Professor Gantz was born at Saline City, Indiana, March 18, 1879. He completed his high school course at the Terre Haute High School, and graduated from the Indiana State Normal School in 1904. He received his A.B. degree from the University of Michigan in 1912, and his M.S. degree from the University of Illinois in 1918. While at these universities he served as a laboratory assistant in Biology.

For six years he taught in the rural and graded schools of Indiana. He was principal of the Farmersburg High School from 1906 to 1909. From 1912 to 1913 he was Professor of Biology in Mercer University. At the Warrensburg State Normal School, Warrensburg, Mo., he served as Professor of Biology from 1913 to 1916. From 1918 to 1919 he was acting Professor of Biology at Georgetown University, Georgetown, Ky. He came to Ball Teachers College in 1919 and served that institution loyally and efficiently to the day of his death. During these years at Muncie he fought vigorously and fearlessly for every movement leading to better community health, especially the health of the students.

Professor Gantz was a member of the Indiana Academy of Science, the Illinois Academy of Science, the American Public Health Association, and the Izaak Walton League. He was also an active member of the Methodist Episcopal Church.

PUBLICATIONS BY RICHARD A. GANTZ.

"Finds of the American Mastodon (*Mammut americanum*) in Delaware County, Indiana."—Proc. Ind. Acad. Sci., vol. 34, 1924 (1925).

"A Plea for John R. Kissinger."—Proc. Ind. Acad. Sci., vol. 37, 1927 (1928).

"Biology and Higher Education."—Trans. Illinois State Acad. Sci., vol. 20, 1927 (1928).

"A Study of Schoolroom Ventilation Involving a Comparison of Two Types of Heating and Ventilating Plants." (With Harriet Thornhill Phypers.)—Proc. Ind. Acad. Sci., vol. 37, 1927 (1928).

"Laboratory Exercises for Physiology and Personal Hygiene."

"Laboratory Exercises for Physiology (Public Health)."

"Manual for General Biology."

FRED J. BREEZE, Ball State Teachers College.

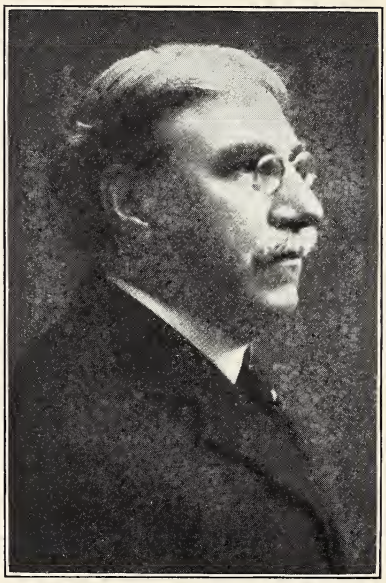
WILLIAM FREEMAN MYRICK GOSS.

BARNSTABLE, MASSACHUSETTS. October 7, 1859.

NEW YORK, NEW YORK. March 23, 1928.

Certificate, Massachusetts Institute of Technology, 1879; Honorary Master of Science, Wabash College, 1888; Doctor of Engineering, University of Illinois, 1904; Instructor, Mechanic Arts, Purdue University, 1879-83; Professor, Practical Mechanics, Purdue University, 1883-89; Professor, Experimental Engineering, Purdue University, 1889-1907; Director, Engineering Laboratory, Purdue University, 1899-1907; Dean, School of Engineering, Purdue University, 1900-07; Dean, College of Engineering and Director, School of Railway Engineering and Administration, University of Illinois, 1907-17; Director, Engineering Experi-

ment Station, University of Illinois, 1909-17; President, Railway Car Manufacturers Association, 1917-1925; Chief Engineer, Chicago Association of Commerce Committee, 1913-16; Jury Awards, Columbian Exposition, 1893; National Advisory Board, Fuels and Structural Materials, 1905; Chairman, Engineering Foundation, 1919-20; Member or Fellow: Am. Soc. Mech. Eng. (Past President); Am. Soc. El. Eng.; Soc. Eng. Education; Western Soc. Eng.; Western Rwy. Club; Ind. Acad, Sci.; Ill. Acad. Sci.; Ill. Soc. Eng.; International Assoc. of Testing Materials.



W. F. M. GOSS.

It is unfortunate that limitations of space preclude any adequate presentation of the life and services of Doctor Goss. Very few of those who have served Indiana in educational and scientific lines have exerted so profound and lasting an influence. Coming to Indiana in his early manhood, he laid the foundations upon which arose the School of Engineering at Purdue University, and in a remarkably short time brought it to the front rank in the country. While he was at work organizing and developing the school, he was able to find time to improve engineering practice, to institute new experimental methods, to publish numerous books and papers, and to serve his profession upon the working committees of various engineering societies. It was inevitable that he should become one of the great engineers of his generation; that his word should carry weight both in engineering education and in engineering practice. The summary which serves as foreword to this brief appreciation gives evidence of the recognition of his knowledge and skill, while the bibliography with which it closes proves that there could have been but few idle moments in his achieveing life.

Of fine New England lineage, his forbears holding high positions of trust and honor in their native state, he had in full measure all of the fine qualities that such a heritage insures.

To those of us who knew him intimately, he was a modest, unassuming, friendly man, with an infinite capacity for work and an almost uncanny genius for organization. Apparently everything he undertook worked, for after his plans were once laid, he carried them to completion with a persistent dynamic force that was as characteristic as his genius for organization. He never pushed himself to the front, but the nature and quality of his work was such that he could not avoid prominence.

While kindly, he was firm, never willing to compromise in matters which seemed to him to involve moral cleanness or scientific honesty; at the same time he was never unfair or discourteous to those from whom he differed.

While in his later years the scene of his activities was, in the main in other states, his basic work, the winning of his high position in his chosen field, were the product of his Indiana years. That in his heart he still turned back to Indiana is shown by his leaving to Purdue University his Engineering Library of nearly 1,000 titles, among which are 750 bound volumes. To be known as the "Doctor Goss Engineering Library," it will stand as a constant reminder of his great services to Purdue University and to the state.

It might be supposed that in a life so compact of effective work, no time would be found for other problems than those arising in engineering and education, yet into civic movements, into church and other activities, he brought the same skill in organization, the same power of execution. His was a life of work done squarely and unwasted days.

It is hard for one who holds him so dear to speak without some danger of exaggeration, but to this Academy, to education and to science, his passing is an irreparable loss. A rare personality, working quietly, persistently, effectively, winning friends and fame by his loyalty to what to him was the best. He could leave us no greater lesson, no sweeter memory.

PUBLICATIONS BY WILLIAM FREEMAN MYRICK GOSS.[1]

I. Books and Reports Published in Bound Form.

Bench work in wood: A course of study and practice design for the use of schools and colleges. 161 p. Boston, 1888. Rev. Ed. 1905.

Locomotive sparks. 172 p. New York, 1902.

Locomotive performance; the result of a series of researches conducted by the Engineering Laboratory of Purdue University. 439 p. New York, 1907.

Tests of a Jacobs-Shupert boiler in comparison with a radial-stay boiler. 171 p. Coatesville, Pa., Jacobs Shupert United States Firebox Company, 1912.

Smoke abatement and electrification of railway terminals in Chicago, a report. 1,177 p. Chicago, 1915.

[1] Compiled by William M. Hepburn, Librarian of Purdue University.

II. PAPERS IN JOURNALS.

Description of the Purdue University Experimental Locomotive. Trans. Amer. Soc. Mech. Eng., *13:* 427-437. 1892.

Notes concerning tests of the Purdue Experimental Locomotive. Proc. Ind. Acad. Sci. 1892: 24-25.

Tests of the Locomotive at the Laboratory of Purdue University. Trans. Amer. Soc. Mech. Eng., *14:* 826-848. 1893.

The value of the steam pipe within the smoke box of a locomotive, as a means of superheating. Proc. Ind. Acad. Sci., 1893: 271-273.

An experimental study of the action of the counterbalance in locomotive drive-wheels. Proc. Ind. Acad. Sci., 1893: 273-274.

An experimental study of the effect of the counterbalance in locomotive drive-wheels upon the pressure between wheel and rail. Trans. Amer. Soc. Mech. Eng., *16:* 305-316, 1894.

The Purdue Engineering Laboratory since the restoration. Proc. Ind. Acad. Sci., 1894: 39-40.

The Purdue University Locomotive Testing Plant. Purdue University, Lafayette, Ind., 1895: 11, 5 pls.

A glimpse of the exhaust jet. Proc. Western Rwy. Club. 1895: 85-89.

Strains in steam machinery. Proc. Ind. Acad. Sci., 1895: 75-77.

New forms of Friction Brakes. Trans, Amer. Soc. Mech. Eng., *16:* 806-819, 1895.

Tests of a ten horse-power De Laval Steam Turbine. Trans. Amer. Soc. Mech. Eng., *17:* 81-89, 1895.

Notes concerning the performance of the Purdue Locomotive "Schenectady." Proc. Western Rwy. Club, 1896: 390-398.

The effect, upon the diagrams, of long pipe-connections for steam engine indicators. Trans. Amer. Soc. Mech. Eng., *17:* 398-412, 1896.

The effect of high rates of combustion upon the efficiency of locomotive boilers. Proc. N. Y. RR. Club, 1896: 6-23.

Paper Friction Wheels. Trans. Amer. Soc. Mech. Eng., *18:* 102-110, 1896.

The Engineering Research Laboratory in its relation to the public. Proc. Ind. Acad. Sci., 1896: 59-63.

Tests of a wrought iron car axle. Proc. Ind. Acad. Sci., 1896: 88-93.

Exhaust pipes and steam passages. Daily Railway Age, June 23, 1896: 27-34.

Indicator diagrams from the Experimental Locomotive of Purdue University. The Railway Review, December 19, 26, 1926, Jan. 2, 9, 16, 23, 30, 1897.

Test of a wrought-iron car axle. Digest of Physical Tests, *2:* 85-95. April 1897.

Speed of rotation for locomotive engines. Baker's Rwy. Mag., July 1897: 52-57.

Atmospheric resistance to the motion of railway trains. Proc. Western Rwy. Club, 1898: 347-377.

Reports of tests made on a vertical triple expansion crank and fly wheel pumping engine having a daily capacity of 20,000,000 U. S. gallons. July, 1898: 76.

Tests of coal for locomotives. Proc. Western Rwy. Club, 1898: 115-129.
Performance of the Twenty-Million-Gallon Snow pumping Engine of the Indianapolis Water Company. Proc. Ind. Acad. Sci., 1898: 147-149.
Tests to determine the efficiency of locomotive boiler coverings. Proc. Ind. Acad. Sci., 1898: 149-151.
Tests of locomotive boiler covering. Proc. Western Rwy. Club, 1899: 162-182.
Test of the Snow pumping engine at the Riverside Station of the Indianapolis Water Company. Trans. Amer. Soc. Mech. Eng., *21:* 793-824. 1900.
Tests of the Boiler of the Purdue Locomotive. Trans. Amer. Soc. Mech. Eng., *22:* 453-487, 1900.
Some factors affecting the power of locomotives. Proc. New England Railroad Club, 1901: 6-50.
Possibilities in American locomotive design. Railroad Gazette, October 17, 1902.
The training of an engineer, or the work of students in a technical school. Proc. St. Louis Rwy. Club, 1902: 9-27.
The Master Car Builders' drop-testing machine as installed at Purdue University. Proc. Amer. Soc. Testing Materials, *3:* 256-261, 1903.
Progress in locomotive testing. Proc. Ind. Acad. Sci., 1903: 113-115.
Recent progress in the design of locomotive front-ends. Proc. Central Railway Club, 1903: 6-22.
A series distilling apparatus of high efficiency. Trans. Amer. Soc. Mech. Eng., *25:* 160-175, 1903.
Report of standing committee on Tests of M.C.B. Couplers. Proc. Master Car Builders' Assn., *37:* 190-210, 1903.
Locomotive valve and valve gears. Proc. Southern and Southwestern Rwy. Club, 1904: 10-33.
The technical graduate and the machinery department of railroads. Proc. Western Rwy. Club, 1904: 202-209.
Locomotive testing plants. Trans. Amer. Soc. Mech. Eng., *25:* 827-867, 1904.
The plans for testing locomotives at the Louisiana Exposition. Proc. Ind. Eng. Soc., 1904: 54-55.
Superheated steam in locomotive service. Purdue Eng. Rev., 1905: 7-10.
Locomotive performance under a steam pressure of 250 pounds, an investigation conducted under the patronage of the Carnegie Institution. Railroad Gazette, *38:* 651-652, June 9, 1905.
Report of the standing committee on Brake Shoes. Proc. Master Car Builders' Assn., *40:* 137-173, 1906.
Report of the committee on Brake Beams. Proc. Master Car Builders' Assn., *40:* 179-288, 1906.
Locomotive front-ends. Proc. Amer. Rwy. Master Mechanics' Assn., *39:* 237-330, 1906.
Steps in the development of a smokeless city. Proc. Ind. Acad. Sci., 1906: 71-76.
A study in graphite. 43 p. Joseph Dixon Crucible Company, Jersey City, 1907.

The Cole locomotive superheater. Trans. Amer. Soc. Mech. Eng., *29:* 289-294, 1907.

High steam pressures in locomotive service. 144 p. Carnegie Inst. Washington, Publication 66, 1907.

High steam pressures in locomotive service. Purdue Eng. Rev., 1907: 5-15.

The effect of different steam pressures upon the performance of single expansion locomotives. Proc. Ind. Eng. Soc., 1907: 185-187.

Power transmission by friction driving. Trans. Amer. Soc. Mech. Eng., *29:* 1093-1119, 1907.

Report of the standing committee on Brake Shoes. Proc. Master Car Builders' Assn., *42:* 103-127, 1908.

Report of standing committee on Tests of M.C.B. Couplers. Proc. Master Car Builders' Assn., *42:* 130-152, 1908.

The State College of Engineering. Addresses delivered at the installation of Dr. Goss as Dean of the College of Engineering at the University of Illinois, 1908: 37-54.

Run-of-mine and briquetted coal on locomotives. Geol. Sur. Bull. 363. (Also published as Bulletin 37 of the U. S. Bureau of Mines, 1911.): 57, 1908.

High steam pressures in locomotive service. Univ. Ill. Eng. Exp. Sta., Bull. 26: 45 p. Sept. 1908.

Locomotive performance under saturated and superheated steam. Proc. Amer. Master Mechanics Assn. *42:* 143-191, 1909.

The Utilization of fuel in locomotive practice. Geol. Sur. Bull., 402. (Also published as Bulletin 35 of the U. S. Bureau of Mines, 1911.): 27 p., 1909.

Science and transportation. Trans. Ill. St. Acad. Sci., 1909: 90-93.

Superheated steam in locomotive service. Carnegie Inst. Wash., Pub. 127: 114 p., 1910.

The greatest need of the water supply interests of the state. Proc. Ill. Water Supply Assn., *2:* 19-24, 1910.

The Engineering Experiment Station in its relation to the public Jour. Western Soc. Eng., 1911: 457-470.

The University of Illinois and the Railroads. Proc. St. Louis Rwy. Club, 1911: 120-137.

Report of the standing committee on Tests of Brake Shoes. Proc. Master Car Builders' Assn., *45:* 138-166, 1911.

Superheated steam in locomotive service. Univ. Ill. Eng. Exp. Sta. Bull. 57: 66 p., 1912.

The adminstration of college shop laboratories. Bull. Soc. Promotion of Eng. Edu., *3:* 93-96, 1912.

Staff supervision in a technical school. Bull. Soc. Promotion of Eng. Edu. *3:* 445-448, 1912.

Fuel as a factor in locomotive capacity. Proc. International Railway Fuel Association, vol. 4, 1912, pp. 23-27, Discussion pp. 28-35.

Efficiency in technical education a factor in the development of professional ideals. Trans. Amer. Soc. Mech. Eng., *35:* 291-300, 1913.

A problem of the modern city. Proc. Soc. Western Pennsylvania, 1915: 229-237.

Smoke as a source of atmospheric pollution. Jour. Franklin Institute, *181:* 305-338, March 1916.

Smoke abatement and electrification of railway terminals in Chicago. Jour. Western Soc. Eng., *21:* 310-329, April, 1916.

The next step. A review and forecast of development of mechanism for producing furnace draft in locomotive service. Amer. Rwy. Assn., Mech. Div., 1927: 844-873.

III. Numerous other articles by Doctor Goss have appeared in technical journals. In many cases they were based on the research work recorded in greater detail in the papers listed in Part II above.

STANLEY COULTER, Indianapolis.

LOUIS FREDERICK HEIMLICH.

REYNOLDS, INDIANA. April 13, 1890.

VALPARAISO, INDIANA. October 12, 1928.

The death of Dr. Louis F. Heimlich occurred at Valparaiso, Indiana, on October 12, 1928, following a very short illness from penumonia.

Doctor Heimlich was born at Reynolds, Indiana, in 1890. His early education was received in the public and Lutheran parochial schools of Monticello and Lafayette, Indiana. He entered Purdue University in 1910. His major studies lay in the botanical field. In 1914 he received his B. S. degree and in 1916 his M. S. degree. In order to continue advanced work in botany he spent several summers at the University of Wisconsin and an entire year's residence in 1924. He received his Ph. D. from the University of Wisconsin in June, 1926.

Immediately upon his graduation from Purdue University, Doctor Heimlich became an assistant instructor in the Department of Biology at Purdue University. After receiving his M. S. degree he became an instructor in Botany. In 1923 he was raised to the rank of Assistant Professor of Botany. His greatest field of activity at this time was along taxonomic and morphological lines. He was very active making collections of the native flora and studying variations in the local flora. His first contributions were the result of such efforts. It was the result also of this concentrated taxonomic work that gave him such an intimate knowledge of the local Indiana flora with which to enable him to revise and construct a taxonomic key of great value in class use. The key was published privately. A revision of this work was in progress at the time of his death.

Very soon after his return from the University of Wisconsin, he received an invitation from the authorities at Valparaiso University to join their staff. This offer was coincident with the purchase of the University by the Missouri Synod of the Lutheran church. In 1926 Doctor Heimlich accepted their invitation and became Head of the Department of Biology. He was Dean of the University during the year 1927. At Valparaiso University, he reorganized the instructional work in Botany and went about in his tireless way of setting up a fine and efficient teaching organization.