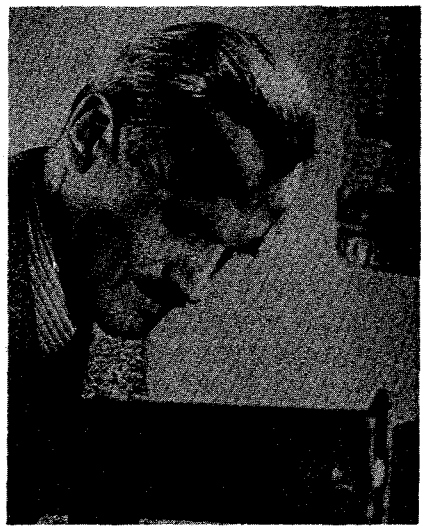
was not known whether a value for "k" greater than unity could ever be obtained.

Fortunate it was that the obtaining of a reproduction factor greater than 1 was a complex and difficult problem. If Hitler's scientists had discovered the secret of controlling the neutrons and had obtained a working value of "k," they would have been well on the way toward producing an atomic bomb for the Nazis.

The Cubical Lattice Concept

One of the first things that had to be determined was how best to place the uranium in the reactor. Fermi and Szilard suggested placing the uranium in a matrix of the moderating material, thus forming a cubical lattice of uranium. This placement appeared to offer the best opportunity for a neutron to encounter a uranium atom. Of all the materials which possessed the proper moderating qualities, graphite was the only one which could be obtained in sufficient quantity of the desired degree of purity.

The study of graphite—uranium lattice reactors was started at Columbia in July, 1941, but after reorganization of the uranium project in December, 1941, Arthur H. Compton was placed in charge of this phase of the work, under the Office of Scientific Research and Development, and it was decided that the chain reactor program should be concentrated at the University of Chicago. Consequently, early in 1942 the Columbia and Princeton groups



Arthur Holly Compton, Director of the "Chicago Metallurgical Project," 1942-1945.