Memories From the SEAS Time Capsules

The Seventh Decade: 1925-1934

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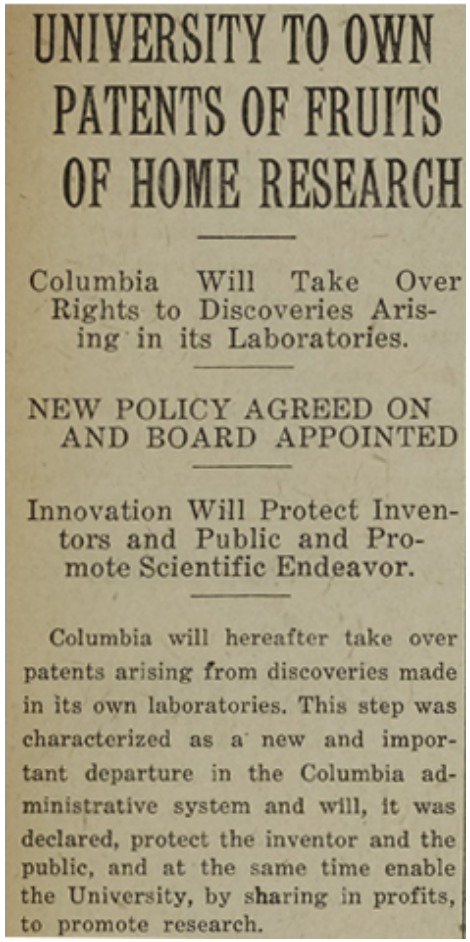
COLUMBIA | ENGINEERING
The Fu Foundation School of Engineering and Applied Science
1864–2014

From the SEAS Time Capsules

The Seventh Decade: 1925-1934



UNIVERSITY TO OWN PATENTS OF FRUITS OF HOME RESEARCH

Columbia Will Take Over Rights to Discoveries Arising in its Laboratories.

NEW POLICY AGREED ON AND BOARD APPOINTED

Innovation Will Protect Inventors and Public and Promote Scientific Endeavor.

Columbia will hereafter take over patents arising from discoveries made in its own laboratories. This step was characterized as a new and important departure in the Columbia administrative system and will, it was declared, protect the inventor and the public, and at the same time enable the University, by sharing in profits, to promote research.

- Columbia takes over patents coming from discoveries on campus, to protect the inventor and allow the University to share in profits, as reported in the March 18, 1925 *Spectator*.
- This has a major impact on how Columbia and the Engineering School operate and grow for many years.

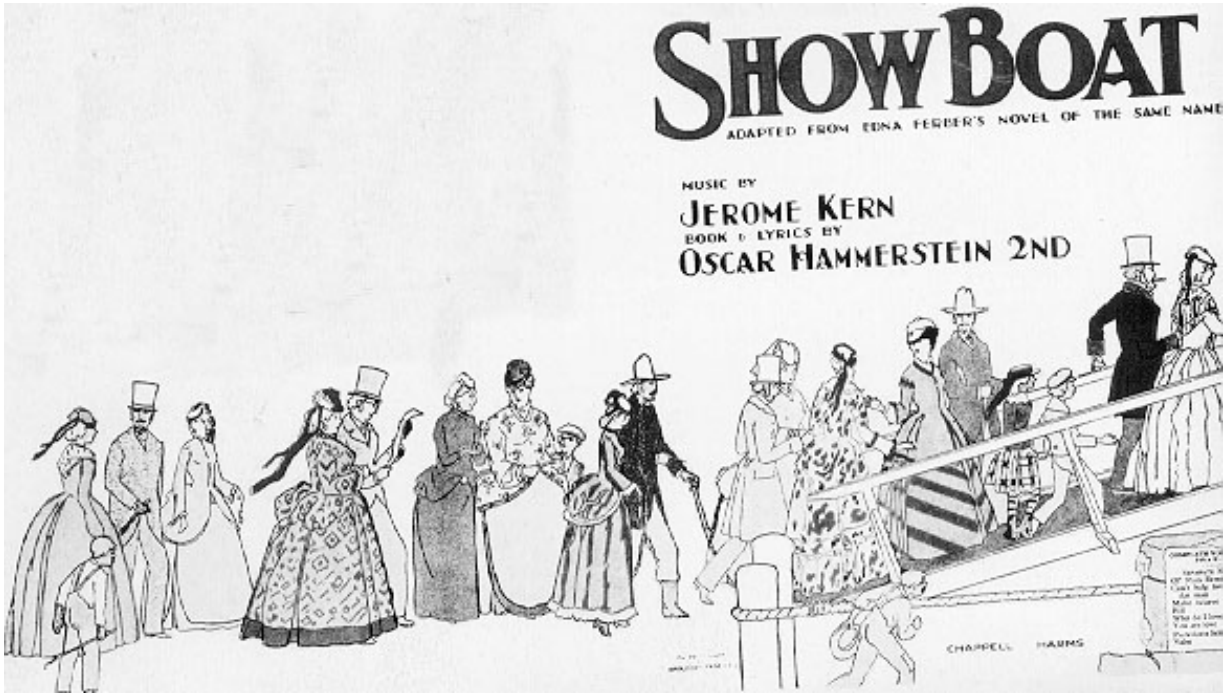
From the SEAS Time Capsules

The Seventh Decade: 1925-1934

- 1926 – The School of Mines, Engineering, and Chemistry is renamed The School of Engineering.
  - Later, in 1961, it becomes The School of Engineering and Applied Science (SEAS), and, in 1997, The Fu Foundation School of Engineering and Applied Science.
- Shown, a Mines lecture room during this period.

New York Moments

The Seventh Decade: 1925-1934



- 1927 – The first modern Broadway musical, *Showboat,* with music by Jerome Kern and book and lyrics by Oscar Hammerstein II, opens.

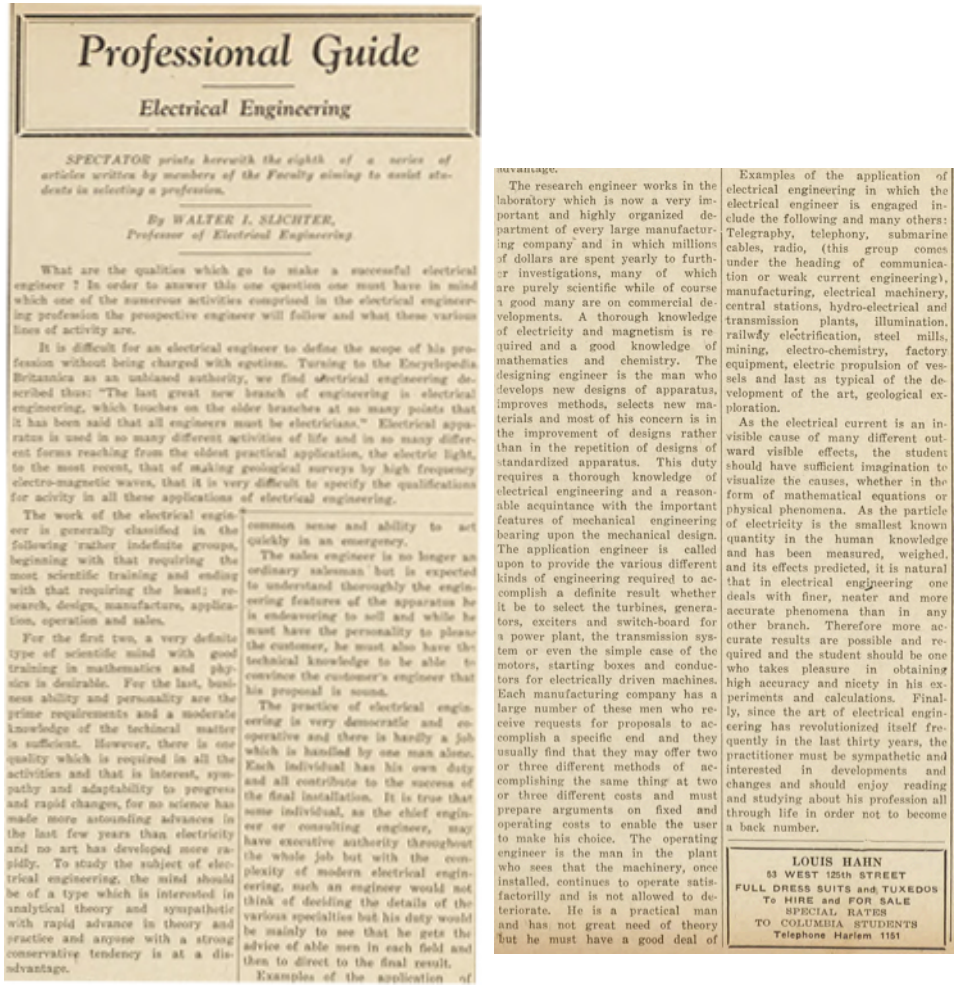
From the SEAS Time Capsules

The Seventh Decade: 1925-1934

- 1928 – Thomas J. Watson, Sr. donates and installs IBM punch card tabulators and sorters in Hamilton Hall, enabling sophisticated computation across disciplines.
  - This is first used for sorting examination papers in 1928, for test scores in 1929, and for astronomy research starting in 1929.
  - Shown, (upper) the Columbia University Statistical Bureau, 1928-33 and (lower) typical tabulating machine installation at Columbia.

From the SEAS Time Capsules

The Seventh Decade: 1925-1934



Professional Guide

Electrical Engineering

SPECTATOR prints herewith the eighth of a series of articles written by members of the Faculty aiming to assist students in selecting a profession.

By WALTER I. SLICHTER,
Professor of Electrical Engineering

What are the qualities which go to make a successful electrical engineer ? In order to answer this one question one must have in mind which one of the numerous activities comprised in the electrical engineering profession the prospective engineer will follow and what these various lines of activity are.

It is difficult for an electrical engineer to define the scope of his profession without being charged with egotism. Turning to the Encyclopedia Britannica as an unbiased authority, we find electrical engineering described thus: "The last great new branch of engineering is electrical engineering, which touches on the older branches at so many points that it has been said that all engineers must be electricians." Electrical apparatus is used in so many different activities of life and in so many different forms reaching from the oldest practical application, the electric light, to the most recent, that of making geological surveys by high frequency electro-magnetic waves, that it is very difficult to specify the qualifications for activity in all these applications of electrical engineering.

The work of the electrical engineer is generally classified in the following rather indefinite groups, beginning with that requiring the most scientific training and ending with that requiring the least; research, design, manufacture, application, operation and sales.

For the first two, a very definite type of scientific mind with good training in mathematics and physics is desirable. For the last, business ability and personality are the prime requirements and a moderate knowledge of the technical matter is sufficient. However, there is one quality which is required in all the activities and that is interest, sympathy and adaptability to progress and rapid changes, for no science has made more astounding advances in the last few years than electricity and no art has developed more rapidly. To study the subject of electrical engineering, the mind should be of a type which is interested in analytical theory and sympathetic with rapid advance in theory and practice and anyone with a strong conservative tendency is at a disadvantage.

common sense and ability to act quickly in an emergency.

The sales engineer is no longer an ordinary salesman but is expected to understand thoroughly the engineering features of the apparatus he is endeavoring to sell and while he must have the personality to please the customer, he must also have the technical knowledge to be able to convince the customer's engineer that his proposal is sound.

The practice of electrical engineering is very democratic and cooperative and there is hardly a job which is handled by one man alone. Each individual has his own duty and all contribute to the success of the final installation. It is true that some individual, as the chief engineer or consulting engineer, may have executive authority throughout the whole job but with the complexity of modern electrical engineering, such an engineer would not think of deciding the details of the various specialties but his duty would be mainly to see that he gets the advice of able men in each field and then to direct to the final result.

Examples of the application of

The research engineer works in the laboratory which is now a very important and highly organized department of every large manufacturing company and in which millions of dollars are spent yearly to further investigations, many of which are purely scientific while of course a good many are on commercial developments. A thorough knowledge of electricity and magnetism is required and a good knowledge of mathematics and chemistry. The designing engineer is the man who develops new designs of apparatus, improves methods, selects new materials and most of his concern is in the improvement of designs rather than in the repetition of designs of standardized apparatus. This duty requires a thorough knowledge of electrical engineering and a reasonable acquaintance with the important features of mechanical engineering bearing upon the mechanical design. The application engineer is called upon to provide the various different kinds of engineering required to accomplish a definite result whether it be to select the turbines, generators, exciters and switch-board for a power plant, the transmission system or even the simple case of the motors, starting boxes and conductors for electrically driven machines. Each manufacturing company has a large number of these men who receive requests for proposals to accomplish a specific end and they usually find that they may offer two or three different methods of accomplishing the same thing at two or three different costs and must prepare arguments on fixed and operating costs to enable the user to make his choice. The operating engineer is the man in the plant who sees that the machinery, once installed, continues to operate satisfactorily and is not allowed to deteriorate. He is a practical man and has not great need of theory but he must have a good deal of

Examples of the application of electrical engineering in which the electrical engineer is engaged include the following and many others: Telegraphy, telephony, submarine cables, radio, (this group comes under the heading of communication or weak current engineering), manufacturing, electrical machinery, central stations, hydro-electrical and transmission plants, illumination, railway electrification, steel mills, mining, electro-chemistry, factory equipment, electric propulsion of vessels and last as typical of the development of the art, geological exploration.

As the electrical current is an invisible cause of many different outward visible effects, the student should have sufficient imagination to visualize the causes, whether in the form of mathematical equations or physical phenomena. As the particle of electricity is the smallest known quantity in the human knowledge and has been measured, weighed, and its effects predicted, it is natural that in electrical engineering one deals with finer, neater and more accurate phenomena than in any other branch. Therefore more accurate results are possible and required and the student should be one who takes pleasure in obtaining high accuracy and nicety in his experiments and calculations. Finally, since the art of electrical engineering has revolutionized itself frequently in the last thirty years, the practitioner must be sympathetic and interested in developments and changes and should enjoy reading and studying about his profession all through life in order not to become a back number.

- On May 25, 1928 The *Spectator* publishes *Professional Guide: Electrical Engineering* by Prof. Walter I. Slichter, as "the eighth of a series of articles written by members of the Faculty aiming to assist students in selecting a profession."
  - It addresses questions, such as "What are the qualities which go to make a successful electrical engineer ? …"
  - It uses the Encyclopedia Britannica as the authority for noting "The last great new branch of engineering is electrical engineering, which touches on the older branches at so many points that it has been said that all engineers must be electricians." …

New York Moments

The Seventh Decade: 1925-1934

- During Prohibition (1920-1933) there are an estimated 20,000 to 100,000 speakeasies in New York City. Shown:
  - Opening night at Evelyn Nesbit Thaw's new speakeasy, c. 1930.
  - Beer being dumped by authorities in lower Manhattan.
  - Celebration as prohibition ends, with the 21st Amendment, with a goodbye to the 18th Amendment.

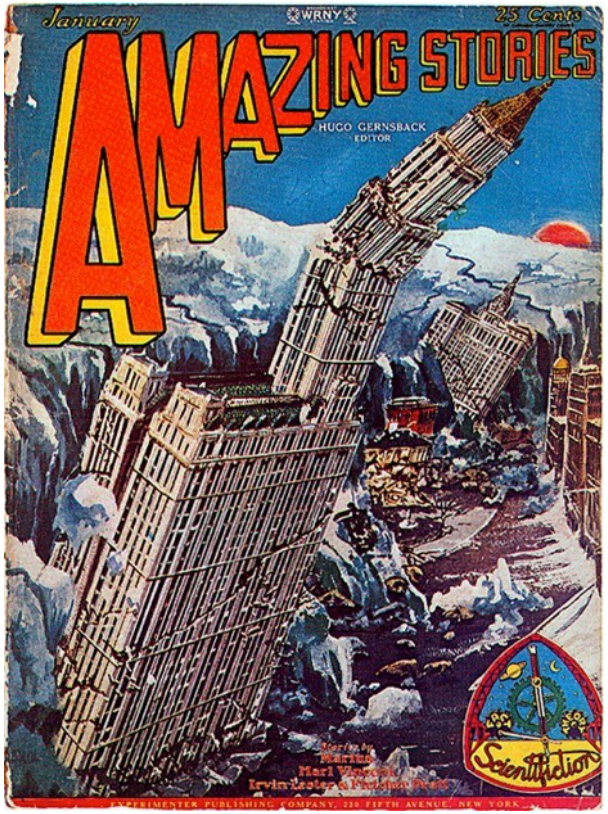
From the SEAS Time Capsules

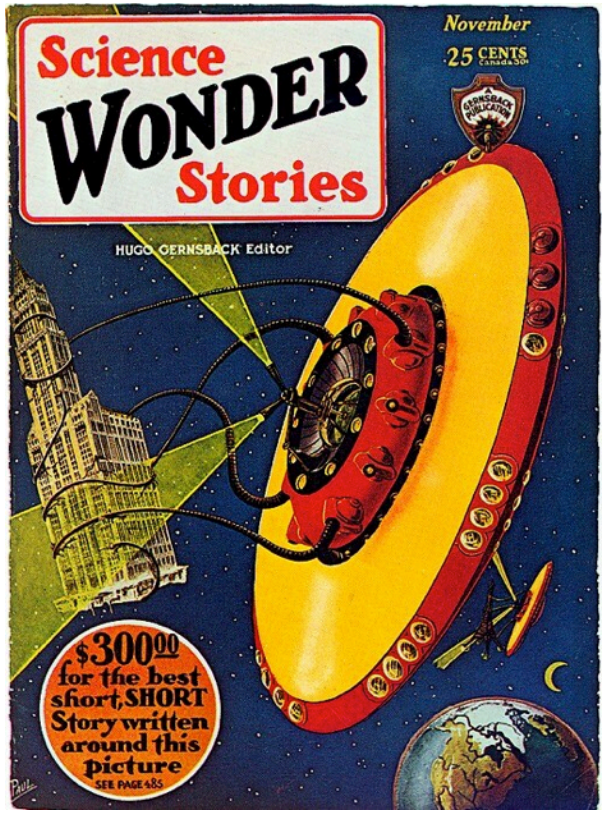
The Seventh Decade: 1925-1934

- Ads in The *Spectator*, May 25, 1928, reflecting student life.

New York Moments

The Seventh Decade: 1925-1934





- New York is often portrayed as being under attack in science fiction.
- Shown, the Woolworth Building (the tallest in the world from 1913 to 1930) is allegedly being destroyed in January 1929 by a glacier (left) and in November 1929 by a tentacled flying saucer.

New York Moments

The Seventh Decade: 1925-1934

BROOKLYN DAILY EAGLE

And Complete Long Island News

LATE NEWS

WALL ST. IN PANIC AS STOCKS CRASH

Attempt Made to Kill Italy's Crown Prince

ASSASSIN CAUGHT IN BRUSSELS MOB; PRINCE UNHURT

Hollywood Fire Destroys Films Worth Millions

FEAR 52 PERISHED IN LAKE MICHIGAN; FERRY IS MISSING

PIECE OF PLANE LIKE DITEMAN'S IS FOUND AT SEA

High Duty Group Gave $700,000 to Coolidge Drive

STOCKS CRASH IN RUSH TO SELL; BILLIONS LOST

CARNEGIE CHARGE OF PAID ATHLETES

HOOVER'S TRAIN HALTED BY AUTO

WARDER SOUGHT TO KEEP SEA TRIP

SOMERS NAMED AS HEAD OF NEW

"All the News That's Fit to Print"

The New York Times

Late Edition

NEW YORK, TUESDAY, OCTOBER 20, 1987

30 CENTS

STOCKS PLUNGE 508 POINTS, A DROP OF 22.6%; 604 MILLION VOLUME NEARLY DOUBLES RECORD

U.S. Ships Shell Iran Installation In Gulf Reprisal

Offshore Target Termed a Base for Gunboats

A Huge Blow to the Five-Year Bull Market

Dow's Record Fall

WORLDWIDE IMPACT

Frenzied Trading Raises Fears of Recession — Tape 2 Hours Late

- The stock market crash begins on October 24, 1929.

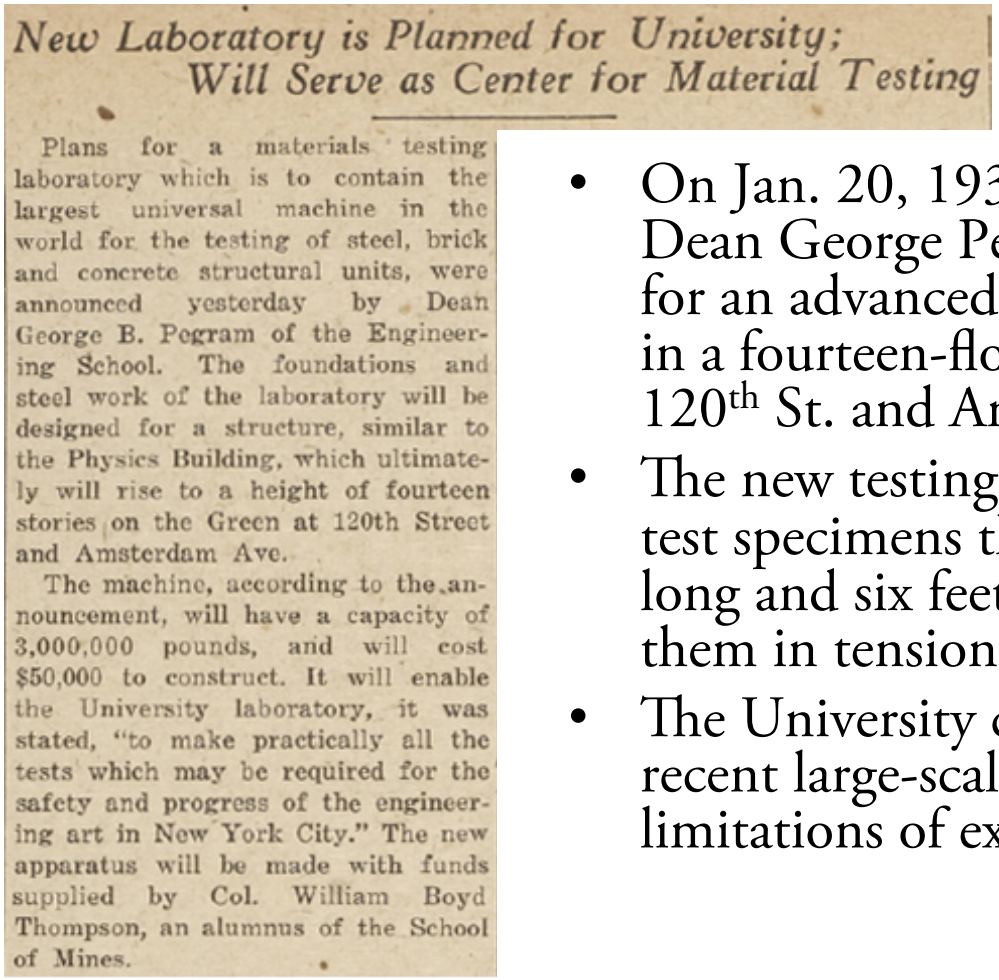
New York Moments

The Seventh Decade: 1925-1934

- Marginal Street, looking east from 125th St. on November 20, 1929, with road construction in the foreground.
  - Very near the site of the new Manhattanville campus.

From the SEAS Time Capsules

The Seventh Decade: 1925-1934



New Laboratory is Planned for University;
Will Serve as Center for Material Testing

Plans for a materials testing laboratory which is to contain the largest universal machine in the world for the testing of steel, brick and concrete structural units, were announced yesterday by Dean George B. Pegram of the Engineering School. The foundations and steel work of the laboratory will be designed for a structure, similar to the Physics Building, which ultimately will rise to a height of fourteen stories on the Green at 120th Street and Amsterdam Ave.

The machine, according to the announcement, will have a capacity of 3,000,000 pounds, and will cost $50,000 to construct. It will enable the University laboratory, it was stated, "to make practically all the tests which may be required for the safety and progress of the engineering art in New York City." The new apparatus will be made with funds supplied by Col. William Boyd Thompson, an alumnus of the School of Mines.

- On Jan. 20, 1930 The *Spectator* reports that Dean George Pegram has announced plans for an advanced materials testing laboratory in a fourteen-floor structure at the corner of 120th St. and Amsterdam Ave.
- The new testing machine would be able to test specimens that are are thirty-five feet long and six feet wide, and be able to break them in tension and compression.
- The University could not be involved in recent large-scale projects due to the limitations of existing facilities.

New York Moments
The Seventh Decade: 1925-1934

- A "Hooverville" in Brooklyn, c. 1930-1932, in what is now known as Red Hook Park.

New York Moments

The Seventh Decade: 1925-1934

- 1930 – The Empire State Building under construction.
- 1931 – It opens officially.

The Chrysler Building in the background in the photos on the left and right.

Now

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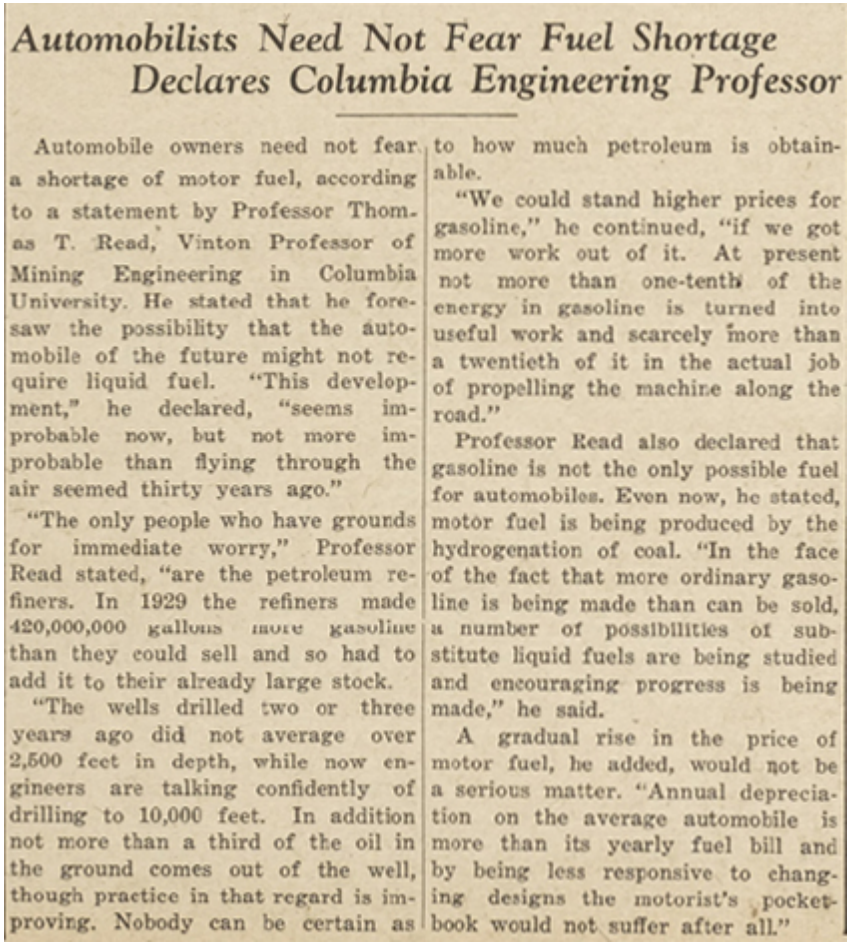

Automobilists Need Not Fear Fuel Shortage Declares Columbia Engineering Professor

Automobile owners need not fear a shortage of motor fuel, according to a statement by Professor Thomas T. Read, Vinton Professor of Mining Engineering in Columbia University. He stated that he foresaw the possibility that the automobile of the future might not require liquid fuel. "This development," he declared, "seems improbable now, but not more improbable than flying through the air seemed thirty years ago."

"The only people who have grounds for immediate worry," Professor Read stated, "are the petroleum refiners. In 1929 the refiners made 420,000,000 gallons more gasoline than they could sell and so had to add it to their already large stock.

"The wells drilled two or three years ago did not average over 2,500 feet in depth, while now engineers are talking confidently of drilling to 10,000 feet. In addition not more than a third of the oil in the ground comes out of the well, though practice in that regard is improving. Nobody can be certain as to how much petroleum is obtainable.

"We could stand higher prices for gasoline," he continued, "if we got more work out of it. At present not more than one-tenth of the energy in gasoline is turned into useful work and scarcely more than a twentieth of it in the actual job of propelling the machine along the road."

Professor Read also declared that gasoline is not the only possible fuel for automobiles. Even now, he stated, motor fuel is being produced by the hydrogenation of coal. "In the face of the fact that more ordinary gasoline is being made than can be sold, a number of possibilities of substitute liquid fuels are being studied and encouraging progress is being made," he said.

A gradual rise in the price of motor fuel, he added, would not be a serious matter. "Annual depreciation on the average automobile is more than its yearly fuel bill and by being less responsive to changing designs the motorist's pocketbook would not suffer after all."

- The April 22, 1930 *Spectator* reports that Prof. Thomas Read thinks the public need not worry about potential automobile fuel shortages.
  - Wells will be drilled deeper.
  - Fuels other than gasoline are possible, such as from the hydrogenation of coal.

New York Moments

The Seventh Decade: 1925-1934

- The George Washington Bridge is dedicated on October 24, 1931, and opened to traffic the following day. Groundbreaking began in October 1927.
- When it opened it had the longest main span in the world, at 3,500 feet, nearly doubling the previous record.
- It is later honored in the below postage stamp.

New York Moments

The Seventh Decade: 1925-1934

- 1931 – Columbia campus, 116th St. between Broadway and Amsterdam Avenue.
- In 1953 this section of 116th St. is closed to public traffic, becoming College Walk.

New York Moments

The Seventh Decade: 1925-1934

- Radio City Music Hall opens on December 27, 1932, near the site of the earlier Columbia campus.
  - Photo taken in 1934 by the Wurts Brothers.
  - The Sixth Avenue "El" seen in this photo was closed on December 4, 1938 and razed during 1939. It was replaced by the underground IND Sixth Avenue Line, which opened between 1936 and 1940.

New York Moments
The Seventh Decade: 1925-1934

- 1933 – The Empire State Building, which had opened in 1931, becomes even more famous with the release of the movie *King Kong*, which premiers on March 2 at the newly opened Radio City Music Hall and the RKO Roxy across the street.
  - Shown, promotion for the movie.

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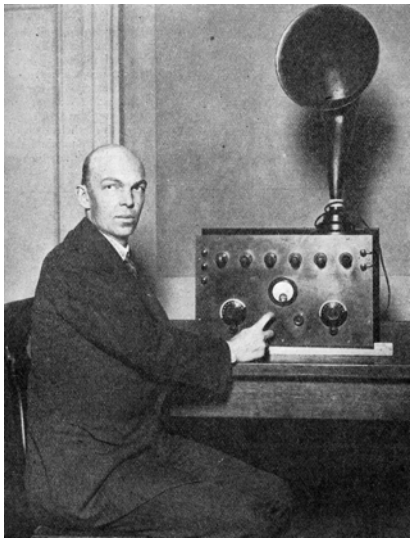
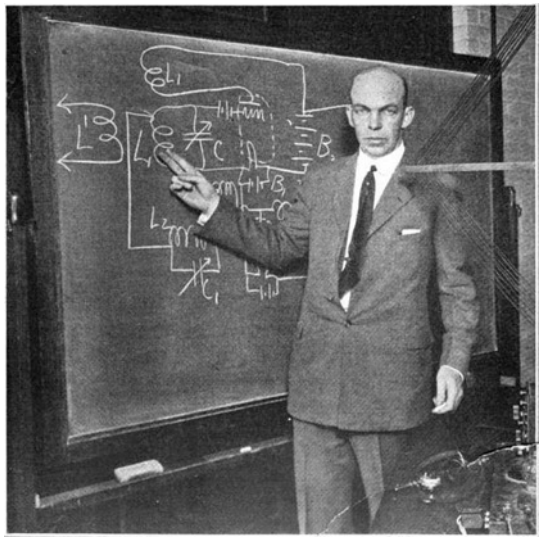
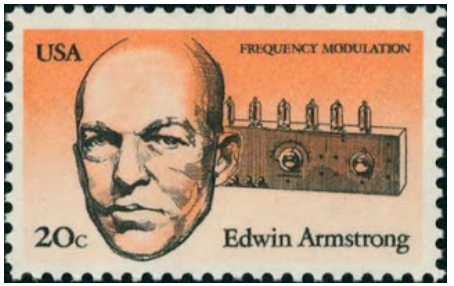




- 1933 – Prof. Edwin Howard Armstrong BS'13 invents wideband frequency modulation (FM) radio, a development that also paves the way for television.
- This invention is later commemorated in a U.S. postage stamp (1983).



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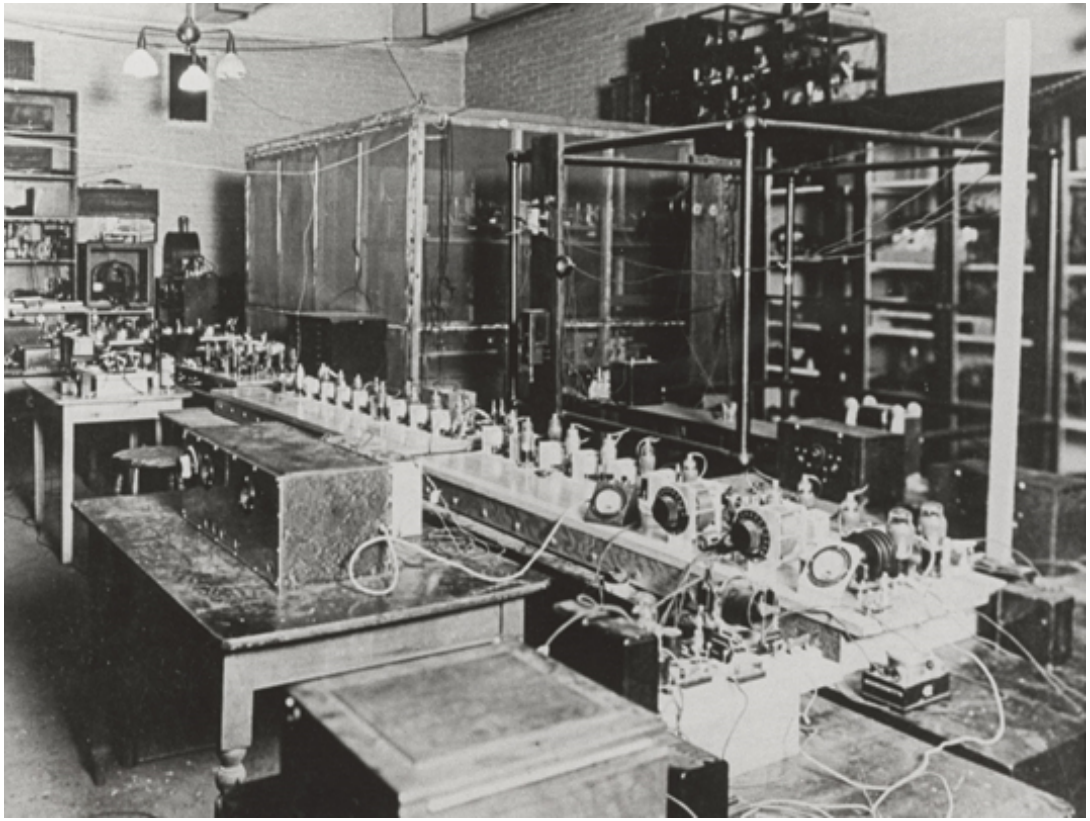

- The Marcellus Hartley Laboratory in the basement of Philosophy Hall, where most of Prof. Edwin Howard Armstrong's work occurs during this period.

New York Moments

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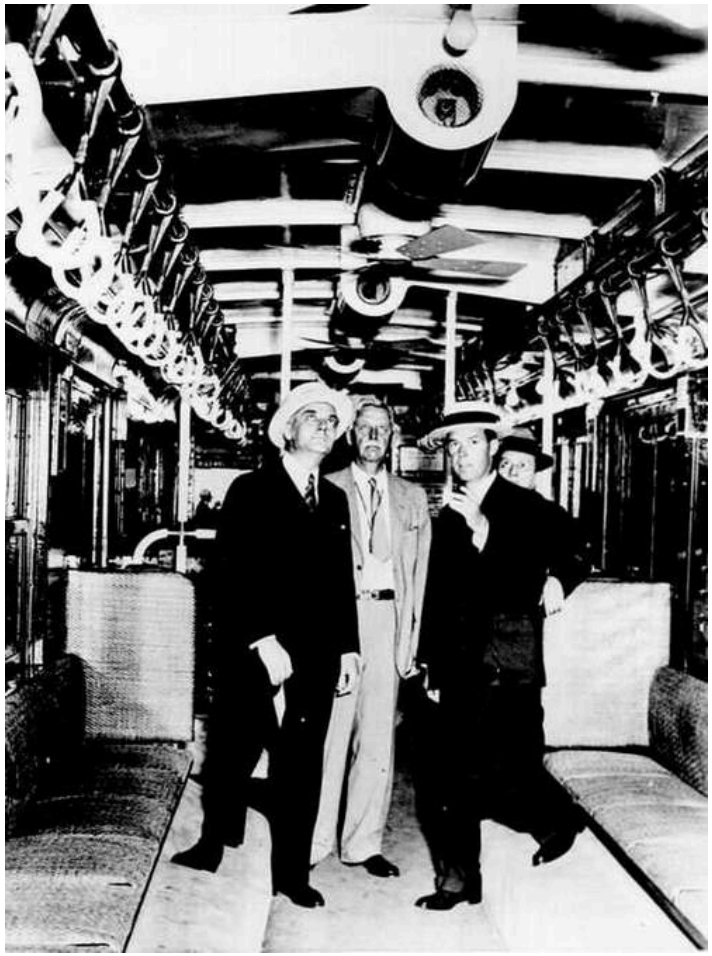

- 1933 – Subway executives inspect new subway car (that was first introduced in 1932).
  - Blowers that ventilate with the windows closed are a breakthrough.
  - These cars, with straw cane (wicker) seats, last until c. the 1960s.

From the SEAS Time Capsules

The Seventh Decade: 1925-1934

- Surveying equipment used by undergraduates during the summer at Camp Columbia, near Litchfield, Conn. c. 1930s.
- Camp Columbia ran in Connecticut from 1885 to 1966 to instruct students on surveying and other skills during the summer.

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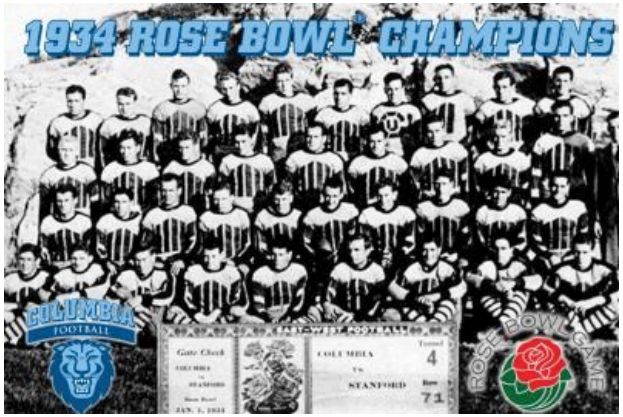
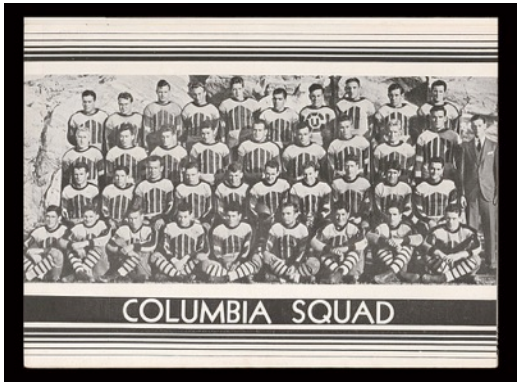
The Seventh Decade: 1925-1934





- The Rose Bowl on January 1, 1934.
- The big upset: Columbia 7 Stanford 0

New York Moments

The Seventh Decade: 1925-1934

- 1934 – The High Line elevated rail line (left), running along Manhattan's West Side in and out of factories and warehouses, opens.
  - This eliminates many street-level railroad crossings and adds 32 acres to Riverside Park.
  - It is later converted into an elevated grassy, pedestrian-packed park, with construction beginning in 2006, shown below.

New York Moments

The Seventh Decade: 1925-1934

- In November 1934, New York City mayor Fiorello LaGuardia flies home on TWA from Chicago and lands in the only major municipal airport in the NY metropolitan area, in Newark.
- He refuses to leave the plane, and makes his famous declaration, on the left.
- He is flown to Floyd Bennett Field, a little-used municipal airport (and later a naval air station) in Brooklyn, and deplanes.
- Under his guidance, in 1937 the City begins the transformation of the smaller North Beach Airport into a major airport, which opens in 1939.
- This first major municipal airport in New York City is commonly is called LaGuardia Field, and officially becomes LaGuardia Airport in 1947.

New York Moments

The Seventh Decade: 1925-1934

- Holiday deals at Finlay Straus, a now-defunct department store.
- This Depression-era ad ran in the *New York Daily News* on December 19, 1934.