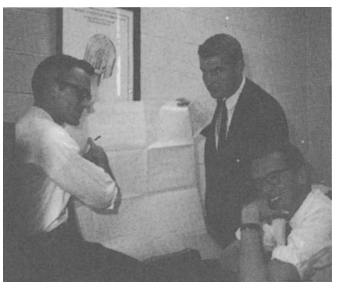
AUTHORS AND PAPERS

The highly condensed summaries of papers and technical notes (below) are intended to assist the busy reader in determining the order in which to read the technical material. Biographical comments are for human interest.

TRANSIENT ANALYSIS OF THE HWOCR

An analog computer study showed that a simple on-off dead band controller would control a small positive coolant coefficient in the Heavy-Water-Moderated Organic-Cooled Reactor (HWOCR).

F. Bevilacqua, center, Manager of the Instrumentation, Controls, and Electrical Section of Combustion Engineering's Nuclear Power Department, has been in the nuclear field for the past 20 years. C. R. Musick, left, (MS, University of Illinois) is a controls engineer in the same section. W. C. Coppersmith (ScD, University of Virginia) is assigned to the Safety Analysis Section.



RADIOISOTOPE GENERATORS

Five radioisotope thermoelectric generator designs in the 100- to 1000-mW range are described for remote applications and for service life $>$ 5 years at a cost ranging from \$0.27 to \$0.70/(Wh).

Warren Lyon, right, a member of the senior staff of Hittman Associates, and Thomas Bustard, left, Manager of Hittman's Isotopic Power and Radiation Applications Department, have worked in the radioisotope-fueled generator field since early 1957. Adoniram Hiebert, Chief of Hittman's Design Section since 1964, is responsible for mechanical design of the generators.

^{60}Co HEAT-SOURCE ENCAPSULATION

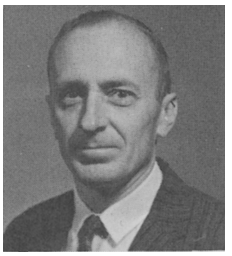
Tests show that ^{60}Co heat sources can be encapsulated safely in one of several nickel- and cobalt-based alloys for one year at 800°C. Operation for longer periods or higher temperatures appears feasible.

Shown from l to r are J. P. Faraci and C. L. Angerman, Sr. Research Scientist, of the Nuclear Materials Division, F. D. R. King, Engineer with the Reactor Engineering Division, and A. E. Symonds of the Nuclear Materials Division of the Savannah River Laboratory. Their experience with the materials and engineering problems of reactor fuel elements provides the background for their work with fuel capsules for isotopic heat and power sources.

HASTELLOY N STRESS-RUPTURE PROPERTIES

Irradiation of Hastelloy N tubing at 760°C reduced rupture life by a factor of 10 and markedly decreased tangential rupture strains without altering creep rates.

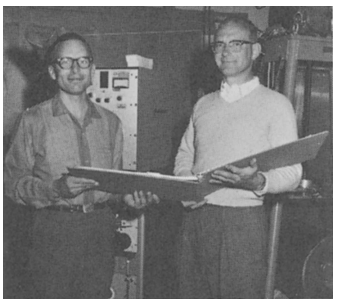
Herbert E. McCoy, Jr. (r) has been a metallurgist in the Metal and Ceramics Division of ORNL since 1958 and, since 1965, a Lecturer in Mechanics at the University of Tennessee, where he obtained his PhD in metallurgy in 1964. J. R. Weir, Supervisor of the Mechanical Properties Group has an MS degree, also from the University of Tennessee. Both men have extensive experience in the effects of neutron irradiation on metals.



IRRADIATION EMBRITTLEMENT OF STEEL

Neutron embrittlement of low-alloy steel at irradiation temperatures between 450 and 575°F is influenced by the amount of uncombined nitrogen in the steel.

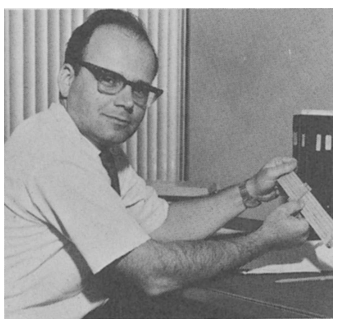
Arthur E. Powers (PhD, Lehigh University, 1951) has worked at KAPL since 1959, specializing in radiation damage of metals. Before that, he studied high-temperature properties of steel at GE's Large Steam Turbine-Generator Department.



TANTALUM MASS TRANSFER

The mass transfer of tantalum in Pu-Co-Ce melts was studied by gamma scanning capsules containing radioactive tantalum in contact with the liquid metal.

John C. Biery (l) and Carl R. Cushing are staff members of the Nuclear Materials Group of LASL's Reactor Division. Biery (PhD, Iowa State University), the Associate Group Leader, has studied liquid-metal mass-transfer phenomena. Cushing (BS, University of New Mexico) has developed gamma-scanning techniques for these studies.



CRITICAL ARRAY ANALYSIS

The surface density method for calculating safe distances between upright cylindrical subcritical units containing either fissile solutions or all-^{235}U metal is examined for both reflected and bare systems.

Thomas Gutman (BS, mechanical engineering, Rochester Institute of Technology, 1954) is a Criticality Engineer at Westinghouse's Nuclear Fuels Division. Previously, at NUMEC, he was responsible for nuclear safety and designed many fissile material shipping containers.