

Memories From the SEAS Time Capsules

The Fourth Decade: 1895-1904



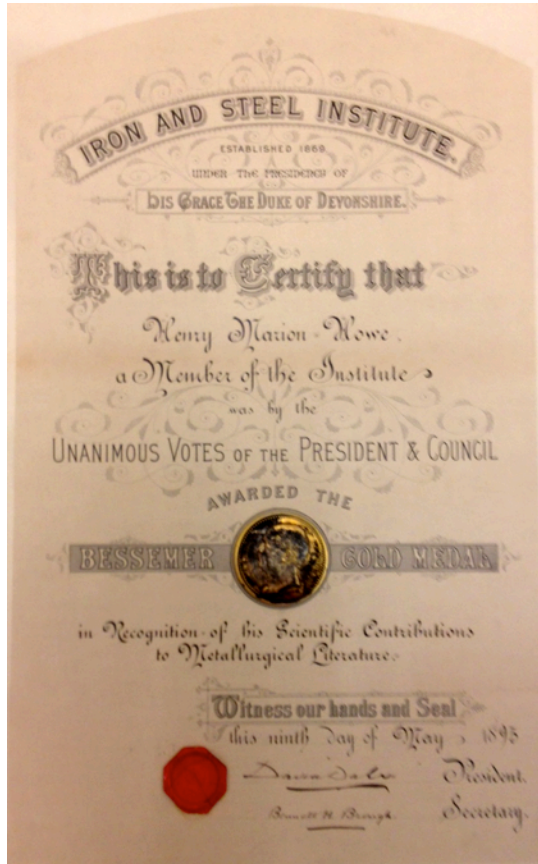
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The Fourth Decade: 1895-1904



- 1895 – The Iron and Steel Institute (now called the Institute of Materials, Minerals, and Mining) awards the annual Bessemer Gold Medal to Prof. Marion Howe—a pioneer in determining the phase diagram of steels—for “outstanding services to the steel industry”.

New York Moments

The Fourth Decade: 1895-1904



- 1895 – Herald Square.



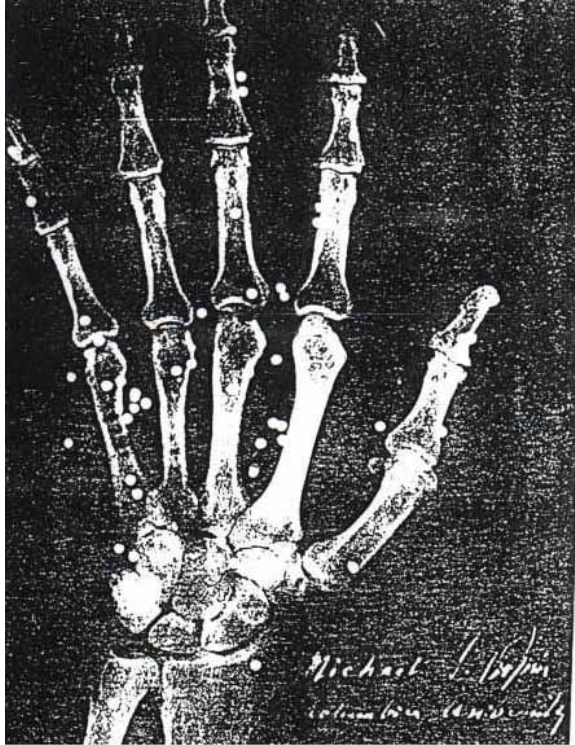
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- In February 1896, following Wilhelm Roentgen's November 1895 discovery of "new kind of rays," Prof. Michael Pupin discovers a rapid method of X-ray photography that uses a fluorescent screen, supplied by Thomas Edison, between the object of the photograph and the photographic plate. This shortens the exposure time from about an hour to a few seconds, and is the method now in universal use.
- Shown, the first X-ray photograph Pupin took: of lead shot in a hand – the famous “shot in hand” image.

New York Moments

The Fourth Decade: 1895-1904

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- The front page of the New York telephone directories before and after the 1896 merger that forms the New York Telephone Company.
 - This name survives until the 1984 breakup of the Bell System.
- The first New York telephone directory had been issued in 1878.
 - It listed fewer than 200 subscribers and fit on a single page.



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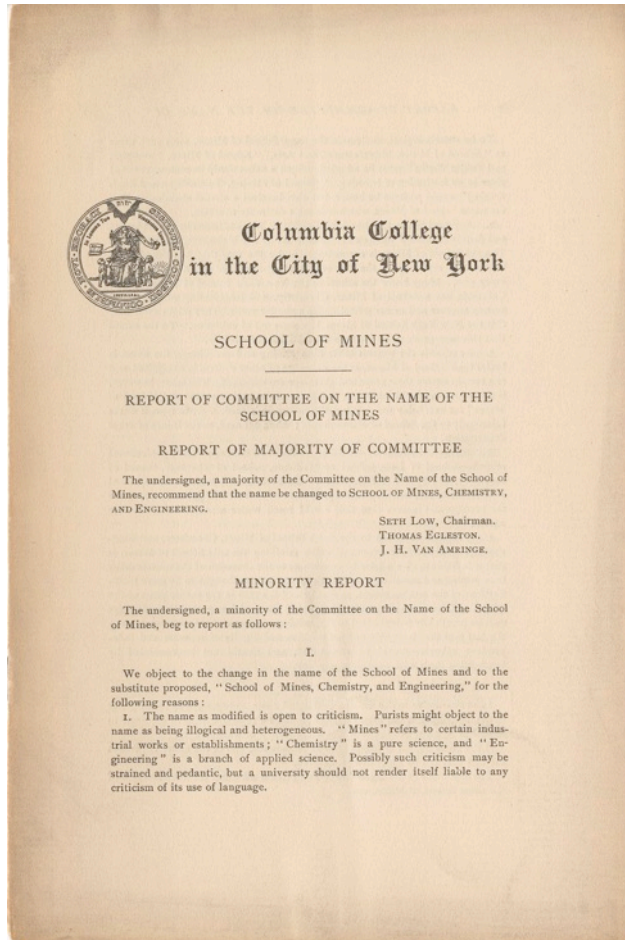
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- 1896 – The Bowery.
- Shown, a steam train on the Third Avenue “El”.

From the SEAS Time Capsules

The Fourth Decade: 1895-1904



- 1896 – The year before moving uptown to the Morningside campus, the School of Mines is renamed the School of Mines, Engineering, and Chemistry, and the Mines faculty becomes the Faculty of Applied Science.



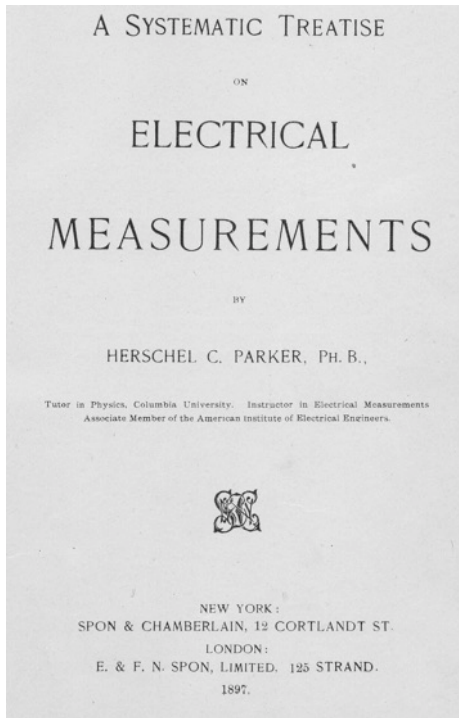
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The Fourth Decade: 1895-1904



CHAPTER I.
CLASSIFICATION OF ELECTRICAL MEASUREMENTS.

RESISTANCE.

LOW RESISTANCE.	{	1. Thomson's Double Bridge.*
		2. Differential Galvanometer.*
		3. Projection of Potentials.
		4. Fall of Potential.
		5. Potentiometer.
		6. Carey Foster's Method.

MEDIUM RESISTANCE.

WHEATSTONE BRIDGE.	{	Wire Bridge..... {	Straight (Metre).
			Circular (Kohlransch).
			Parallel (Poggendorf).
		Direct Reading (Kirchhoff).	
		Slide Coil..... {	Five Arc (Cushman).*
			Quadruplex (Muirhead)
			Duplex (Varley).
		Constant Ratio.... {	Post Office Bridge.
			Decade Bridge.*

"SPECIFIC RESISTANCE." {

		P. O. Bridge.*
		Conductivity Balance.

COMPARISON OF STANDARDS. {

		Carey Foster's Method.*
		Substitution in the Bridge.

CALIBRATION..... {

		Bridge Wire... {	Comparison with Rheostat (Potentiometer Method).*
			Carey Foster's Method.*
			Double bridge.
			Differential Galvanometer.
		Rheostat..... {	Substitution in the Bridge.

GALVANOMETER RESISTANCE. {

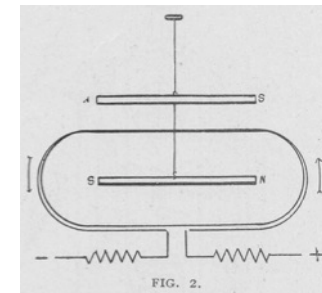
		P. O. Bridge.*
		Thomson's Method.
		$\frac{1}{2}$ Deflection.

HIGH RESISTANCE. {

		Slide Coil Bridge.*
		Potentiometer Method.
		Deflection Method.*
		Loss of Charge.

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- *A Systematic Treatise on Electrical Measurements*, by Dr. Herschel C. Parker, 1897, based on lectures given to Columbia EE students, is used in Advanced Laboratory.
- Astatic galvanometer shown.



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- The School moves to the Morningside Heights campus in 1897, residing in the new Engineering Building (now known as Mathematics) before expanding into the new Mines Building (now known as Lewisohn) when it is completed in 1905.
- Shown, Low Library and the bucolic campus on October 1, 1897.



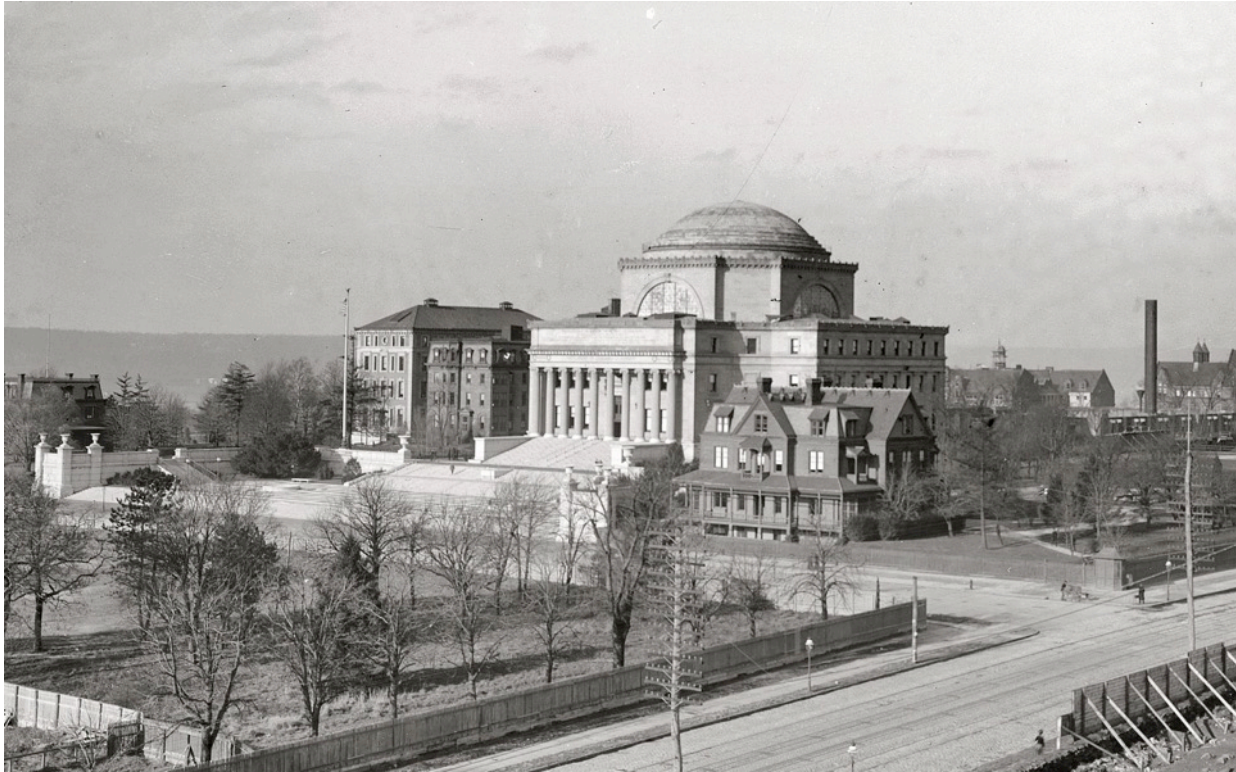
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- Low Library and the new Morningside campus in 1897, shown in detail.



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- 1897 - Electric vehicles find their first commercial application in the U.S. as a fleet of electrical New York City taxis (left: fleet and a taxi from 1901).
- G.E. charging station with a Baker Electric car, from circa the early 1900's (below).
- U.S. electric car sales peaks in 1912; they are rarely used by the 1930s.



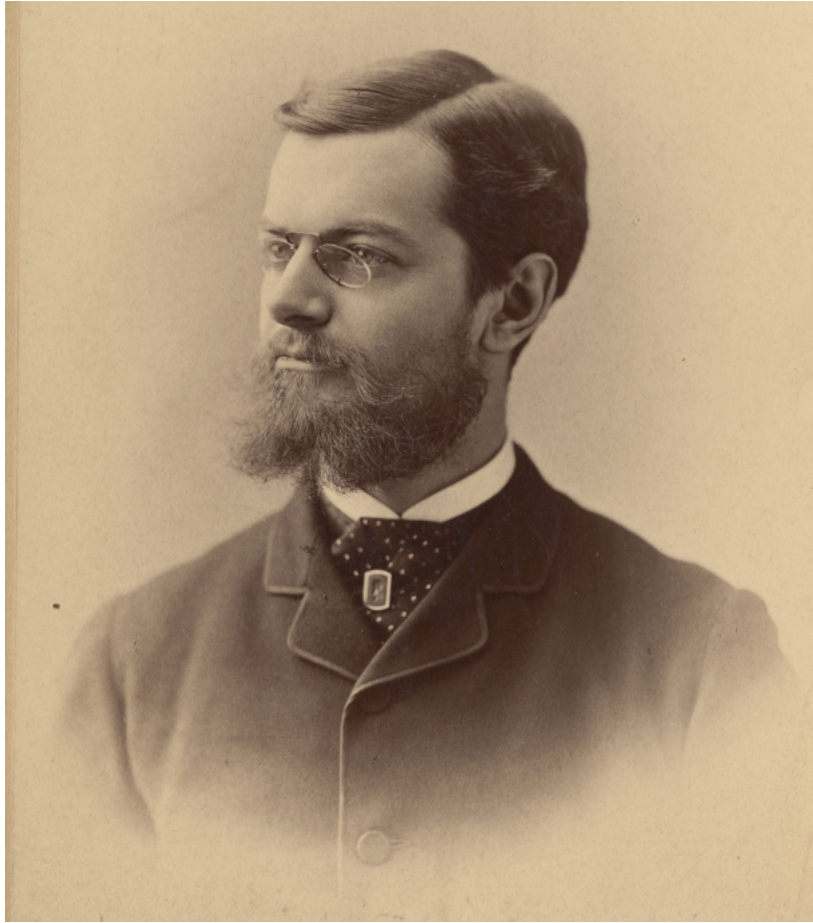
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- The Mechanical Engineering Department is established in 1897.
- Prof. Frederick F. Hutton, who had taught the first mechanical engineering courses in 1882, is the founding chair.



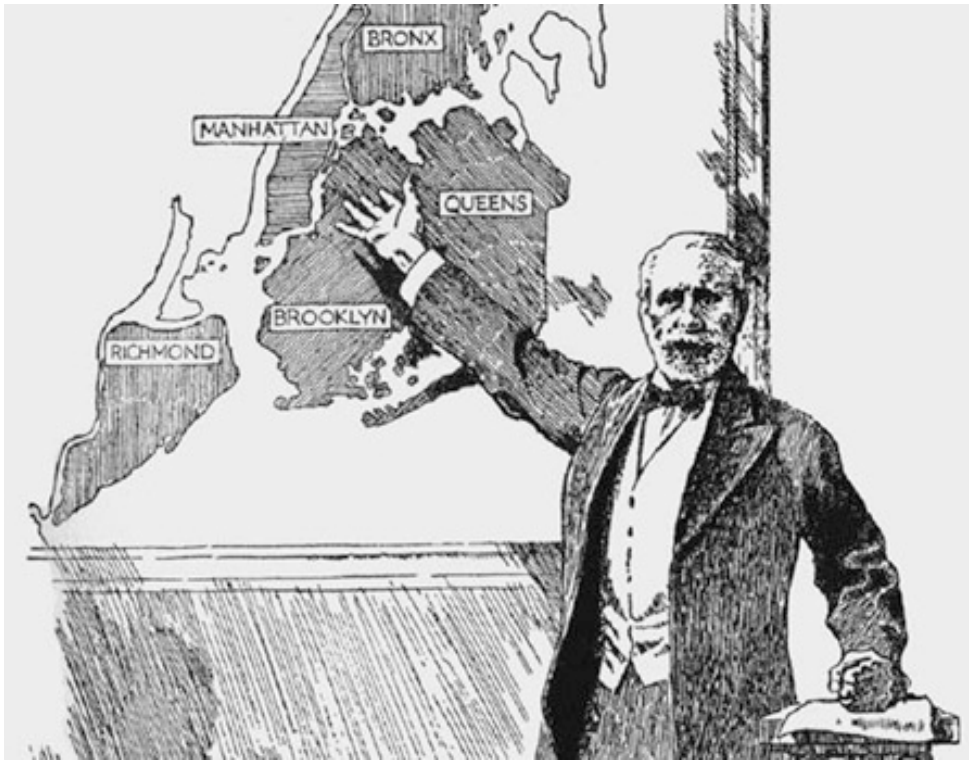
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The Fourth Decade: 1895-1904



- 1898 – The City of New York is formed.

New York Moments

The Fourth Decade: 1895-1904



- 1898 – The City of New York is formed: One set of views
 - Fifth Avenue in front of the Plaza.
 - Canned goods counter at Macy's Department Store in



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- 1898 – The City of New York is formed: A very different set of views (Lower East Side)
 - Orchard Street.
 - Aguilar Branch of the New York Public Library.



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- Summer in the City, Midland Beach in Staten Island in 1898.



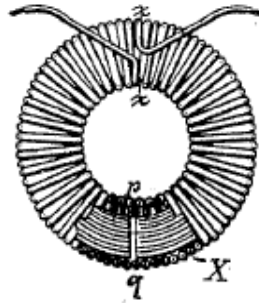
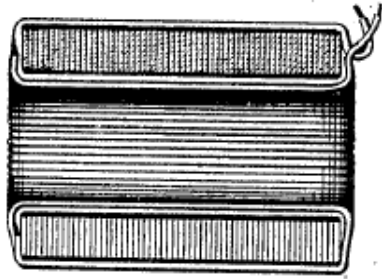
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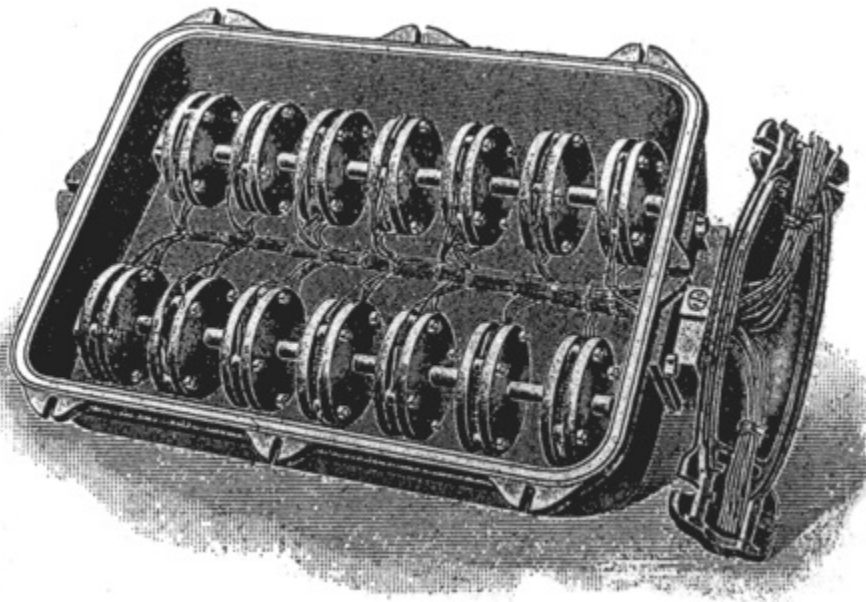
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The Fourth Decade: 1895-1904

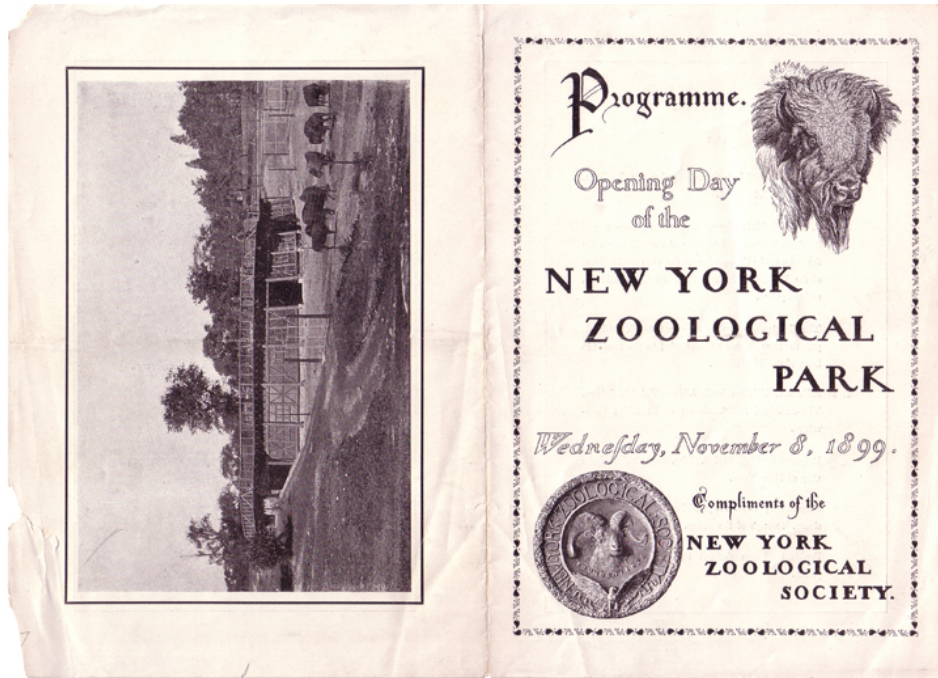


- Prof. M. I. Pupin's design of loading coil, "Pupin coils."
- These loading coils (upper images) are inserted to increase circuit inductance (as in the iron box, lower image), and extends the range of long-distance telephone calls.
- United States Patent 652,231 (1899).



New York Moments

The Fourth Decade: 1895-1904



- The Bronx Zoo opens in 1899.
- Final plans for The Bird House in the Bronx Zoo, from 1898, below.



From the SEAS Time Capsules

The Fourth Decade: 1895-1904

Students registered in :	1899	1900	1901	1902	1903	1904	1905	1906	1907
Columbia College	446	464	481	485	493	527	557	606	609
Freshmen	106	124	141	157	119	145	157	160	133
Sophomores	113	95	102	85	111	113	130	156	168
Juniors	89	99	98	128	112	117	112	128	141
Seniors	93	88	94	70	110	106	113	111	111
Non-matriculated	45	58	46	45	41	46	45	51	56
Barnard College	223	292	328	345	399	363	371	395	420
Freshmen	54	82	99	92	101	110	103	112	122
Sophomores	38	51	73	79	74	75	95	89	92
Juniors	39	39	48	73	81	70	77	109	115
Seniors	39	52	50	49	77	83	81	64	58
Non-matriculated	53	68	58	52	66	25	15	24	33
Total undergraduates	669	756	809	830	892	890	928	1004	1029
Faculty of Political Science	118	109	142	150	143	148	174	177	210
Faculty of Philosophy	108	239	280	317	382	392	490	492	573
Faculty of Pure Science	53	64	84	37	95	160	150	139	155
Barnard College	71	8	—	—	—	—	—	—	—
Auditors	22	20	18	23	17	9	—	—	—
Total non-professional graduate students	372	432	494	547	637	709	804	808	938
Schools of Mines, Engin'g and Chem.	464	546	604	685	719	589	566	524	585
First-year	130	153	193	222	177	156	140	137	186
Second-year	114	132	150	184	226	164	198	158	189
Third-year	111	123	127	149	146	156	112	118	123
Fourth-year	69	99	91	87	104	85	94	97	64
Non-matriculated	3	33	31	38	53	28	22	24	23
Graduates	3	6	6	5	13	†	†	†	†
Fine Arts	—	—	—	—	—	109	139	112	147
Architecture	†	†	†	†	†	74	107	87	123
Music	—	—	—	—	—	35	32	25	24
Law School	377	427	443	468	384	342	277	261	247
First-year	166	172	165	182	104	106	70	92	85
Second-year	111	151	150	135	149	98	107	69	83
Third-year	99	100	126	129	119	127	92	85	59
Non-matriculated	1	4	2	22	12	11	8	15	20
Medical School	757	751	815	777	669	560	424	352	298
First-year	226	245	269	203	107	97	79	86	60
Second-year	159	190	199	205	164	106	83	80	67
Third-year	158	148	179	181	191	156	100	79	76
Fourth-year	173	147	148	171	178	190	152	95	80
Non-matriculated	41	21	20	17	29	11	10	11	15
College of Pharmacy	—	—	—	—	—	435	353	254	229
First-year	—	—	—	—	—	261	97	107	120
Second-year	—	—	—	—	—	157	232	106	90
Graduates	—	—	—	—	—	17	24	41	2
Non-matriculated	—	—	—	—	—	—	—	—	17
Teachers College	317	448	557	563	624	640	792	726	891
First-year	42	24	17	43	29	29	24	—	—
Second-year	19	39	28	21	46	44	51	43	—
Third-year	80	93	141	155	201	237	308	273	314
Fourth-year	46	76	79	145	174	195	236	239	314
Non-matriculated	38	40	19	54	40	23	32	22	40
Graduates	92	127	162	83	95	99	141	149	223
Auditors and unclassified students	—	58	111	62	39	13	—	—	—
Total professional students	1915	2172	2419	2493	2396	2675	2551	2229	2397
Double registration †	—	105	136	120	189	218	266	155	223
Net total resident students	2936	3255	3586	3750	3736	4066	4017	3586	4141
Summer Session	—	417	579	643	1001	661	1018	1041	1392
Double registration **	—	108	86	91	180	184	280	277	336
Grand total regular students	2936	3664	4079	4302	4557	4833	4755	4660	5197
Students in extension courses	750	721	420	535	732	684	964	1017	3055
Officers	412	440	449	473	509	551	573	571	646

- 1899-1907, Student enrollments across Columbia, including at the School of Mines, Engineering, and Chemistry.

New York Moments

The Fourth Decade: 1895-1904



- 1899 – Lower Broadway.

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- Mulberry Street, c. 1900.



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- 1900 - Broadway and 119th Street.
 - 2999-3035 Broadway; between 118th and 120th Streets.



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- Construction of the New York City Subway, at Columbia University.
- Photo taken at (under) Broadway and 118th St. on July 23, 1901.



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The Fourth Decade: 1895-1904



- 1902 - Subway construction at City Hall.



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New York Moments

The Fourth Decade: 1895-1904



- 1903 – The Baltimore team moves to the American League and relocates to Hilltop Park (shown) and is renamed the New York Highlanders.
- 1913 – It is later renamed the New York Yankees *en route* to 27 World Series titles (and counting).
- The first Yankee Stadium is home to Columbia engineering student Lou Gehrig from 1923-1939.



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The Fourth Decade: 1895-1904



NEW YORK & JERSEY RAILROAD COMPANY
Hudson Tunnel

Inspection of the Works by Members of the Faculty and Engineering Students of Columbia University on March 22, 1904, after the connection of the States of New Jersey and New York through the North Tunnel.

Charles M. Jacobs
Chief Engineer.

- Inspection of the Hudson Tunnel by faculty and engineering students on March 22, 1904.
- This, the first tunnel under the Hudson River, begins in 1874 and is completed on March 11, 1904.
- On February 25, 1908, train service begins between 19th St. at Sixth Ave and Hoboken.
- The former Hudson and Manhattan Railroad is operated today as PATH, which runs trains westbound from 33rd St. to Hoboken and Jersey City through this old north tunnel.



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New York Moments

The Fourth Decade: 1895-1904



- In 1904 the Interborough Rapid Transit (the IRT) becomes the first New York City Subway company, with its official opening on October 27, 1904.
- Shown, inspecting City Hall Station and tracks prior to the opening.



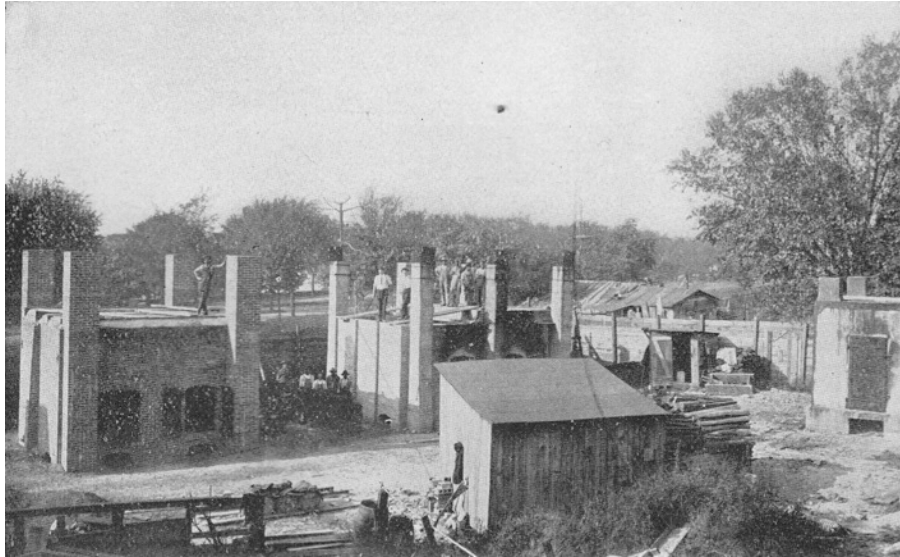
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- May, 1904 - Columbia Fire Testing Station is established at 116th Street and Claremont Avenue.
- Two large buildings for testing floors.
- Dead weight and hydraulic tests are made on standard size floors and girders of reinforced concrete.
- Building on extreme right is for testing partitions.
- Shown, the site in 1907.