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*Duncan S. Davies*

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1921–1987

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Submitted by The NAE Home Secretary

Duncan S. Davies, a polymath who was interested and knowledgeable in all aspects of human affairs, died March 25, 1987, at age sixty-five. He was a scientist of excellence in both the pure and applied fields, an engineer, and one of the founders of the science of technological economics. Above all he was a man of vision, of ideas, of concepts, but also of warmth and humanity. He truly loved his fellow men and women, and he always did us the honor of behaving as though we were as intelligent, as hardworking, as conscientious, and as well motivated as he was himself.

Born in Liverpool on April 20, 1921, Davies valued his origins in that city, but Oxford and his contact there with Cyril Hirschel-wood formed him. He received his B.Sc. in chemistry (Minor Scholar), 1st Class-Honours, in 1943 from Oxford University; his Ph.D. from that university in 1945; and his M.A. in chemistry from Trinity College, Cambridge, in 1947. At Oxford he gained an understanding of physical chemistry as a description of dynamic systems that served him well in his lifetime attempts to understand, explain, and influence human systems. Although his ability to organize and convince was much recognized, his major role was his ability to influence and persuade "men of action" in both industry and government into fresh channels.

In 1945 he began work in the Research Department of the Dyestuffs Division of Imperial Chemical Industries (ICI), the

United Kingdom's largest chemical firm; he remained with that firm for thirty-five years. In 1955 he was appointed head of the Colours Experimental Department, Grangemouty Works; in 1959 to research manager and then research director of ICI General Chemicals Division; in 1962 to director of ICI Central Petrochemical and Polymer Laboratory; in 1967 to deputy chairman of Mond Division, a heavy chemicals division of ICI; and in 1969 to general manager of research and development at ICI, responsible for formulation of research and development policy and its connection with long-term business policy internationally.

At ICI Davies was originally concerned with the application of chemistry to the improvement of products and processes, and the design of innovation in the chemical and polymer industries, including first manufacture of polymer (fiber)-reactive dyes. He was subsequently responsible for research and development direction covering all parts of the chemical industry. Perhaps his most important innovation at ICI was his major role in the creation of the Petrochemicals and Polymers Laboratory, of which he was the first director. Davies had an international reputation in providing new concepts and means for making industrial research useful, particularly as it becomes more multidisciplinary and must be economically viable.

Because he had become especially active in the integration of technology, economics, and social studies relevant to the success and acceptability of innovations in the United Kingdom, Davies was appointed in 1977 chief engineer and scientist at the U.K.'s Department of Trade and Industry. There he was responsible for recommending technology policy to the U.K. Secretary of State for Industry, determining government needs for industrial research and development, and placing appropriate contracts with state or private sector agencies.

While becoming in 1982 a director and then in 1983 chairman of the British Ceramics Research Ltd., Davies also took on consulting responsibilities for Unilever, Tate & Lyle, Monsanto, and in Washington, D.C., the National Bureau of Standards.

Davies's accomplishments span the science, development, engineering, and manufacture of synthetic polymeric materials,

which constitute one of the most important groups of modern industrial engineering materials and revolutionized the plastics, synthetic fibers, textiles, and protective coating industries. His technical and engineering contributions have had significant effects upon industries other than those in which he was directly concerned. The dyestuff, mining, ceramic, and metallurgical industries owe much to him. Above all he was an outstanding innovator. In ICI he pioneered the effective direct use of laboratory-type science on the plant.

He served as president of the Council of the Society of Chemical Industry and of the R&D Society. He served on the Science Research Council (SRC) and its successor, the Science and Engineering Research Council, and also the Social Science Research Council Joint Committee. These bodies are a major source of research funds for British universities. He also served on the Organization for Economic Cooperation and Development ad hoc Working Group on Technology Transfer. He was a member of the U.K. Chemical Society, Faraday Division; the Council of Liverpool University; the Confederation of British Industry, Research and Technology Committee; U.K. Advisory Board for Research Councils; Advisory Council on Applied R&D, Natural Environment Research Council; Swann Manpower Working Group; Council, Liverpool University; and Council, The Organization of the European Community, London. He was a visiting professor at Imperial College (1968–1970) and University of York (1983–1987); a visiting fellow, St. Cross College, Oxford (1970); visiting fellow, Australian National University; and visiting professorial fellow, University College, Swansea (1974–1979).

In 1967 Davies received the Society of Chemical Industry Castner Medal. He was awarded an honorary doctorate from the University of Stirling, 1975, and the University of Surrey, 1980. He received an honorary doctor of science from Bath University, 1981, and Haifa University, 1982. Davies was elected a foreign associate of the National Academy of Engineering in 1978.

Davies was a writer of great clarity. "If you want to understand something," he said, "then write a book about it." He wrote

several, including *An Introduction to Technological Economics*, with Callum McCarthy, where he takes the reader by the hand and walks with him into the development of the subject.

He was a superb communicator, both as a speaker and a writer—witty, erudite, compelling, with apposite quotations from sources as widely apart as *Winnie the Pooh* and Wagner's *Ring*. He delighted in travel. A key memory is of him ensconced in corners of obscure airports writing yet another chapter or another article under his many noms de plume in a neat rapid hand with scarcely a correction, or dashing off dozens of strange and funny postcards to his worldwide circle of friends.

He loved his family; they provided that firm and secure base from which he forayed to do battle on many fronts. He loved the young, and they loved him for he shared with them his bubbling enthusiasms, his vulnerability, and a sharp detestation of injustice of any form.

The Research Society has instituted a Duncan Davies Memorial Lecture and Medal. The first of these was given at the Royal Society on April 3, 1990, by one of his many friends and disciples from ICI, Robert Malpas, then chairman of PowerGen, a privatized half of the old Central Electricity Generating Board. His lecture title was the "Marketing of Technology." Duncan would have loved it, but proposed yet another new approach, if not three! The medal was presented by Mrs. Ann Davies. All of us present had the sense of affection, loss, and respect.

Duncan Davies never retired, and he was always seeking change. He wrote, he consulted, he lectured, he traveled, he served his profession. The luster of Duncan shines brighter with time. I would commend to you his book *The Humane Technologist*. He was, above all, the humane technologist himself. His major ideas, seemingly outrageous at the time, are now an integral part of the background from which we work. We could do with his yeast now to leaven our dull bread.

