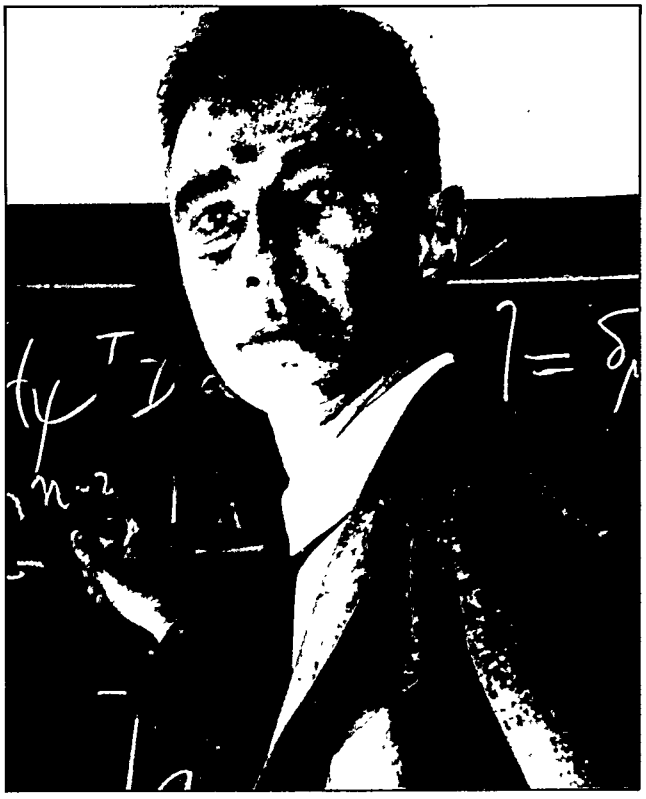
only cloud in the Chicago sky was the scientists' disappointment when they learned that construction and operation of the production facilities, now to be built near the Clinch River in Tennessee at Site X, would be turned over to a private firm. An experimental pile would be built in the Argonne Forest Preserve just outside Chicago, but the Metallurgical Laboratory scientists would have to cede their claim to pile technology to an organization experienced enough to take the process into construction and operation.

The Luminaries Report From Berkeley

While each of the four processes fought to demonstrate its "workability" during summer and fall 1942; equally important theoretical studies were being conducted that greatly influenced the decisions made in November. Robert Oppenheimer headed the work of a group of theoretical physicists he called the luminaries, which included Felix Bloch, Hans Bethe, Edward Teller, and Robert Serber, while John H. Manley assisted him by coordinating nationwide fission research and instrument and measurement studies from the Metallurgical Laboratory in Chicago. Despite inconsistent experimental results, the consensus emerging at Berkeley was that approximately twice as much fissionable material would be required for a bomb than had been estimated six months earlier. This was disturbing, especially in light of the military's view that it would take more than one bomb to win the war. The goal of mass-producing fissionable material, which still appeared questionable in late 1942, seemed even more unrealistic given Oppenheimer's estimates. Oppenheimer did report, with some enthusiasm, that fusion explosions using deuterium (heavy hydrogen) might be possible. The possibility of thermonuclear (fusion) bombs generated some optimism since deuterium supplies, while not abundant, were certainly larger and more easily supplemented than were those of uranium and plutonium. S-1 immediately authorized basic research on other light elements.



J. Robert Oppenheimer. Reprinted by permission of the J. Robert Oppenheimer Memorial Committee.

Input From DuPont

Final input for the November meetings of the Military Policy Committee and the S-1 Executive Committee came from DuPont. One of the first things Groves did when he took over in September was to begin courting DuPont, hoping that the giant chemical firm would undertake construction and operation of the plutonium separation plant to be built in Tennessee. He appealed to patriotism, informing the company that the bomb project had high priority with the President and maintaining that a successful effort could affect the outcome of the war. DuPont managers resisted but did not refuse the task, and in the process they provided an objective appraisal of the pile project. Noting that it was not even known if the chain reaction would work, DuPont stated that under the best of circumstances plutonium could be mass-produced by 1945, and it emphasized that it thought the chances of this happening were low. This appraisal did not discourage Groves, who was confident that DuPont would take the assignment if offered.

Time for Decisions

The Military Policy Committee met on November 12, 1942, and its decisions were ratified by the S-1 Executive Committee two days later. The Military Policy Committee, acting on Groves's and Conant's recommendations, cancelled the centrifuge project. Gaseous diffusion, the pile, and the electromagnetic method were to proceed directly to full-scale,