



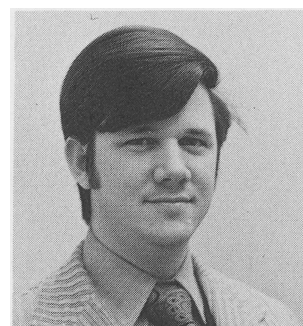
## AUTHORS — JULY 1975

### REACTORS

#### SIMPLIFIED SMALL-BREAK BLOWDOWN MODELS

*L. W. Ward*

Leonard W. Ward (BS, Marietta College, 1969; MS, Columbia University, 1970; degree of professional engineer, Columbia University, 1972) is principal investigator for small-break analysis and design development in the Nuclear Safety Department at Combustion Engineering, Inc. For the past four years, his interests have been related to the blowdown simulation of the small-break loss-of-coolant accident (LOCA). His thesis showed that the small-break LOCA response is governed by the hydrostatic forces that develop in the primary system of a pressurized water reactor.



### CHEMICAL PROCESSING

#### ROCKY FLATS EXPERIENCE WITH BOROSILICATE GLASS RINGS FOR CRITICALITY CONTROL

*C. L. Schuske  
J. D. McCarthy*

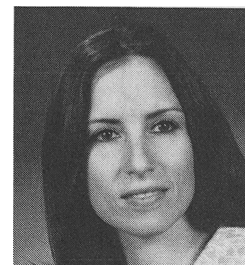
C. L. Schuske (left) (MS, physics, University of Southern California) is nuclear safety manager at Dow Chemical U.S.A., Rocky Flats Division. His areas of interest are critical mass physics and process plant nuclear criticality safety. J. D. McCarthy (BS, Hofstra University, 1963) is criticality engineering supervisor at Dow Chemical U.S.A., Rocky Flats Division. His primary interest and responsibilities include criticality safety as applied to all aspects of plant processes.



#### NOMINALLY REFLECTED PIPE INTERSECTIONS CONTAINING FISSILE SOLUTION

*Deanne Dickinson*

Deanne Dickinson (PhD, mathematics, Massachusetts Institute of Technology) is a research specialist at the Dow Chemical U.S.A. Rocky Flats Plant, working on computer calculations for nuclear safety.



**SWELLING OF URANIUM SILICIDE FUEL DURING POST-IRRADIATION HEATING**

*R. B. Matthews  
M. L. Swanson*

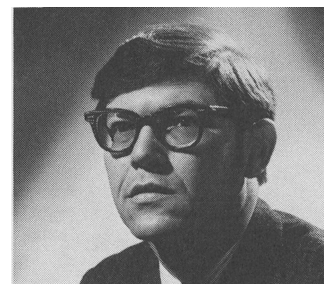
Robert B. Matthews (left) (PhD, materials science, University College Swansea, 1970) is presently working at the Whiteshell Nuclear Research Establishment in the Fuel Development Branch. He has conducted research on the effects of irradiation on the mechanical properties of ceramic materials, and is currently studying the effects of postirradiation annealing on the swelling behavior of nuclear fuels. M. L. Swanson (technologist, Ryerson Institute of Technology, Toronto, 1958) has worked in nuclear fuel development for the past 12 years. He did safety analysis work on uranium carbide fuel for the organic-cooled reactor study and is presently involved in irradiation experiments for the thorium fuel cycle.



**THE RELATIONSHIP BETWEEN RUPTURE LIFE AND CREEP PROPERTIES OF 2½Cr-1 Mo STEEL**

*R. L. Klueh*

R. L. Klueh (BS, metallurgical engineering, Purdue University, 1961; PhD, metallurgy and materials science, Carnegie-Mellon University, 1966) is a research metallurgist in the Metals and Ceramics Division at Oak Ridge National Laboratory. He is involved in mechanical property studies on liquid-metal fast breeder reactor steam generator materials.



**EFFECT OF FAST REACTOR FLUENCE ON POSTIRRADIATION RUPTURE OF TYPE 316 STAINLESS STEEL**

*A. J. Lovell*

Artell J. Lovell (MS, University of Idaho) has been involved in the study of irradiation effects on the mechanical properties of structural and cladding materials for some time. Current research interests are in-reactor creep and rupture properties of liquid-metal fast breeder reactor cladding materials.



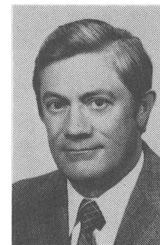
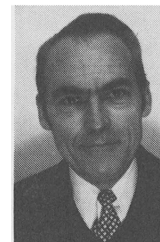
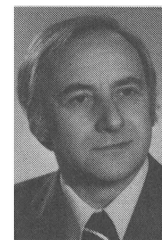
**A PLUTONIUM-238-FUELED CARDIAC PACEMAKER**

*Michel Alais  
René Berger  
René Boucher  
Kenneth A. Gasper  
Paul Laurens*

Michel Alais (right) (ingenieur physicien, Ecole Supérieure de Physique et Chimie Industrielle, 1956) is the chief engineer at the New Product Division of CIT-Alcatel Company. His main interests have been in the field of



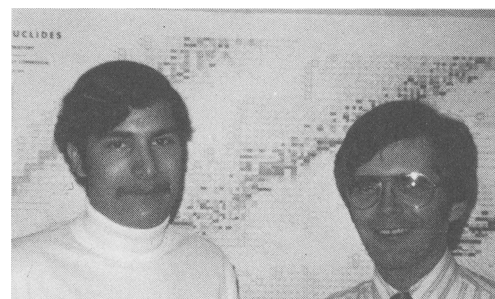
semiconductors (since 1956) and thermoelectric products and devices (since 1960). René Berger (top right) (licencié es sciences, University of Clermont Ferrand; degree of ingénieur chimiste, Ecole Nationale Supérieure de Chimie, Clermont Ferrand, 1948) is now deputy-head of the Hydro-metallurgy and Transuranium Chemistry Service. His interests are basic chemistry and applied research on transuranium elements. He is a member of the Fontenay-aux-Roses Center for Nuclear Studies of the French Atomic Energy Commission. René Boucher (top left) (licencié es sciences, University of Paris, 1953) has been involved in metallurgical studies of LMFBR fuel elements since 1956. Currently, he is a group leader and is responsible for metallurgical research and development of transuranium element sources. He is a member of the Fontenay-aux-Roses Center for Nuclear Studies. Kenneth A. Gasper (bottom right) (BS, chemical engineering, 1961; MS, 1963, and PhD, nuclear engineering, University of Wisconsin, 1966) is currently director of design engineering at Medtronic, Inc. Prior to this position, he was manager of nuclear programs at Medtronic, with world-wide responsibility for the Model 9000 Isotopic Pacemaker program. Earlier, he managed programs on nuclear-powered artificial hearts and nuclear batteries at the Donald W. Douglas Laboratories of the McDonnell Douglas Corporation. Paul Laurens (bottom left) (engineer of the Central School of Paris, 1946; doctor of medicine, 1955) has been qualified in cardiology in 1958. He is now director of research at the National Institute of Health and Medical Research in the Cardiology Clinic of the Hospital Broussais in Paris. He directed and coordinated the joint efforts of Commissariat à l'Énergie Atomique, Alcatel, Hospital Broussais, and Medtronic, Inc. in the French nuclear-powered pacemaker program. The first human implantation of this device took place in Apr. 1970 at the Hospital Broussais. As of Sep. 1974, a total of 118 such implantations were performed in this hospital.



**MONTE CARLO DOSIMETRY CALCULATION FOR BORON NEUTRON-CAPTURE THERAPY IN THE TREATMENT OF BRAIN TUMORS**

*Owen Leslie Deutsch  
Brian Winston Murray*

Owen L. Deutsch (left) (BS, Columbia University, 1969; SM, Massachusetts Institute of Technology, 1973) is currently engaged in thesis research at MIT on computer simulation of molecular dynamics in the solid state. He has worked for the Los Alamos Scientific Laboratory and the U.S. Army, Picatinny Arsenal in the area of time-dependent radiation transport and in shielding. His long-standing interests include Monte Carlo methods and applications to radiation transport in nuclear medicine. Brian W. Murray (BSc, University of Manitoba, 1963; PhD, Case Western Reserve University, 1970) is a research associate in the Department of Nuclear Engineering at MIT and an assistant physicist (radiology) in the Physics Research Laboratory at Massachusetts General Hospital. His general interests include the applications of neutrons and radioisotopes to medicine.



**REMOTE SENSING OF PLUTONIUM BY THE LOW-ENERGY SCATTERED FLUX***A. E. Profio  
G. C. Huth*

A. Edward Profio (top) (PhD, nuclear engineering, 1973) is professor and vice-chairman of nuclear engineering at the University of California at Santa Barbara. His current areas of interest are radiation transport, nuclear instrumentation especially for biomedical applications, and fission and fusion reactor physics. Gerald C. Huth (BS, physics, University of Maryland, 1953; MS, nuclear engineering, University of Cincinnati, Ohio, 1959; PhD, electronics, Teknisk Högskola, Uppsala University, Sweden, 1974) is a professor of radiology at the University of California at Los Angeles. He is presently chief of the Division of Measurement Science in the Laboratory of Nuclear Medicine and Radiation Biology. His area of research is advanced instrumentation or measurement systems for use in medicine and biology.

**CRITICAL EXPERIMENTS—BENCHMARKS (Pu-U SYSTEMS)***S. R. Bierman*

S. R. Bierman (BS, chemical engineering, Texas Technological University; MS, nuclear engineering, University of Washington) has been involved in both the chemical processing industry and criticality research and analysis. He is currently a senior research engineer at the Critical Mass Laboratory in Richland, Washington, where he has been active in both the generation of basic experimental criticality data and the utilization of this data in performing criticality analyses of production plant systems.

