

of its value. Increasing physical disability neither embittered his cheerful spirit nor diminished his interest in science or in the general affairs of life. When he withdrew from activities in which he would once have joined it was with the unobtrusive thoughtfulness for others that foresaw some possible hindrance that his presence might occasion. His scientific associates have lost his genial sympathy, his ever ready help in worthy effort, and his ripe judgment in decisions of moment; but the inspiration of his life and character remain and probably each of those who loved him has had the heartfelt wish that when his own turn came death might summon him with like gentleness, after a life of usefulness and honor.

F. L. RANSOME

#### THE CONGRESS OF TECHNOLOGY

THE fiftieth anniversary of the Massachusetts Institute of Technology was celebrated on April 10, 1911. On the afternoon of April 10 President MacLaurin read the address given above. It was followed by an address by Professor W. H. Walker on the spirit of alchemy in modern industry, and by one on technology and the public health by Professor C.-E. A. Winslow. On Tuesday an elaborate program of special papers was given as follows:

##### SECTION A—SCIENTIFIC INVESTIGATION AND CONTROL OF INDUSTRIAL PROCESSES

*Chairman*, Professor W. H. Walker

"The Conservation of our Metal Resources," Albert E. Green, '07, electro-metallurgical engineer, American Electric Smelting and Engineering Co., Chicago.

"Some Causes of Failures in Metals," Henry Fay, professor of analytical chemistry, Massachusetts Institute of Technology, Boston.

"Metallography and its Industrial Importance," Albert Sauveur, '89, professor of metallurgy, Harvard University, Cambridge, Mass.

"Thirty Years' Work in Boiler Testing," George H. Barrus, '74, expert and consulting steam engineer, Boston.

"Coal Combustion Recorders," A. H. Gill, '84, professor of technical analysis, Massachusetts Institute of Technology, Boston.

"An Electric Furnace for Zinc Smelting," Francis A. J. FitzGerald, '95, consulting chemical engineer, Niagara Falls, N. Y.

"Improvements in Cotton Bleaching," Walter S. Williams, '95, textile expert, Arthur D. Little, Inc., Boston.

"The Work of Engineers in the Gas Industry," Frederick P. Royce, '90, vice-president, Stone & Webster Management Association, Boston.

"The Chemist in the Service of the Railroad," H. E. Smith, '87, chemist and engineer of tests, The Lake Shore & Michigan Southern Railway Co., Collinwood, Ohio.

"The Control of Thermal Operations and the Bureau of Standards," George K. Burgess, '96, associate physicist, Bureau of Standards, Washington, D. C.

"The Debt of the Manufacturer to the Chemist," Hervey J. Skinner, '99, vice-president, Arthur D. Little, Inc., Boston.

"Prevention and Control of Fires through Scientific Methods," Edward V. French, '89, vice-president and engineer, Arkwright Mutual Fire Insurance Co., Boston.

"Research as a Financial Asset," Willis R. Whitney, '90, director, Research Laboratory, General Electric Co., Schenectady, N. Y.

"The Utilization of the Wastes of a Blast Furnace," Edward M. Hagar, '93, president, Universal Portland Cement Co., Chicago.

"Development in Paint and Varnish Manufacture," E. C. Holton, '88, general chemist, The Sherwin-Williams Co., Cleveland, Ohio.

"Reclamation of the Arid West," Frederick H. Newell, '85, director, U. S. Reclamation Service, Washington, D. C.

"Some Problems of High Masonry Dams," John R. Freeman, '76, consulting engineer, Providence, R. I.

"Some New Chemical Products of Commercial Importance," Salmon W. Wilder, '91, president, Merrimac Chemical Co., Boston.

##### SECTION B—TECHNOLOGICAL EDUCATION IN ITS RELATIONS TO INDUSTRIAL DEVELOPMENT

*Chairman*, Dr. Arthur A. Noyes

"The Elevation of Applied Science to an Equal Rank with the So-called Learned Professions," Mrs. Ellen H. Richards, '73, instructor in sanitary chemistry, Massachusetts Institute of Technology, Boston.

"The Engineering School Graduate; His Strength and His Weakness," H. P. Talbot, '85,

professor of inorganic and analytical chemistry, Massachusetts Institute of Technology, Boston.

"Development of Mining Schools," Robert H. Richards, '68, professor of mining engineering and metallurgy, Massachusetts Institute of Technology, Boston.

"The New Profession of Economic Engineering," Roger W. Babson, '98, president, Babson's Statistical Organization, Wellesley Hills, Mass.

"Instruction in Finance, Accounting and Business Administration in Schools of Technology," Harvey S. Chase, '83, certified public accountant, Boston.

"Technical Education and the Contracting Engineer," Sumner B. Ely, '92, vice-president, Chester B. Albree Iron Works Co., Allegheny, Pa.

"The General Educational Value of the Study of Applied Science," Alan A. Claffin, '94, president, Avery Chemical Co., Boston.

"The Influence of the Institute upon the Development of Modern Education," James P. Munroe, '82, president, National Society for the Promotion of Industrial Education, Boston.

"The Training of Industrial Foremen," Charles F. Park, '92, associate professor of mechanical engineering, Massachusetts Institute of Technology; director of Lowell Institute School for Industrial Foremen, Boston.

"The Responsibility of Manufacturers for the Training of Skilled Mechanics and Shop-foremen," Arthur L. Williston, '89, principal, Wentworth Institute, Boston.

"The Function of Technical School Laboratories," H. W. Hayward, '96, assistant professor of applied mechanics, Massachusetts Institute of Technology, Boston.

"Technical Education—Its Function in Training for the Textile Industry," Charles H. Eames, '97, principal, Lowell Textile School, Lowell, Mass.

"The Contribution of the Institute of Technology toward Negro Scientific Thought," Robert R. Taylor, '92, director of industrial training, Tuskegee Institute, Tuskegee, Ala.

#### SECTION C—ADMINISTRATION AND MANAGEMENT

*Chairman*, Dr. Davis R. Dewey

"An Object Lesson in Efficiency," Wilfred Lewis, '75, president, The Tabor Mfg. Co., Philadelphia, Pa.

"The Scientific Thought as applied to Railroad Problems," Benjamin S. Hinckley, '99, engineer of tests, N. Y., N. H. & H. R. R. Co., Boston.

"Reliability of Materials," Walter C. Fish,

'87, manager, Lynn Works, General Electric Co., Lynn, Mass.

"A Consideration of Certain Limitations of Scientific Efficiency," Henry G. Bradlee, '91, Stone & Webster, Boston.

"Scientific Industrial Operation," Tracy Lyon, '85, assistant to first vice-president, Westinghouse Electric & Mfg. Co., Pittsburgh, Pa.

"The Trend of Commercial Development Viewed from the Financial Standpoint," Charles Hayden, '90, banker, Boston.

"Profitable Ethics," David Van Alstyne, '86, vice-president, Allis-Chalmers Co., Milwaukee, Wis.

"The Natural Increase in the Ratio of Burden to Labor in Modern Manufacturing Processes," James B. Stanwood, '75, vice-president and engineer, Houston, Stanwood & Gamble, Co., Cincinnati.

"Scientific Management of American Railways," Samuel M. Felton, '73, president, Chicago Great Western R. R., Chicago, Ill.

#### SECTION D—RECENT INDUSTRIAL DEVELOPMENT

*Chairman*, Professor D. C. Jackson

"The Elimination of some Sources of Loss in a Large Producer-gas Engine Plant," John G. Callan, '96, electrical engineer, Arthur D. Little, Inc., Boston.

"Improvements in Efficiency of Electric Lighting Properties and what the Public Gains Thereby," William H. Blood, Jr., '88, technical expert, Stone & Webster, Boston, Mass.

"Advent of Illuminating Engineering," John S. Codman, '93, electrical and illuminating engineer with the Holophane Co., Boston.

"Development of Gasoline Engines," Joseph C. Riley, '98, assistant professor of mechanical engineering, Massachusetts Institute of Technology, Boston.

"The Progress of Electric Propulsion in Great Britain," Henry M. Hobart, '89, consulting engineer, London, England.

"Mechanical Handling of Materials," Richard Devens, '88, manager eastern office, Brown Hoisting Machinery Co., New York City.

"The General Solution for Alternating Current Networks," George A. Campbell, '91, research engineer, American Telephone & Telegraph Co., New York City.

"Electro-chemistry and its Recent Industrial Development," Harry M. Goodwin, '90, professor of physics and electro-chemistry, Massachusetts Institute of Technology, Boston.

"Mail Handling Machinery at the Pennsylvania Railroad Terminal and United States Post Office

at New York City," Julian E. Woodwell, '96, consulting engineer, New York.

"The Development of a System of Underground Pneumatic Tubes for the Transportation of United States Mail," B. C. Batcheller, '86, chief engineer, American Pneumatic Service Co., New York City.

"The Continuous Cooling of Circulating Water used for Condensing Steam," Edward F. Miller, professor of steam engineering, Massachusetts Institute of Technology, Boston.

"Power Plant Betterment," H. H. Hunt, '89, Stone & Webster Management Association, Boston.

"The Development of Economical Ore Dressing Systems," Frank E. Shepard, '87, president, Denver Engineering Works, Denver, Colo.

"Recent Developments in Bridge Construction," Frank P. McKibben, professor of civil engineering, Lehigh University, South Bethlehem, Pa.

"The Manufacture and Use of Asbestos Wood," Charles L. Norton, '93, professor of heat measurements, Massachusetts Institute of Technology, Boston.

"The Technics of Iron and Steel," Theodore W. Robinson, '84, vice-president, Illinois Steel Co., Chicago, Ill.

#### SECTION E—PUBLIC HEALTH AND SANITATION

*Chairman*, Professor W. T. Sedgwick

"Profitable and Fruitless Lines of Endeavor in Public Health Work," Edwin O. Jordan, '88, professor of bacteriology, University of Chicago, Chicago, Ill.

"The Technical School Man in Public Health Work," Harry W. Clark, '88, chief chemist, State Board of Health, Boston.

"Present Status of Water Purification in the United States and the Part that the Massachusetts Institute of Technology has Played," George C. Whipple, '89, consulting engineer, New York City.

"The Pollution of Streams by Manufacturing Wastes," William S. Johnson, '89, sanitary and hydraulic engineer, Boston.

"Sewage Disposal with Respect to Offensive Odors," George W. Fuller, '90, consulting hydraulic engineer and sanitary expert, New York.

"The Food Inspection Chemist and his Work," Herman C. Lythgoe, '96, analyst, State Board of Health, Boston.

"The Life Saving Corps of the Technical School," Severance Burrage, '92, professor of sanitary science, Purdue University, Lafayette, Ind.

"Factory Sanitation and Efficiency," C.-E. A.

Winslow, '98, associate professor of biology, College of City of New York, New York City.

"A Review of the Work of the Sanitary Research Laboratory and Sewage Experiment Station of the Massachusetts Institute of Technology," Earle B. Phelps, '99, consulting sanitary expert, New York City.

"Bacteria and Decomposition," Simeon C. Keith, Jr., '93, assistant professor of biology, Massachusetts Institute of Technology, Boston.

#### SECTION F—ARCHITECTURE

*Chairman*, Professor F. W. Chandler

"Landscape Architecture, a Definition and a Brief Résumé of its Past and Present," Stephen Child, '88, landscape architect and consulting engineer, Boston and Santa Barbara.

"Some Phases of Modern Architectural Practice," Walter H. Kilham, '89, architect, Boston.

"The Engineer and Architect Unite," Luzerne S. Cowles, '97, assistant designing engineer, Boston Elevated Railway Co., Boston.

"Mill Construction with Steel Frame and Tile Walls," John O. DeWolf, '90, mill engineer, Boston.

#### SCIENTIFIC NOTES AND NEWS

SIR J. J. THOMSON, Cavendish professor of experimental physics in the University of Cambridge, and Dr. D. Hilbert, professor of mathematics at Göttingen, have been elected corresponding members of the Paris Academy of Sciences.

THE University of Edinburgh will confer its doctorate of laws on Mr. Frank W. Dyson, the astronomer royal, and on Dr. Ernest Rutherford, professor of physics in the University of Manchester.

THE University of Aberdeen has conferred its LL.D. on Dr. A. R. Cushny, professor of materia medica in the University of London, on Dr. Arthur Keith, Hunterian professor of anatomy in the Royal College of Surgeons, and Major P. A. Macmahon, deputy warden of the standards.

DEAN LIBERTY H. BAILEY, of the State School of Agriculture at Cornell University, has written to Governor Dix, of New York, expressing regret that he can not accept the appointment of state commissioner of agriculture.