Form No. 10-300 (Rev. 10-74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC: Pupin Physics Laboratories, Columbia University

AND/OR COMMON: Pupin Physics Laboratories

2 LOCATION

STREET & NUMBER: Broadway and West 120th Street — __NOT FOR PUBLICATION

CITY, TOWN: New York — __ VICINITY OF

CONGRESSIONAL DISTRICT: 20th

STATE: New York — CODE: 36 — COUNTY: New York — CODE: 61

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	__PUBLIC	X OCCUPIED	__AGRICULTURE	__MUSEUM
X BUILDING(S)	X PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
__STRUCTURE	__BOTH	__WORK IN PROGRESS	X EDUCATIONAL	__PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	X YES: RESTRICTED	__GOVERNMENT	X SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		X NO	__MILITARY	__OTHER:

4 OWNER OF PROPERTY

NAME: Columbia University

STREET & NUMBER: Broadway and West 120th Street

CITY, TOWN: New York — __ VICINITY OF — STATE: New York

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC.: New York County Hall of Records

STREET & NUMBER: 31 Chambers Street

CITY, TOWN: New York — STATE: New York

6 REPRESENTATION IN EXISTING SURVEYS

TITLE

DATE — __FEDERAL __STATE __COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS

CITY, TOWN — STATE

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
_EXCELLENT	_DETERIORATED	XUNALTERED	X_ORIGINAL SITE
_GOOD	_RUINS	_ALTERED	_MOVED DATE_____
X_FAIR	_UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

The Pupin Physics Laboratories is a brick structure of 10 stories with stone trim on corners and cornice. The windows are single sash one over one with single stone flathood. The laboratories in which the clyclotron and its associated activities were kept occupy the entire basement floor of the building.

Originally to the right of a flight of stairs that lead down from the ground floor was a corridor that led to the control room for the cyclotron. Just beyond the control room was an area closed off by large, tall water tanks which shielded against radiation. Inside the wall formed by the tanks was the cyclotron. However, the cyclotron was dismantled in 1964 and sent to the Smithsonian Institution in Washington, but the huge magnet used in the experiment is still in the laboratory. Both the experimental and control rooms are still being used for experimental purposes but not for any radioactive use. Both rooms are full of lab equipment and crowded with various kinds of paraphernalia. The Pupin Physics Laboratories is the functioning Physics Building of Columbia University. In this building 33 full-time faculty members teach 1,120 undergraduates and 114 graduate students. The building, including the experimental and control rooms are not open to the public.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW				
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	__CONSERVATION	__LAW	X SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE
__1600-1699	__ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	__ENGINEERING	__MUSIC	__THEATER
__1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION
X 1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		X INVENTION		

SPECIFIC DATES January 25, 1939 BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

The cyclotron magnet which first split the uranium atom in the New World, on January 25, 1939, is located within the basement laboratory of the Pupin Physics Building of Columbia University, Broadway and West 120th Street, New York, New York. This event followed by only 10 days the world's first atom-splitting in Copenhagen, Denmark.

Dr. Enrico Fermi, a refugee from Fascism, had just joined the Columbia University faculty when news came of an atomic breakthrough in Copenhagen. He immediately assembled his colleagues and planned an attempt to verify the amazing news. Fermi was called to Washington on the day of the experiment, which was carried out by Dr. John R. Dunning and several colleagues. The first attempt was successful and, after several repetitions to eliminate the possibility of error, Dr. Dunning recorded in his laboratory notebook: "Here is real atomic energy."

The cyclotron magnet is located in a basement laboratory. To the right of a flight of steps leading down from the ground floor is a corridor that leads to the cyclotron control room, which has been converted to a storage area. Only the great magnet still remains of the atom-splitting apparatus. The other basement labs, which flank the central corridor, are still in use as laboratory work areas.

HISTORY

During the 1930's, European and American scientists had been making steady progress in their quest to unleash the power of the atom. Enrico Fermi contributed a major advance when in 1934 he and his colleagues bombarded a uranium atom with neutrons and proved the possibility of atomic energy. Subsequent work led to further advances, and on January 15, 1939, two German exiles, Dr. Lise Meinter and Dr. Otto R. Frisch, successfully split the uranium atom in Copenhagen, liberating some 200,000,000 volts. At about the same time, Fermi, also an exile from Fascism, arrived in the United States to join the faculty at Columbia University. When news of the Meitner-Frisch success reached Fermi, he assembled those at Columbia who had been working on atomic energy and discussed the epochal event with them. It was then planned to conduct experiments to verify the amazing news from Denmark.

The experiment devised aimed at studying the ionization, or electrical pulses, that would be released after uranium atoms had been split. These pulses were to be watched on an oscilloscope, which has been described "as a species of atomic thermometer."1 The energy, or pulses, is transformed into lines on an oscilloscope and can thus be observed. On the day of the experiments, Fermi had to go to

9 MAJOR BIBLIOGRAPHICAL REFERENCES

S. Sydney Bradford, "Cyclotron, Pupin Physics Laboratory, Columbia University," National Survey of Historic Sites and Buildings special study, August 10, 1964.
William L. Laurence, Dawn Over Zero (New York, 1946).
"Extracts from the Notebooks of John R. Dunning," (n.p., n.d.).
Press Release, Columbia University, January 26, 1964 and December 26, 1965.

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY less than 1 acre

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	18	587590	4517980
B			
C			
D			

VERBAL BOUNDARY DESCRIPTION

The boundaries of the landmark are coterminus with those of the Pupin Physics Laboratories building. Beginning approximately 160' east of the southwest intersection of Broadway and 120th Street, at the northwest corner of the Pupin building, proceed east along the north facade of the building for approximately 225' to the northeast corner of the building, thence proceed south along the east side of the building for approximately 80' to the southeast corner of the building,

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE
Cecil McKithan, Historian

ORGANIZATION	DATE
Historic Sites Survey	March 1978
STREET & NUMBER	TELEPHONE
1100 L Street, NW.	523-5464
CITY OR TOWN	STATE
Washington,	D. C.

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL ___ STATE ___ LOCAL ___

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

TITLE DATE

Landmark
Designated: DEC 21 1965
date
Boundary Certified: MAR. 15 1978
date

FOR NPS USE ONLY
I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER
DATE 9/28/83

ATTEST: DATE

KEEPER OF THE NATIONAL REGISTER

GPO 892.453

Washington and Dr. John R. Dunning, with some colleagues, carried out the investigation.

Outside, a cold wind raced through the campus as Dunning and Drs. E. T. Booth and F. G. Slack prepared for the experiment. After laborious efforts in readying the cyclotron, all was ready for the attempt to split the uranium atom. Then the bombardment began, and

> Suddenly, huge green lines began to shoot up in the circle of the circle of the oscilloscope screen. They leaped high and seemed to jump from the screen and they stunned the scientists. . . . . He'd [Dunning] never seen anything like it before. He quickly calculated that between 150 and 200 million electron volts were being generated. At that rate one pound of Uranium-235 could yield as much energy as 5 million pounds of coal.[2]

Afraid that something might have gone wrong, Dunning carefully checked the cyclotron and other apparatus, but found nothing amiss. He then repeated the experiment many times and by about midnight was convinced that atomic energy could be released.

The fascination of the night's work is added to by the notes jotted down in a laboratory notebook by Dunning. They, like the journal of a soldier kept during a campaign, bring us close to a major historical event. The first sentence for January 25, 1939, reads, "Believe we have observed new phenomenon of far reaching consequences." After relating, in technical language, how he prepared the cyclotron and then began the experiment, Dunning wrote, "Observed very large kicks [green lines] on oscillograph!" And after further observations about the experiment, the physicist commented "here is real atomic energy."[3]

Dunning, who had long worked on the problem of releasing atomic energy, realized the significance of the night's work. Furthermore, continued experimentation during the following several days convinced him of the possibility of a chain reaction, which, if uncontrolled, could unleash a tremendous amount of energy in a split second. The young scientist also grasped the political and military implications of his work, and he noted in his journal on January 27 that he and his colleagues

> Agreed to keep it rigorously quiet in view of serious implications of atomic energy release internationally.[4]

The culmination of the enquiry of the scientists into atomic energy on January 15 in Europe and on January 25 in the United States remains a turning point in world history. Dunning's success resulted in Federal support for atomic research at Columbia that led to the development of the "Manhattan District Project" and the subsequent production of the atomic bomb.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY

RECEIVED

DATE ENTERED

[1]William L. Laurence, Dawn Over Zero (New York, 1946), p.35.

[2][News release], Columbia University, January 26, 1964, page 4.

[3]Quoted from "Extracts from the Notebooks of John R. Dunning," Columbia University (n.p., n.d.)

[4]His italics, Ibid.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

Geographical Data

thence proceed west along the south (rear) facade of the building to the southwest corner of the building, thence proceed north along the west side of the building to the point of origin. These boundaries enclose the landmark within the physical dimensions of the building.