associates turned their attention to the study of plant respiration.

It is for his contributions to our understanding of plant respiration that James will probably be best remembered. His group in Oxford carried out some of the first definitive work on glycolytic systems in plants and in the early 1940s demonstrated unequivocally that pyruvate was produced from fructose diphosphate in extracts of barley. Later they examined the enzyme systems involved using the phosphorylated intermediates and cofactors which had recently become available commercially, and showed the key enzyme enolase was present in barley sap.

His group published detailed descriptions of the respiratory characteristics of several different plant tissues including leaves, roots and embryos and sought to explain their *in vivo* respiration quantitatively in terms of the activity of enzymes which could be isolated from them. It was demonstrated, for example, that sugar lost from carrot tissue during a period in N_2 could be accounted for entirely by alcohol and CO_2 production. In attempts to explain the terminal oxidation processes in plants whose respiration was differentially inhibited by specific respiratory inhibitors, James and his associates also devoted considerable attention to the examination of soluble and insoluble plant oxidases. Much useful detailed information about the distribution and activity of the variety of plant oxidases was assembled, although no convincing evidence that any oxidase other than cytochrome oxidase plays a major role in plant respiration has yet emerged. H. Beevers in James' laboratory in the late 1940s first examined the exceedingly rapid cyanide-insensitive respiration of the *Arum spadix* and later the Oxford group were the first to show the location of this activity in isolated mitochondria. James' years of study of the respiratory processes in plants culminated in the publication of his book *Plant Respiration* in 1953, hailed as a scholarly summary of a whole epoch of plant respiratory studies.

During his years in Oxford, in addition to his research activities, James also taught plant physiology to several generations of undergraduates and, during the second World War, was a prime mover in the Oxford Medicinal Plants Scheme. The objective of the scheme was to supply medicinal drugs by extracting them from natural plant sources. Many of these drugs were alkaloids and in addition to improving methods for their extraction and