

THE MANHATTAN PROJECT AND THE FIRST NUCLEAR PILE



SHORTLY AFTER FERMI'S ARRIVAL AT THE UNIVERSITY, HE (TOGETHER WITH BOOTH AND DUNNING) VERIFIED THE NUCLEAR FISSION EXPERIMENT OF HAHN AND STRASSMAN. FERMI THEN BEGAN THE CRUCIAL TASK OF CONSTRUCTING THE FIRST NUCLEAR PILE AT COLUMBIA (STARTED IN PUPIN, LATER TRANSFERRED TO AND COMPLETED IN SCHERMERHORN). THE FOLLOWING IS TAKEN VERBATIM FROM FERMI'S ADDRESS UPON RETIREMENT AS PRESIDENT OF THE AMERICAN PHYSICAL SOCIETY (DELIVERED IN McMILLAN, NOW MILLER, THEATER ON JANUARY 30, 1954).

... I REMEMBER VERY VIVIDLY THE FIRST MONTH, JANUARY, 1939, THAT I STARTED WORKING AT THE PUPIN LABORATORIES BECAUSE THINGS BEGAN HAPPENING VERY FAST. IN THAT PERIOD, *NIELS BOHR* WAS ON A LECTURE ENGAGEMENT IN PRINCETON AND I REMEMBER ONE AFTERNOON *WILLIS LAMB* CAME BACK VERY EXCITED AND SAID THAT *BOHR* HAD LEAKED OUT GREAT NEWS. THE GREAT NEWS THAT HAD LEAKED OUT WAS THE DISCOVERY OF FISSION AND AT LEAST AN OUTLINE OF ITS INTERPRETATION. THEN, SOMEWHAT LATER THAT SAME MONTH, THERE WAS A MEETING IN WASHINGTON WHERE THE POSSIBLE IMPORTANCE OF THE NEWLY-DISCOVERED PHENOMENON OF FISSION WAS FIRST DISCUSSED IN SEMI-JOCULAR EARNEST AS A POSSIBLE SOURCE OF NUCLEAR POWER.

AT THE SAME TIME EXPERIMENTATION WAS STARTED FEVERISHLY IN MANY LABORATORIES, INCLUDING PUPIN.

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NOW THIS WORK WAS CARRIED ON AT COLUMBIA SIMULTANEOUSLY BY ZINN AND SZILARD ON ONE HAND AND BY ANDERSON AND MYSELF ON THE OTHER HAND. ... I DON'T KNOW HOW MANY OF YOU KNOW SZILARD. HE IS CERTAINLY EXTREMELY INTELLIGENT. (LAUGHTER) I SEE THAT IS AN UNDERSTATEMENT. (LAUGHTER) HE IS EXTREMELY BRILLIANT AND HE SEEMS TO ENJOY STARTLING PEOPLE.

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GRAPHITE IS A BLACK SUBSTANCE. SO IS URANIUM OXIDE. AND TO HANDLE MANY TONS OF BOTH REQUIRES STRONG PEOPLE. DEAN PEGRAM LOOKED AROUND AND SAID THERE IS A FOOTBALL SQUAD AT COLUMBIA THAT CONTAINS A DOZEN OR SO OF VERY HUSKY BOYS WHO TAKE JOBS BY THE HOUR JUST TO CARRY THEM THROUGH COLLEGE. WHY DON'T YOU HIRE THEM?

AND IT WAS A MARVELOUS IDEA ...



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LEO SZILARD

... IT REALLY WAS A PLEASURE TO DIRECT THE WORK OF THESE HUSKY BOYS, CANNING URANIUM--JUST SHOVING IT IN--HANDLING PACKS OF 50 OR 100 POUNDS WITH THE SAME EASE AS ANOTHER PERSON WOULD HAVE HANDLED 3 OR 4 POUNDS. AND PASSING THEM IN THESE CANS, AND JUST FUMES OF ALL SORTS OF COLORS, MOSTLY BLACK, WOULD GO IN THE AIR. ...SO GREW WHAT WAS CALLED AT THE TIME

THE EXPONENTIAL PILE.

...WELL, THIS BRINGS US TO PEARL HARBOR. THAT IS THE TIME WHEN I LEFT COLUMBIA UNIVERSITY, AND AFTER A FEW MONTHS OF COMMUTING BETWEEN CHICAGO AND NEW YORK EVENTUALLY MOVED TO CHICAGO TO KEEP UP THE WORK THERE, AND FROM THEN ON, WITH A FEW NOTABLE EXCEPTIONS, THE WORK AT COLUMBIA WAS CONCENTRATED ON THE ISOTOPE-SEPARATION PHASE OF THE ATOMIC ENERGY PROJECT, INITIATED BY BOOTH, DUNNING AND UREY ABOUT 1940.



THIS PICTURE WAS TAKEN IN 1946, AND CONSISTS OF THOSE WHO WERE INVOLVED IN THE EARLY PHASE OF THE MANHATTAN PROJECT.

SEATED (FROM LEFT): GROVES, BUSH, FERMI, NICHOLS, PEGRAM, BRIGGS
STANDING: THOMAS, CONANT, COMPTON, MURPHREE, GREENEWALT

AFTER THE FAMOUS LETTER SIGNED BY EINSTEIN (TRANSCRIBED BY SZILARD) TO ROOSEVELT IN 1939, THE NAVY AWARDED COLUMBIA THE FIRST ATOMIC ENERGY FUNDING OF \$6000. THIS GREW INTO THE MANHATTAN PROJECT.