neutron energies for reactors containing small amounts of moderators. The old method of velocity selectors are not very effective in this region and other methods, for instance the one using the neutrons from light nuclear reactions, are not applied easily in this energy region. The Plowshare method could fully explore this region and thereby make a great contribution to nuclear reactor technology, in particular, to the development of fast breeders.

Other experiments on nuclear physics could be carried out in a unique fashion with the help of nuclear explosions. Thus one could study the collision of pairs of neutrons. There are several ways in which this could be done. One of the simplest is to study the high-energy end of the neutron spectrum in a thermonuclear explosion.* The highest energy neutrons generated in such an explosion carry 14 million volts. Collision of two such neutrons, however, can produce even faster neutrons up to 28 million volts. The intensity of these very fast neutrons will permit a direct, though somewhat inaccurate, determination of the neutron-neutron cross section. More elaborate experiments will be needed to obtain the accurate cross section.

Nuclear physics may be even more rapidly advanced by another application of thermonuclear explosions. The first of these big-scale events (performed in 1952 under the code name of Mike) gave rise to a considerable number of successive neutron captures.** A maximum of eighteen neutrons

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*This was suggested by Dr. Stanislaus Ulam in the early fifties.

**A. Ghiorso, S. G. Thompson, G. H. Higgins, G. T. Seaborg, M. H. Studier, P. R. Fields, S. M. Fried, H. Diamond, S. F. Meek, G. L. Pyle, J. R. Huizenger, A. Hirsh, W. M. Manning, C. I. Browne, H. L. Smith, and R. W. Spence. Phys. Rev. 99, 1048 (1955).