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REATIONS PRODUCED BY NEUTRONS IN
HEAVY ELEMENTS

By Dr. Enrico Fermi

Professor of Physics, Columbia University

The nuclear reactions produced by neutron bom-
bardment in heavy elements can be conveniently de-
scribed, according to Bohr, with the assumption that,
as soon as the bombarding neutron strikes the nucleus,
it is incorporated into the nuclear structure with the
formation of the so-called compound nucleus. This is
a relatively stable system in the sense that its lifetime
is very long compared with the frequencies of nuclear
particles; in an absolute sense, however, the lifetime
is very short, being sometimes of the order of 10^-18
seconds and sometimes much less.

The ultimate result of the nuclear reaction depends

1 Presented in a symposium on "Nuclear Physics," at
the University of Pennsylvania Bicentennial Conference,
September 19.