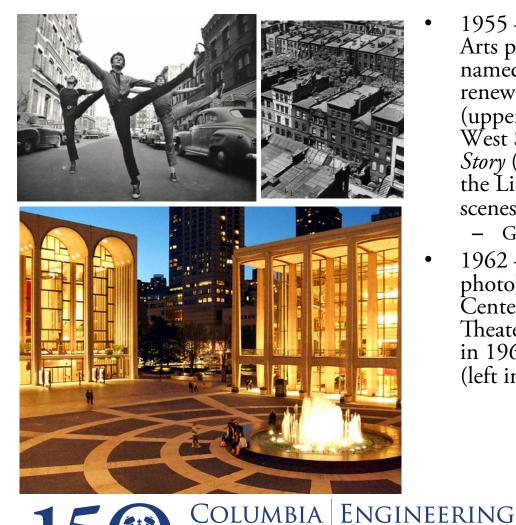
Memoríes From the SEAS Tíme Capsules

The Tenth Decade: 1955-1964





The Fu Foundation School of Engineering and Applied Science
1864–2014

1955 – The Lincoln Center for the Performing Arts project begins with Lincoln Square (so named in May 1906) designated for "urban renewal." Some of the tenement locations (upper right) in Lincoln Square (which is on the West Side) are used in the 1961 film *West Side Story* (upper left) and are later razed as part of the Lincoln Center project. (Some playground scenes are filmed on 110th St. on the East Side.)

- Groundbreaking on May 14, 1959 (below).

1962 – Avery Fisher Hall (right in lower left photo) (formerly Philharmonic Hall) in Lincoln Center opens, followed by the David H. Koch Theater (formerly the New York State Theater) in 1964, and the Metropolitan Opera House (left in lower left) in 1966.

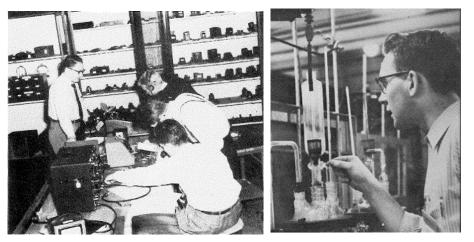


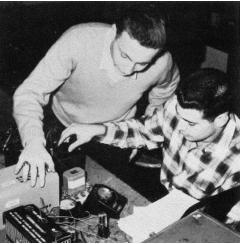




- The Oct. 10, 1955 *Spectator* reports on plans for a new Engineering Center at Amsterdam Ave. and 120th St.
- Currently, many School activities are in the Mines (far left) and Engineering (near left and below) Buildings.
 - Photos from the 1957 (left) and 1959 (below) *Columbia Engineer* yearbooks.









COLUMBIA | ENGINEERING The Fu Foundation School of Engineering and Applied Science

- Students working in the laboratory.
 - Photos from the 1953 (upper far left), 1956 (lower left), 1957 (upper near left), and 1959 (below) *Columbia Engineer* yearbooks.

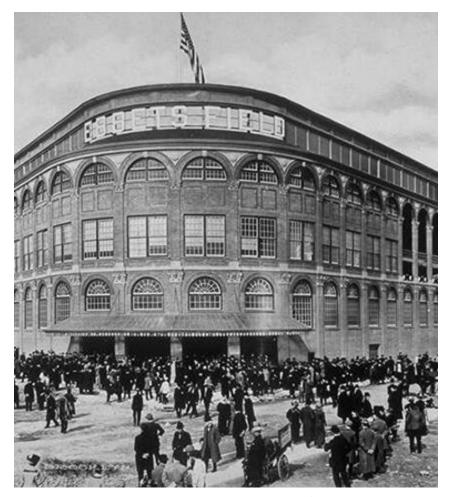




• The Class of 1957 presents to the chemical engineering faculty a wooden screw signed by all members of the class.



COLUMBIA | ENGINEERING The Fu Foundation School of Engineering and Applied Science



- September 24, 1957 –
 The Brooklyn Dodgers
 play their last game in
 Ebbets Field (shown in
 1913), as they prepare to
 leave town, to the dismay
 of their many fans.
- It had been the home of the Dodgers since 1913, and was demolished on February 23, 1960.



COLUMBIA | ENGINEERING The Fu Foundation School of Engineering and Applied Science





Dean John R. Dunning

Ends Present Policy Of Taking Students Only from Colleges

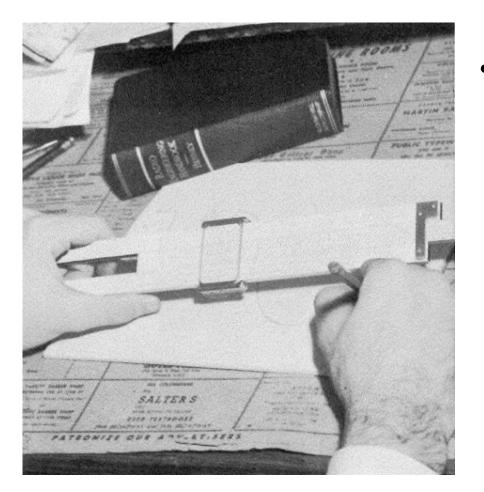
By Morris Dickstein For the first time since 1914, the School of Engineering will open its doors to freshmen next year. A selected pilot group of 50 to 60 students are to be under the new program.

This major policy shift was announced by Dean John R. Dunning.

COLUMBIA ENGINEERING The Fu Foundation School of Engineering and Applied Science

- As reported in the Dec. 4, 1958 *Spectator*, Engineering will directly admit freshmen, starting with the incoming class in Fall 1959.
 - Since 1924 "preengineering" undergraduates have needed to transfer as juniors from the College to the Engineering School.
 - Since 1951, upperclassmen also entered the School from other colleges through the Combined Plan.





COLUMBIA ENGINEERING The Fu Foundation School of Engineering and Applied Science

- Slide rules* in action in the days before calculators.
 - Photo from the 1959
 Columbia Engineer yearbook.

* Slide rules operated on the principle that multiplication and division involve the addition and subtraction of logarithms (base 10).





The Columbia University Engineering Newsletter team is shown with a mimeograph machine*, photo from the 1959 *Columbia Engineer* yearbook.

* Mimeograph machines were low-cost printing presses that worked by forcing ink through a stencil onto paper, and were first patented by Edison and in common use before xeroxing.



The Fu Foundation School of Engineering and Applied Science
1864–2014

COLUMBIA ENGINEERING

April 4th, 1959 OUR MOST IMPORTANT DATE SINCE 1864 Mail Your

Reservations Now!

VOL. 2, NO. 3

Busy Dean's Day Is Scheduled

Engineering Desn's Dey '50 has acheduled a fuil day of junctions on Columbia Cempus April 4.

Beginning at 10 o'clock in the morning, registration takes place on the second floor balcony of Schemerhern Hall, where colfee and deughauts will be served.

From 16:30 to 11:30 the first lecture of the day will be presented by Jack Heary Schulmas, Stabley-Thompson Professor of Chemical Matsilungy, Dr. Schulman has prepared a unique presentation entilled "Sreing is Ballving," which will feature illustrations mode with a high resolution electron misroscope.

These slides will be of outstanding interest since, in some cases, they have never been on public view before, and will present revolutionary aspects of molecules, molecular agregates, microemulation and molecular leafilts and will demonstrate adsorbed molecues on metal surfaces.

Gecondersching for the first until of the new Engineering Center will take place at 11:45 with President Grayson. Kisk and Dean John R. Daming officiating, The showl used by Max. Seth Levo on June 18th, 1985, for groundhershing of Lev Library, the first halfing on Marningsie Heights, will be usof a phis coremony, and both President Krick and Dean Durning will speak hriefly on the cutstanding significance of the occasion.

Following the geometrewise, alumni and puests will meet at the Freederly Club ior a reception and the Deem's hunchem at which majne denors and Transtees of the University will be present to bener For. Dunning. A highlight of the huncheen program will be the presentation of the Michoel I. Puptin Medol is given for "service to the nation" and is awarded in this 10th anniversary year of the bit of Preference Papins (the Clumbit Darimetering School Alumni Associa-(Continued on Page 6)

Groundbreaking

engineering alumni times

Robert A. W. Carleton '04

Egleston Medalist Robert A. W. Carleton, president and founder of The Carleton Company, Ineconstruction engineering firm, has been maned the 1859 recipient of the Egleston Modal, Columbia University's highest avord for "distinguished engineering achievement. The amountcoment was

mais by Louis H. F. Monguin, preident of the Columhis B ng in ce eing Scheol Alumni Association, which Egistem Media. This Award will be presented to Mr. Carleton at cere-

monies to be held in the Retunda Giogenra.w.casterow Low Memorial Library as a part of the annual Dean's Day program on Saturday, April 4th. At that time a specific citation of the award will be made publie.

Mr. Carleton was graduated from the School of Engineering in 1904 with the (Continued on Page 6)

Pupin Medal Awarded To Dean J. R. Dunning

To John R. Junning, Denn of the Columbia School of Engineering, who has played a key role in the development of the United States' atomic enery program, will address the Engineering Engineering School Alumni Association, ore Saturdoy, April Ho. Bean Dunning's talk will be entitled: "The Engineer and the Next Civilization."

eer and the Next Civilization." Ge Dean Daming will be swarded the Michael I. Pupin Anniversary Medal for dizinguished "service to the notion." Given This is the hird in a section of similar medals awarded during 1588-1589, 100th for (Centinued on Page 6) ists

-1-

04 Ground will be broken on Engineering

MARCH 1959

Dean's Day, Saturday, April 4, for the new Colombia Engineering Center, At 1145 A.M. President Grayson Kirk and Dean John R. Dunning will turn over the first two spokelist of earth at the atte of the first huilding of the Center, to be known as the Sceley Wintersmith Mudd Building, on the Campus at 120th St. and Armsterdam Avenue.

In the presence of major donors to be Engineering Conter, Trustees, engineering alaumi, Faculty and friends of the Scheel of Engineering, the two Columbia officials will use the same spade with which Mira. Seth: Low, wife of a for Low Memorial Library, the first resw building on the Moringold Heights comport, June 18, 1995.

The iolig-awaites first major founding of the Engineering Center will b-a a thirteen story edifice containing 100,003 square foct, which will house classrooms, laborataries and administrative offices for Mining, Metallurgical and mineral engineering, Meclanical, Civil, Electrical, Industrial and Chemical engineering.

The Muid Building will contain the Analyzer Monel Library and Student Centre; the Charles F. Hayden Laboraery of Extractive Metallurgy; The Henry Krunis School of Minas; The Henry Krunis School of Minas; The Marcellus Hartler Laboratories of Elfectrical Engineering; The Daniel and Florence Grogenehein Institute of Flight Structures; the Western Electric Instrument Laboratory; The Weller Hull Advidge Laboratory of Mining Goo-Physics and ethers.

This medern, fully air-conditioned building, the largest presently to be constructed at Columbia, marks the beginning of the results of a ten-year effort by the School of Enginteering and its alumni.

- March, 1959 Announcement of several momentous SEAS events in a single issue of *Columbia Engineering Alumni Times*.
 - Upcoming groundbreaking of the Mudd Building.
 - Alumnus Robert Carleton C.E. '04 named the Egleston Medalist.
 - Carleton Lab to open in the planned Engineering Terrace Building.
 - Dean John R. Dunning awarded the Pupin Medal.
 - In the 1930s he developed stronger neutron sources using cyclotrons, in 1939 he was on the first team to achieve nuclear fission in the United States, and during WWII he made important advances in gaseous diffusion to separate uranium isotopes for the Manhattan Project.
 - Henry Krumb bequest.



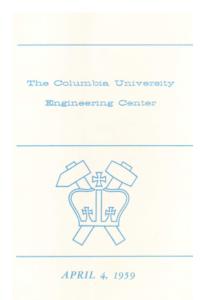
CU Breaks Ground Saturday For New Engineering Building



ARTIST'S DRAWING of the Seeley Wintersmith Mudd Building, first unit of Columbia's Engineering Center.

- Construction on the Seeley Wintersmith Mudd Building, the first unit of Columbia's Engineering Center, is imminent, as reported on March 31, 1959 in The *Spectator*.
- "Three large gifts in recent months have permitted expansion of plans for the center and an immediate start of construction."
 - The start of construction was made possible by a gift from the Seeley Wintersmith Mudd Foundation (as well as by the one from the Krumb Foundation).
 - The bequest from the late Henry Krumb E.M. '98, will be divided between the Engineering Center and The School of Mines.
- The gift from the Ambrose Monell
 Foundation of New York will be used to
 provide a library and student center in the
 new building, named for Ambrose Monell,
 who graduated from Engineering in 1896.







The Seeley Wintersmith Mudd Building

First Unit of the Columbia University Engineering Center April 4, 1959 – Program of the groundbreaking for the Mudd Building.

Ground-Breaking Ceremony

11:45 A.M. Saturday, April 4, 1959 Corner Amsterdam Avenue and 120th Street

CALL TO ORDER	Hon, Felix E. Wormser, Chairman
INVOCATION	Chaplain John M. Krumm
REMARKS	Dean John R. Dunning
REMARKS	President Grayson Kirk
	(The first spadeful of earth is turned by President Kirk, the second by Dean Dunning, using the historic spade with

(The first spadeful of earth is turned by President Kirk, the second by Dean Dunning, using the bistoric spade with which Mrs. Seth Low boke ground for Low Memorial Library, June 18, 1895.)

CONCLUSION

Hon. Felix E. Wormser, Chairman







COLUMBIA | ENGINEERING The Fu Foundation School of Engineering and Applied Science 1864–2014 April 4, 1959 – Groundbreaking for the Mudd Building, (below) with the same silver spade used to begin work in 1895 on the first Morningside campus building.



Bequest From Henry Krumb

Henry Krumb, distinguished mining engineer and graduate of the Columbia School of Mines in 1898, who died on December 27, 1958 at the age of 83, has made a bequest to Columbia in support of engineering education, believed to be one of the largest single bequests in the University's 205-year history.

The bequest may reach a total of \$6 million and eventually \$10 million.

Mr. Krumb left one half of his estate to Mrs. Krumb, the former LaVon Duddleson, whom he married in 1914. The other half, after deduction of taxes and direct gifts to individuals, religious, cultural and charitable organizations, was left to Columbia. In addition, Mr Krumb gave \$500,000 to establish and maintain the "Krumb Chair of Mining" and added \$100,000 to the Henry Krumb-Mining and Metallurgical Scholarship Fund, which he had set up at Columbia in 1945 with a similar grant.

He directed that one-half the amount now left directly to Columbia be applied toward the construction of the Engineering Center. A similar amount was left "for improving and building up the School of Mines," as stated in his will that the School of Mines should become "one of the most efficient, best-known and largest schools of its kind in the world, with a reputation second to none."

- 1959 After Krumb's bequest the School of Mines/Department of Mining, Metallurgy, and Mineral Engineering was renamed the Henry Krumb School of Mines.
- As of 1962, Henry Krumb and his wife Lavon Duddleson Krumb had left nearly \$16,000,000 to Columbia.

April 4th, 1959 OUR MOST IMPORTANT DATE SINCE 1864 Mail Your Reservations Now!

VOL. 2, NO. 3





The Fu Foundation School of Engineering and Applied Science

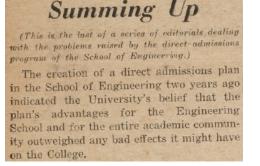
1864-2014

COLUMBIA ENGINEERING



- September, 1959 The Engineering School admits and registers freshmen directly from high school for the first time since 1912-1913. (See The *Spectator* Oct. 28, 1959 headline, above, and March 10, 1960 editorial remarks, below.)
 - Freshmen and sophomores still take primarily liberal arts and fundamental science courses, while the last two years stress engineering work.
 - There is concern that the proposed increase in direct admissions, from 150 to 400 per year, will require extra resources, but such an increase does not occur.





- This first class directly admitted to SEAS of ninety-two freshmen includes four "coeds."
 - The March 10, 1960 *Spectator* editorial remarks "The presence of girls in the engineering program" reflects "haphazard planning" and "the admission of girls into the program implies a covert, if unplanned, introduction of coeducation into Columbia College."
 - 1970 SEAS women are now living in Carman (Sept. 29, 1970 *Spectator* photo); several had lived in Johnson Hall, limiting studying with classmates.
 - The first woman in the College is the Engineering undergrad Anna Kornbrot, a 4-1 student who first got her B.S. in SEAS in 1974, and then her B.A from the College in 1975; shown, headline from the Sept. 9, 1974 Spectator.
 - The first women are directly admitted to the College in 1983.

First Woman Enters College To Complete Joint Degree







Architect's conception of Mudd Hall, new Engineering School, currently under construction.

COLUMBIA ENGINEERING The Fu Foundation School of Engineering and Applied Science

- Direct admissions and the construction of a new Engineering Center, including the Mudd Building (shown, sketch from The Nov. 25, 1959 *Spectator*), are hallmark events in SEAS history.
- The February 13, 1959 Spectator notes "In spite of cramped facilities, Columbia's School of Engineering has been ranked seventh in the nation, by a recent Chicago Tribune poll. But its potentialities are unlimited."



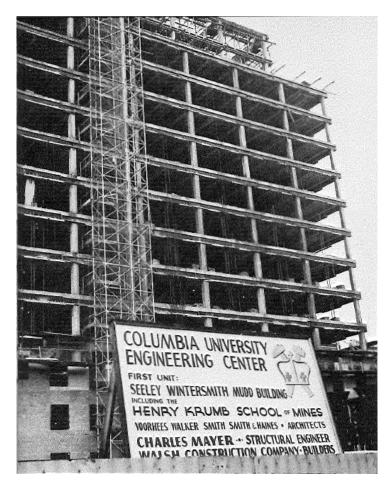


Engineers to Attend **Classes** With College English A and Humanities A1 Will Be Open To School of Engineering Undergraduates

- The April 20, 1960 *Spectator* reports that undergraduate students in the School of Engineering's direct admissions program will be allowed next year to take their English A and Humanities Al courses with Columbia College students.
- Professor of English Charles W. Everett explained that the plan to have the new undergraduate engineers attend classes separate from the regular college students last September was prompted by "the fear that engineering students have only utilitarian objectives which would make them bad liberal arts students." But this fear has not materialized, he said. "If the quality of the undergraduate engineers continues to be as high as it has been this year," he stated, "there will be little difference between them and the regular College students."
- Engineering Dean John Dunning stated that "we have been in favor of integrated classes all along. It is most unwise to segregate engineers and liberal arts students."







COLUMBIA ENGINEERING

The Fu Foundation School of Engineering and Applied Science
1864–2014

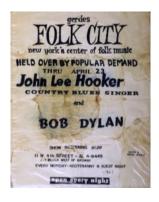
• The Mudd Building under construction; photos used from the 1969 *Columbia Engineer* yearbook.

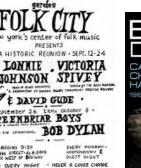


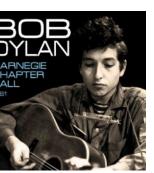


- 1961 The new Seeley W. Mudd Building opens, as shown in the early 1960s.
- With this move the School name changed from School of Engineering to School of Engineering and Applied Science (SEAS) to reflect new activities in the school.

















- 1961 New York City is a major center in the new age of folk music.
- Bob Dylan's career takes off, nurtured by this environment.
 - Nineteen years old, he arrives on Jan. 24, 1961.
 - His first major gig in New York City is on April 11, 1961, opening for iconic blues artist John Lee Hooker in Greenwich Village.
 - Shown in Columbia Studio A, Sept. 29, 1961: (l-r) Bruce Langhorne, Carolyn Hester, Bob Dylan, Bill Lee (below), and recording first album (middle of left column), and at the Bitter End in 1961 (lowest row on left).
 - On the evening of Nov. 4, 1961, nine days after signing with Columbia Records, he performed 22 songs at Carnegie Chapter Hall in New York City, an auxiliary practice room to the "Carnegie Hall" prestigious main hall.





COLUMBIA ENGINEERING The Fu Foundation School of Engineering and Applied Science







- 1961 The Plasma Physics Laboratory is established by several faculty, including Profs. Robert Gross and C.K. (John) Chu.
- This begins a long tradition at the forefront of hightemperature and fusion plasmas and prominence in applied physics, including a major expansion of the fusion effort in 1975.





COLUMBIA ENGINEERING The Fu Foundation School of Engineering and Applied Science



- 1962 The New York Metropolitans (Mets) are established, bringing National League baseball back to the city.
- Shea Stadium (left)

 opens in 1964, and is the
 home of the Mets until
 Citi Field opens in 2009.

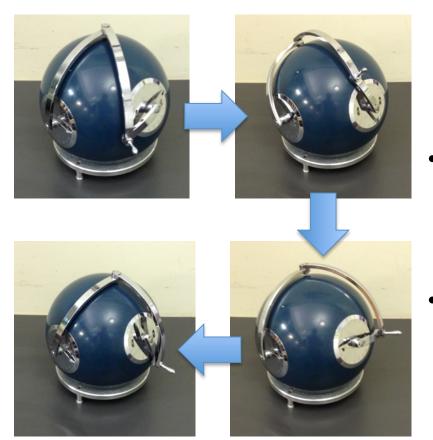




• Summer in the City, Washington Square in 1962.



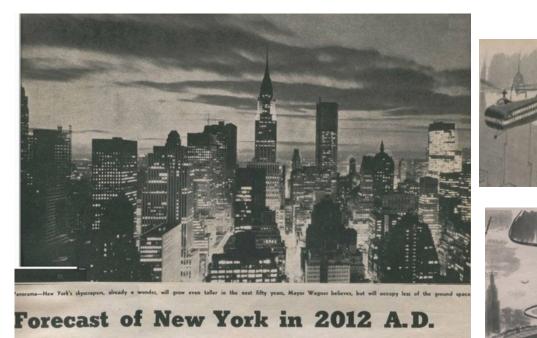




- Ferdinand Freudenstein, a Columbia ME professor from 1954-2006 is known as the "Father of Modern Kinematics". In the 1960s he revolutionizes mechanical design by using computers in kinematics synthesis and the design of mechanism.
- In his Ph.D dissertation (Columbia, 1954), he develops what is later called the Freudenstein Equation, to determine the position of an output lever in a linkage mechanism.
- Illustrative of his work is the sequence on the left: the four-bar linkages used on 2D planar surfaces are seen to also be usable on the 2D surfaces on spheres.







Physically, socially and culturally, the city will attain new splendors, says the Mayor, with 'many Lincoln Centers' for the enrichment of its people.

By ROBERT F. WAGNER



- 1962 Mayor Robert Wagner (mayor from 1954-1965) makes predictions about New York City in 2012 in the *New York Times Magazine*, Oct. 7, 1962. He predicts:
 - Commuters will travel by "rocketpowered vehicles suspended from monorails, or by huge vertical-rising helicopters".
 - There will be "more sunlight, grass and greenery" to "balance skyscrapers".
 - That "shopping streets and centers will become malls".
 - "We may safely say that in 2012 New York City will be a city where all races and nations meet and mingle, a city of many cultures, each of which will be respected and prized. The prevailing spirit of this city in 2012 will reflect the spirit of individual enterprise, of economic opportunity, of social ferment and of cultural excitement. At the same time it will bespeak social pioneering, progress and justice."





COLUMBIA ENGINEERING

The Fu Foundation School of Engineering and Applied Science
______1864–2014 ______

- 1962 Andy Warhol creates his iconic Campbell's Soup can painting, which is displayed at the Museum of Modern Art (MOMA).
- It is included in his first New York solo pop art exhibition, at Eleanor Ward's Stable Gallery Nov. 6–24, 1962.
- MOMA hosts a symposium on pop art in Dec. 1962 where artists like Warhol were attacked for "capitulating" to consumerism.
 - But "the times they are achangin" and Warhol becomes the center of the change in the art world.

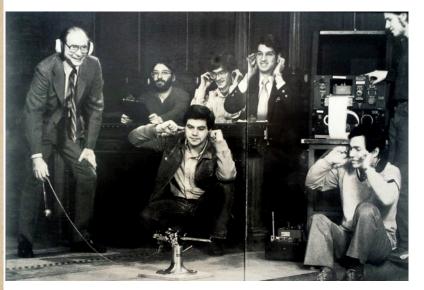
Columbia Engineer to Advise Opera Company on Acoustics

Cyril M. Harris, associate professor of electrical engineering at Columbia, is one of the acoustical consultants for the new Metropolitan Opera House scheduled to be constructed at Lincoln Center for the

Performing Arts. Professor Harris says that he and his colleague, Dr. D. L. Jordan of Copenhagen, Denmark will spend over three years working on the acoustical design of the \$36 million opera house.

The new Met is to open in 1965. According to Professor Harris, the objective of the acoustical design is to produce "an acoustical environment fully in keeping with the rich tradition of grand opera."

Professor Harris joined the Columbia faculty in 1952 and has since taught acoustics in the Department of Electrical Engineering. He is now engaged in a research project for the University dealing with the problems of room acoustics. Dr. Harris has lectured around the world on acoustics and has coauthored an internationally noted book on the subject.



COLUMBIA ENGINEERING

The Fu Foundation School of Engineering and Applied Science
1864–2014

- Prof. Cyril M.
 Harris advises
 concert halls on
 acoustics, starting in
 the 1960s, including
 the Metropolitan
 Opera House at
 Lincoln Center (The
 Dec. 3. 1962
 Spectator).
- Later, in 1976 he redesigns the acoustics of Avery Fischer Hall at Lincoln Center
- Shown, Prof. Harris with students, c. 1982.



- Photo from the establishment of the Robert A. W. Carleton Strength of Materials Laboratory in 1963 (Carleton seated on the sofa). The lab moves to Engineering Terrace in 1966 from the Engineering (now Mathematics) Building where it began in 1918.
- Robert A.W. Carleton, C.E. 1904,
 built many of new York's subway and railroad tunnels. He served as president and chairman of the Board of the Hudson and Manhattan Railroad Company, and was a principal endower of this lab.



Work on Structure Set for December; Building Will House Nuclear Reactor By Stanford N. Sesser Construction of the three-story, \$6,200,000 Engineering Terrace

Building is scheduled to begin in late December, according to Edward Jaworski, director of the University Office of New Construction.

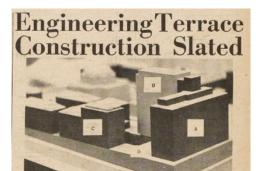


Photo by John Hunt NEW ENGINEERING TERRACE BUILDING: The scale model shows (A) Mudd Hall, (B) the proposed Engineering Tower, (C) Schermerhorn Hall, and (D) the connecting Terrace Building.

- As reported in The Oct. 1, 1963 *Spectator*, the School has moved to the thirteen-story Seeley Wintersmith Mudd Building, which was completed late in 1961.
- The second phase of the Engineering Center is now under construction.
 - The Eng. Terrace (ET) Building, to be built between Schermerhorn and Mudd Hall, will include nuclear, mechanical, and chemical engineering laboratories, and will also have a strength of materials laboratory to be named after Robert A. W. Carleton. Chemical engineering laboratories are now in Havemeyer Hall and in Chandler. Funds to complete the building are now available, through new gifts, particularly from the estate of Mr. and Mrs. Henry Krumb.
- The third phase in construction of the Engineering Center is the projected Tower building attached to Mudd above the Terrace level. (It is never built and the space over ET is later given to Biology.)
- A possible auditorium-classroom group between Mudd and Pupin laboratories would represent the fourth phase of the construction program. (It was never built and this space is later used for the Schapiro CEPSR Building.)



COLUMBIA | ENGINEERING The Fu Foundation School of Engineering and Applied Science



- Working on a laboratory assignment involving microwave generation and transmission.
 - Photo from the 1964
 Columbia Engineer yearbook.







- February 7, 1964 The Beatles arrive in New York at JFK Airport and are greeted by 3,000 screaming fans.
- Two days later, they make their first appearance on the *Ed Sullivan Show*, with 73 million U.S. television viewers, or about 40 percent of the U.S. population, watching. Their impact provides a bit of healing for a nation mourning the recent assassination of John Kennedy.
- The Beatles spelled their name with an "a" partly as a reference to the Beat Generation, whose beginnings can be traced to Columbia University.





COLUMBIA | ENGINEERING The Fu Foundation School of Engineering and Applied Science



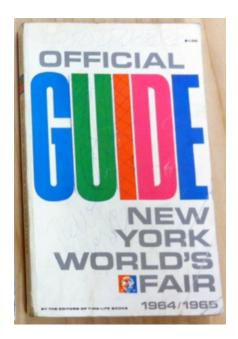




COLUMBIA | ENGINEERING The Fu Foundation School of Engineering and Applied Science

1864-2014

 1964-1965, New York World's Fair.



Engineering Terrace Bldg. Begun



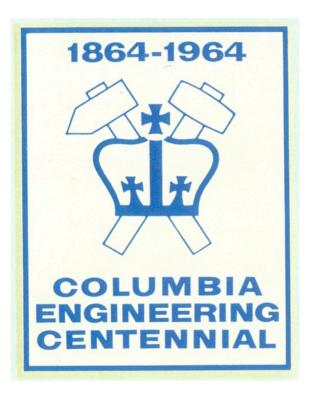
EXPLOSIVE SITUATION: Workmen are planting dynamite sticks at the sight of the Engineering Terrace. Construction began in the summer, and the three story building is expected to open early in 1966.

- 1964 Construction of Engineering Terrace begins, as depicted in the Sept. 25, 1964 Spectator.
- It is expected to be completed in 1966.

15

- 1864-2014

COLUMBIA | ENGINEERING The Fu Foundation School of Engineering and Applied Science







 1964 –
 Celebrating the SEAS Centennial.



