



*James Mandel*

## HEINRICH MANDEL

*1919-1979*

BY WALKER L. GISLER

HEINRICH MANDEL, elected in 1976 as a Foreign Associate of the National Academy of Engineering, died on January 24, 1979. He was a Professor, Doctor of Engineering, Doctor of Philosophy, and Chairman of the Management Board of Rheinisch Westfälisches Elektrizitätswerk AG (RWE). He will long be remembered not only for his outstanding leadership of a great electric utility system but, more particularly, for his incisive analysis of the current world energy crisis. Professor Mandel saw clearly the developing shortages of petroleum and gas and the potential dangers from intensified competition for diminishing supplies. He was convinced that the future well-being of many countries was closely linked with an adequate supply of energy at favorable prices, that a substitute must be found for the failing contribution of oil and gas, and that the substitute must be nuclear fission.

Heinrich Mandel was born on August 11, 1919, in Prague, Czechoslovakia, where his family had lived for several generations. He studied mechanical engineering at the local Institute of Technology and received his Doctor of Engineering degree in 1943. After military service during the war, he joined the RWE organization in 1948. In 1950 he entered the University of Cologne to study physics and was granted a Doctor of Philosophy degree in 1952. He accepted a professorship at Technische Hochschule Aachen in 1963, a post he held for the rest of his life.

After completing his studies at Cologne, Heinrich Mandel

devoted himself to the prognosis of electric power demand and total energy requirements. After 1955 the German Federal Republic again was allowed to work on nuclear power plant technology, and from then on, Professor Mandel had a key role in its development. He recognized that, in the long run, a dependable energy supply was impossible without it. Largely as a result of his drive and leadership, a small, 15-megawatt nuclear power plant was built at Kahl/Main in 1958. Experience acquired there and at the demonstration plant at Gundremmingen/Danube provided an important background for the further development of nuclear power in the Federal Republic, culminating in the construction and successful operation of two 1,200-megawatt nuclear units at Bilbis. He was cofounder of the German Society for the Regeneration of Nuclear Fuels, a constant supporter of German centrifuge technology and of a European enrichment industry. He was President of the German Atomic Forum.

In 1961 Heinrich Mandel was elected to the Board of Management of RWE with principal responsibilities for construction and operation of power plants. In addition to the successful introduction of nuclear power, spoken of above, he had a key role in the development of power plants burning brown coal. These plants, using progressively larger units up to today's 600-megawatt machines, were an important factor in controlling electric power costs and thus contributing to the favorable development of the German economy.

Heinrich Mandel's ideas concerning energy policies reached far beyond the boundaries of West Germany. He ably represented his country on many international energy bodies. **H**e was constantly sought after as a participant in conferences and forums. He presented many papers on the basic importance of conservation, on the environmental impact of energy, and on the need to find a substitute for the dwindling reserves of oil and gas.

In 1977 he was elected Chairman of the Executive Council of the World Energy Conference, a position he held until his death. In the same year an honorary Doctorate of Engineering was conferred upon Heinrich Mandel by Michigan Technological University.

Heinrich Mandel was deeply concerned with the substantial differences between nations in economic development. He believed

that an important factor in the past development of industrialized nations had been a supply of energy at favorable costs and in adequate amounts. He also believed that the gap between industrialized nations and developing countries can be narrowed only if adequate supplies of energy are available to developing nations. He therefore urged that the industrialized nations push ahead with the development of nuclear power so that a greater share of the diminishing supply of oil and gas would be available to the developing countries.

He was well aware of the worldwide concern with the proliferation of nuclear weapons, but he nevertheless insisted that the breeder reactor was an essential part of the nuclear program and that the long-term potential of nuclear power could only be reached with a balanced program including the breeder reactor. He was convinced that the proliferation problem could be solved through International Atomic Energy Association controls and cooperative agreements.

Heinrich Mandel's untimely death is a great loss to the entire world. He will long be remembered for his early recognition of the developing energy crisis and, most particularly, for his constant readiness to support his ideas on how the crisis might be met with well-considered reasons. His life philosophy is probably best reflected by his statement to the graduating class at Michigan Technological University on May 21, 1977: "I fully believe that it is possible to make our world a better place to live in "