

could not regulate themselves and higher organisms could not exist.

In 1969 Monod gave the Robbins Lectures at Pomona College in California. He used the occasion to develop and make precise his general ideas about biology, man and society. The lectures became a book, originally written in English, rewritten by him in French under the title *Le Hasard et la Nécessité*. Its publication made a strong impact and it became a best-seller. It aroused the almost united opposition of the French intellectual establishment which has always preferred Marx, Freud and Teilhard de Chardin to Darwin and Mendel. Written with force and clarity, in an unmistakable personal style, it presented a view of the universe that to many lay readers appeared strange, sombre, arid and austere. This is all the more surprising since the central vision of life that it projected is shared by the great majority of working scientists of any distinction. It would be difficult to find a better example to display the deep rift between science and the rest of our culture.

Monod was not aloof from public affairs. He was a persistent critic of the French University system and of the way in which French science was supported. Thus it was not entirely surprising that in 1971 he accepted the invitation to become Director-General of the Pasteur Institute. This decision came partly from his strong sense of duty; he was naturally reluctant to have to give up his research and his writing, but the Institute was in a bad way, having become desperately short of money. Monod threw himself wholeheartedly into his new job. He tried many things: appeals for funds, both public and private; the setting up of a production subsidiary with the aim to exploit useful ideas from the research side of the Institute; various economies and a limited reduction of staff. Finally

he toyed with a scheme, strongly opposed by many of his colleagues, to move the laboratory outside Paris. But the opposition to such a move was too strong and the sums of money required too great; only the government could supply them, a source he somewhat distrusted, as he feared for the Institute's independence. Looking back one can see that the Pasteur had to change and to change radically. It needed a scientist of Monod's stature to make the changes possible and reasonably palatable.

Science was the dominant activity in Monod's life but it was not the only one. During the war he worked for the French underground, receiving recognition for this perilous work from both the French and the American governments. He became a keen mountaineer only to give it up for sailing; the characteristic mixture of discipline and freedom appealed strongly to his temperament. He would sail his 37' boat single-handed or with the assistance of a mere amateur. Having a wide intellectual curiosity, he was remarkably well read, both in classical and modern authors—Camus was a personal friend. But his main passion outside science was music. He both played the cello and conducted. In his twenties he even wondered whether to give up science for music, and all through his life he tried to find time to make music with his friends.

Monod was a man of great personal charm. His English was perfect, though simpler than his French. Thanks to his good ear and his American mother, he spoke it without any trace of the heavy accent which most Frenchmen find difficult to discard. Good-looking, though small of stature, he commanded attention by his intelligence, his clarity, his incisiveness and by the obvious breadth and depth of his interests. Never lacking in courage, he combined a debonair manner and an impish sense

of humour with a deep moral commitment to any issue he regarded as fundamental. He had great warmth for his friends and treated his students with affection and candour, as if they were members of his family. To others he could be charming but somewhat more remote. Though his creative powers flowered most abundantly in his scientific work he combined within himself, in a natural harmony, the scientist, the philosopher, the man of action and the musician. He might well have made a world reputation by concentrating on any one of these roles. Such a range of gifts is rare. It is fortunate for us that he chose science, otherwise the development of molecular biology would have been very different.

The formal outlines of Monod's career will be recorded here only briefly. He obtained his first degree in 1931 and his doctorate in 1941, both from Paris. He joined the Pasteur Institute in 1945 as Chef de Laboratoire, becoming Chef de Service in 1953, head of the department of Cellular Biochemistry in 1954 and Director-General in 1971.

His stay at Caltech in 1936 was supported by the Rockefeller Foundation. While at the Pasteur he held a chair at the University of Paris from 1959 to 1967, followed by a chair in Molecular Biology at the Collège de France from 1967 to 1972. From 1962 onwards he was a non-resident fellow of the Salk Institute.

Monod received many honours, including Foreign Membership of the Royal Society and the US National Academy, among others, and several prizes, culminating in the award of the Nobel Prize for Physiology and Medicine in 1965 which he shared with Lwoff and Jacob.

His wife, the former Odette Bruhl, whom he married in 1938, died in 1972. They had two sons, twins, who survive him. Both are scientists. **F.H.C.C.**

announcements

Meetings

August 30–31, **L'Anthropologie et la Biologie des Populations Andines**, Toulouse, France (Prof Georges Lambert, Centre d'Hématologie du CNRS, Colloque d'Anthropologie et Biologie des Populations Andines, Hôpital de Purpan, Avenue de Grande-Bretagne, 31052 Toulouse Cedex, France).

September 2–3, **564th Meeting of the Biochemical Society**, Dublin (The

Meetings Officer, The Biochemical Society, 7 Warwick Court, Holborn, London WC1R 5DP).

September 6–8, **Biochemistry of Lipids**, Paris (J. Polonovski, Faculté de Médecine Saint-Antoine, 27, rue Chaligny, F 75571 Paris Cedex 12, France).

September 21–23, **Science and Technology of Water Soluble Polymers**, Cardiff (The Short Courses Secretary, Planning Section, UWIST, King Edward VII Avenue, Cardiff CF1 3NU, UK).

September 24–25, **Joint Radiological Meeting of the RCR and the BIR**, Leeds (The General Secretary, BIR, 32 Welbeck Street, London W1M 7PG).

October 7–8, **Meeting of the South-eastern Cancer Research Association on Membrane Receptors, Regulation of Gene Expression and Chemical Carcinogens**, Atlanta, Georgia (Dr Edward Bresnick, Chairman of the Dept of Cellular and Molecular Biology, Medical College of Georgia, Augusta, Georgia 30902).