will allow me to say that I have no fear that all will eventually agree that sanitary considerations with reference to the characteristics of parasitic diseases which are now quite commonly resident in the seed and the soil will yet form the essential basis for the proper management of crops in rotation in series, and the same considerations will largely govern the type of tillage and the manner of handling waste materials on the farm, particularly farm manures. Further, aside from the matter of variety as to food value, the efforts of agriculturists and agronomists with reference to cereal cropping will, in the future, give primary consideration to the selection of seed for sowing purposes, based directly upon its powers of resistance to disease.

The ability of our farmers to do all these things can not be questioned, and when they realize that health among cropping plants is far more important because of the close association of individual plants in the soil, than it is with reference to animal life, they will understand, and will put into action proper sanitary measures for disease control in cereal cropping.

H. L. BOLLEY

AGRICULTURAL COLLEGE,
NORTH DAKOTA,
May 14, 1913

DOCTORATES CONFERRED BY AMERICAN UNIVERSITIES

As shown by the tables published on the following pages, the notable increase in the number of degrees of doctor of philosophy and of science conferred by American universities in 1912 has been followed by a small decrease in 1913. The total number of degrees this year is 461, as compared with 482 last year; the degrees in the natural and exact sciences fell from 273 to 231. Such fluctuations are not, however, significant, being due to natural variations in statistics when the total number of cases is comparatively small. It is not likely that the number of degrees conferred in any future year will fall appreciably below the record for the present year, whereas the average for the first five years covered by these statistics was 233. This represents a doubling of graduate and research

TABLE I

Doctorates Conferred

	Average of 10 Years, 1898–1907	1908	1909	1910	1911	1912	1913	Total for 16 Years, 1898–1913
Columbia	32.2	55	59	44	75	81	66	702
Chicago	35.6	54	38	42	55	57	46	648
Harvard	33.8	42	38	35	42	41	52	588
Yale	31.8	32	44	27	31	31	39	522
Johns Hopkins	30.5	28	27	23	28	32	32	475
Pennsylvania	22.5	32	29	26	29	34	31	406
Cornell	18.1	22	34	35	34	33	35	374
Wisconsin	8.6	17	16	18	23	27	19	206
Clark	8.7	11	9	14	16	6	16	159
New York	6.7	15	13	11	17	10	16	149
Michigan	6.9	4	13	7	6	11	15	125
Boston	4.4	11	13	6	13	8	9	104
California	3.3	4	10	6	6	15	6	80
Princeton	2.6	6	4	8	9	12	13	78
Illinois	.5	5	4	12	11	20	20	77
Bryn Mawr	2.1	4	2	5	5	9	3	49
George Wash.	2.8	3	4	4	5	2	2	48
Virginia	2.8	4	1	4	2	4	4	47
Brown	2.3	2	5	1	4	6	1	42
Catholic	2.0	1	3	3	5	5	3	40
Minnesota	2.4	3	5	1	2	2	3	40
Stanford	1.4	2	3	5	4	4	5	37
Iowa	1.1	2	0	4	3	7	3	30
Nebraska	2.0	2	2	1	0	3	2	30
Mass. Inst.	.3	3	0	3	2	6	1	18
Cincinnati	.3	0	2	2	5	3	2	17
Indiana	.0	3	3	0	2	4	3	15
Ohio	.4	0	2	0	2	5	1	14
Pittsburgh	.1	4	0	2	1	1	5	14
Washington	.7	1	0	0	2	1	3	14
Missouri	.4	3	0	2	2	1	1	13
Vanderbilt	.6	1	1	2	0	1	2	13
Georgetown	1.0	0	0	0	0	0	0	10
Colorado	.5	0	1	0	0	0	1	7
Kansas	.3	0	0	3	1	0	0	7
Syracuse	.2	0	2	1	2	0	0	7
North Carolina	.5	0	1	0	0	0	0	6
Northwestern	.4	0	1	0	1	0	0	6
Tufts	.5	0	0	1	0	0	0	6
Wash. and Lee	.4	1	0	0	0	0	0	5
Lafayette	.3	0	0	0	0	0	0	3
Dartmouth	.1	1	0	0	0	0	0	2
Lehigh	.2	0	0	0	0	0	0	2
Tulane	.1	0	0	0	0	0	1	2
Total	272.4	378	389	358	445	482	461	5,237

TABLE II

Doctorates Conferred in the Sciences

	Average of 10 Years, 1898–1907	1908	1909	1910	1911	1912	1913	Total for 16 Years, 1898–1913	Per Cent.
Chicago	16.4	37	20	24	35	37	16	333	51
Johns Hopkins	16.8	17	20	15	19	23	21	283	60
Columbia	13.4	21	23	11	29	36	27	281	40
Cornell	10.4	15	24	27	27	28	30	255	68
Harvard	14.1	13	14	10	20	15	22	235	40
Yale	12.4	16	27	12	15	21	19	234	45
Pennsylvania	9.0	18	13	12	10	9	9	161	40
Clark	7.7	11	8	14	16	6	13	145	91
Wisconsin	2.8	6	4	13	13	14	5	83	40
California	2.4	2	6	4	5	12	6	59	74
Michigan	2.8	1	5	1	3	8	10	56	45
Illinois	.3	0	2	9	6	15	11	46	60
Princeton	1.1	3	3	2	5	7	7	38	49
George Wash.	1.7	2	2	3	4	2	1	31	65
Stanford	1.1	2	2	1	4	3	5	28	76
Brown	1.2	2	2	1	3	4	1	25	60
Nebraska	1.3	1	2	1	0	0	2	19	63
Virginia	1.1	2	0	1	1	2	2	19	40
Mass. Inst.	.3	3	0	3	2	6	1	18	100
New York	.6	1	3	2	1	2	3	18	12
Bryn Mawr	1.0	1	0	2	1	3	0	17	35
Minnesota	.7	1	2	1	2	2	2	17	43
Iowa	.7	0	0	2	1	3	2	15	50
Washington	.7	1	0	0	2	1	3	14	100
Indiana	.0	3	3	0	2	4	1	13	87
Ohio	.4	0	2	0	2	5	0	13	93
Cincinnati	.1	0	1	1	4	1	2	10	59
Missouri	.3	2	0	2	2	0	1	10	77
Catholic	.5	—	2	0	1	1	0	9	23
Pittsburgh	.0	0	0	1	1	1	5	8	57
Kansas	.3	0	0	3	1	0	0	7	100
Vanderbilt	.3	1	1	0	0	1	1	7	54
Boston	.1	0	1	0	0	1	2	5	5
Tufts	.5	0	0	0	0	0	0	5	83
North Carolina	.3	0	1	0	0	0	0	4	67
Northwestern	.2	0	1	0	1	0	0	4	67
Wash. and Lee	.3	1	0	0	0	0	0	4	80
Syracuse	.1	0	0	1	1	0	0	3	43
Colorado	.2	0	0	0	0	0	0	2	28
Dartmouth	.1	1	0	0	0	0	0	2	100
Lehigh	.2	0	0	0	0	0	0	2	100
Georgetown	.1	0	0	0	0	0	0	1	10
Lafayette	.1	0	0	0	0	0	0	1	33
Tulane	.0	0	0	0	0	0	1	1	50
Total	124.1	184	194	179	239	273	231	2,541	49

TABLE III

Doctorates Distributed According to Subjects

	Average of 10 Years, 1898–1907	1908	1909	1910	1911	1912	1913	Total
Chemistry	32.3	54	43	48	68	78	68	682
Physics	15.5	22	25	25	33	30	21	311
Zoology	15.2	25	18	24	25	20	24	286
Psychology	13.5	23	21	20	23	29	24	275
Mathematics	12.1	23	14	23	25	22	20	248
Botany	12.6	11	16	10	20	30	27	240
Geology	7.1	5	13	10	15	23	14	151
Physiology	4.1	7	13	4	2	12	2	81
Astronomy	3.4	1	7	3	4	2	11	62
Agriculture	1.0	2	7	4	11	11	8	53
Bacteriology	1.4	1	5	1	4	6	3	34
Anthropology	1.0	4	4	2	2	0	3	25
Anatomy	.9	2	0	1	1	6	1	20
Paleontology	1.6	1	0	2	0	0	0	19
Pathology	.5	2	3	1	1	2	2	16
Engineering	.8	0	0	1	2	2	0	13
Mineralogy	.6	0	3	0	1	0	0	10
Metallurgy	.3	0	1	0	1	0	0	5
Geography	.1	1	1	0	1	0	1	5
Meteorology	.1	0	0	0	0	0	0	1
Total	124.1	184	194	179	239	273	231	2,541
English		30	27	31	35	30	39	192
History		32	22	25	28	20	25	152
Economics		17	42	7	17	26	16	125
Philosophy		25	14	19	26	15	22	121
Education		6	9	13	23	21	25	97
Latin		12	12	15	13	17	19	88
German		14	14	16	8	15	21	88
Romance		12	16	6	12	15	9	70
Sociology		6	6	14	18	12	11	67
Oriental		9	15	11	1	10	8	54
Political Science		9	4	9	6	9	15	52
Greek		13	11	5	7	5	8	49
Theology		7	2	1	7	7	6	30
Philol. and Com. Lit.		0	1	5	1	2	3	12
Law		1	0	1	2	1	1	6
Classical Arch.		0	0	0	1	3	1	5
Music		1	0	1	1	0	0	3
Fine Arts		0	0	0	0	1	1	2
Total		194	195	179	206	209	230	1,213

work in our universities within fifteen years. It is, however, still the case that, in proportion to its population, Germany has six times as many men officially certified as competent to undertake advanced teaching and research work.

From 1898 to 1907 five universities—Chicago, Harvard, Columbia, Yale and the Johns Hopkins—conferred nearly equal numbers of degrees, varying only from 356 at Chicago to 305 at the Johns Hopkins, but during the last six years these five universities have arranged themselves somewhat definitely in the order shown in the table, and it seems not improbable that this order will be maintained for a long time. Pennsylvania and Cornell have in this period come into the same group as

Yale and the Johns Hopkins. The most notable advance, however, has been in the case of the state universities, especially Wisconsin, Michigan and Illinois. Both last year and this the last-mentioned university conferred twenty degrees, whereas during the entire ten-year period from 1898 to 1907 only five degrees were conferred. In 1912 and 1913 Princeton has also increased to a considerable extent the number of its higher degrees. This year Harvard and Yale conferred more degrees than usual, while the number at Columbia decreased. Such annual changes have, however, no special significance. This year Columbia University conferred about 500 master of arts degrees, by far the largest number in the history of any American institution.

When we turn to the degrees conferred in the natural and exact sciences, we find that Chicago and the John Hopkins have still conferred the largest numbers in these subjects, though this year they fall behind Columbia, Cornell and Harvard. Of the leading universities, Cornell and the Johns Hopkins have conferred the largest percentages of their degrees in science, 68 and 60, respectively. The percentage is exactly the same for Columbia, Harvard, Pennsylvania and Wisconsin, namely, 40 per cent. In the separate sciences there were this year 68 degrees given in chemistry, 27 in botany, 24 each in zoology and in psychology and 21 in physics. More degrees than usual were conferred in astronomy, as many as six, all the degrees the university conferred, being granted by California.

It is not altogether easy to make a satisfactory distribution of the degrees. Thus Harvard conferred degrees in applied biology and Cornell in plant breeding, and degrees may be conferred in genetics and plant pathology. It would scarcely do to have entries for subjects such as these, yet it is not certain whether they should be placed under botany or agriculture. This is only an example of difficulties which occur in all such classifications; while the table is substantially correct, it is not certain that exactly the same methods of classification have been followed from year to year.

It will be noted that while this year the number of degrees in the exact and natural sciences falls from 273 to 231, the number of degrees in the humanities is increased from 209 to 230. In the latter subjects English leads decidedly, followed by history, economics, philosophy and education. Latin and German are bracketed, while more degrees have been conferred in the oriental languages than in Greek.

The institutions which this year conferred two or more degrees in a science are: in *chemistry,* Columbia, 13; Yale, 10; Cornell and Johns Hopkins, 7 each; Pittsburgh, 5; Illinois, 4; Harvard, 3; Chicago, New York, Pennsylvania and Princeton, 2 each; in *physics,* Cornell, 4; Harvard and Johns Hopkins, 3 each; Stanford and Yale, 2 each; in *zoology,* Illinois, 5; Harvard, 4; Columbia, 3; Chicago and Stanford, 2 each; in *psychology,* Clark, 8; Chicago, Columbia and Cornell, 3 each; Iowa and Johns Hopkins, 2 each; in *mathematics,* Harvard, 4; Columbia and Johns Hopkins, 3 each; Boston, Michigan and Yale, 2 each; in *botany,* Cornell, 5; Harvard, 4; Michigan, Pennsylvania and Washington, 3 each; Columbia, Johns Hopkins and Wisconsin, 2 each; in *geology,* Johns Hopkins, 4; Yale, 3; Chicago and Columbia, 2 each; in *astronomy,* California, 6; Chicago, 2; in *agriculture,* Cornell, 8; in *anthropology,* Clark, 2; in *pathology,* Chicago, 2.

The names of those on whom the degree was conferred in the natural and exact

sciences, with the subjects of their theses, are as follows:

CORNELL UNIVERSITY

Edward Riley Allen: "The Orcinolphthaleins, the Orcinoltretrachlorphthaleins and some of their Derivatives."

Adeline Sarah Ames: "Studies in the Polyporaceæ."

Hiram Douthitt Ayres: "The Refraction of Gases at Different Temperatures and Pressures."

Henry John Broderson: "Solubilities and Chemical Reactions in Anhydrous Hydrazine."

Karl M. Dallenbach: "The Measurement of Attention."

Maxwell Jay Dorsey: "Pollen Development in *Vitis* with Special Reference to Sterility."

Alfred Washington Drinkard, Jr.: "Heredity and Variation in *Browallia*."

Mary Alida Fitch: "Studies in Transpiration."

Harry Morton Fitzpatrick: "A Comparative Study of the Development of the Fruit Body in *Phallogaster, Hysterangium* and *Gautieria*."

William Silliman Foster: "On the Preservative Tendency."

Margaret Graham: "Studies in Nuclear Division of *Preissia commutata*."

Bascombe Britt Higgins: "A Contribution to the Life History and Physiology of *Cylindrosporium* on Stone Fruits."

George Richard Hill, Jr.: "The Relation of Ripe and Unripe Fruits and Germinating Seeds to Air."

Arthur Romaine Hitch: "The Electrolytic and Thermal Decomposition of some Inorganic Trinitrides."

Earle Hesse Kennard: "The Rate of Decay of Phosphorescence at Low Temperatures."

Burton Judson Lemon: "The Electrolysis of Solutions of the Rare Earths."

James Martin Lohr: "The Tensile Strengths of the Copper Zinc Alloys."

Lawrence Martin: "Some Features of the Glaciers and Glaciation in College Fiord, Prince William Sound, Alaska."

Tanomo Odaira: "A Study of Heredity and Variation in Pure Lines and in Hybrids of *Phaseolus vulgaris*."

Martin John Prucha: "Can the Efficiency of *Bacillus radicicola* in producing Nodules on the Legumes be altered?"

Fred M. Rolfs: "A Bacterial Disease of the Stone Fruits due to *Bacterium pruni* E. F. S."

Christian Alban Ruckmich: "The Rôle of Kinesthesis in the Perception of Rhythm."

Philip Edward Smith: "Some Features in the Development of the Central Nervous System of *Desmognathus fusca* Urodela."

Vern Bonham Stewart: "The Fire Blight Disease in Nursery Stock."

Roland Elisha Stone: "The Life History of *Ascochyta* of some Leguminous Plants."

Hawley Otis Taylor: "A Direct Method of finding the Value of Materials as Sound Absorbers."

George Ellsworth Thompson: "An Experimental Study of Photoactive Cells with Fluorescent Electrolytes."

Lawrence J. Ulrich: "Equilibrium in certain Binary Systems."

Eleanor Van Ness Van Alstyne: "The Absorption of Protein without Digestion."

Thomas Whitney Benson Welsh: "Contributions to the Chemistry of Hydrazine."

COLUMBIA UNIVERSITY

Eric Temple Bell: "The Cyclotomic Quinary Quintic."

Ralph Carpenter Blanchard: "Rocks of the Western Buckskin Mountains, Arizona."

Ethel Nicholson Browne: "A Study of the Male Germ Cells in Notonecta."

Burdette Ross Buckingham: "Spelling Ability: its Measurement and Distribution."

Cora Sutton Castle: "A Statistical Study of Eminent Women."

Herbert Anthony Clark: "Selective Reflection of Salts of Chromium and certain other Oxygen Acids."

Benjamin George Feinberg: "A Quantitative Study of some Aldehyde Reactions."

H. D. Goodale: "The Early Development of *Spelerpes bilineatus* (Green)."

Gabriel Marcus Green: "Projective Differential Geometry of Triple Systems of Surface."

Joseph Samuel Hepburn: "Biochemical Studies of Cholesterol."

Ferdinand Friis Hintze, Jr.: "A Contribution to the Geology of the Wasatch Mountains, Utah."

Benjamin Horowitz: "A Study of the Action of Ammonia on Thymal."

Robert Melyne Isham: "The Preparation and Properties of certain Methoxylated Carbinols, Olefins and Ketones derived from Trimethyl Gallic Acid."

Michael Levine: "Studies in the Cytology of the Hymenomycetes, especially the Boleti."

Walter Wilbert McKirahan: "The Surface Tension of Aqueous Solutions of some Organic Salts."

Edgar Grim Miller, Jr.: "Studies in Pathological Chemistry."

Garry Cleveland Myers: "A Study in Incidental Memory."

Marks Neidle: "The Surface Tension of Aqueous Solutions of Ethyl, Methyl and Amyl Alcohols and of Acetic and Formic Acids."

William Stockton Nelms: "A Systematic Study of Linear and Non-linear Resonators for Short Electric Waves."

Anton Richard Rose: "Biochemical Studies of Phytophosphates."

Edward Schramm: "The Surface Tension of Molten Hydrated Salts and their Solutions."

George Gilmore Scott: "A Physiological Study of the Changes in *Mustelus canis* produced by Modifications in the Molecular Concentration of the External Medium."

Lloyd Leroy Smail: "Some Generalizations in the Theory of Summable Divergent Series."

Clayton Sidney Smith: "A Study of the Influence of Cold Storage Temperature upon the Composition and Nutritive Value of Fish."

Edward Collins Stone: "The Surface Tension of certain Organic Liquids and the Capillary Constants and Critical Temperatures calculated therefrom."

Arlow Burdette Stout: "The Individuality of the Chromosomes and their Serial Arrangement in *Carex aquatilis*."

Charles Weisman: "Biochemical Studies of Expired Air."

JOHNS HOPKINS UNIVERSITY

Gardner Cheney Basset: "The Relation between Brain Weight and the Time required for Habit Formation in the Albino Rat."

Harvey Bassler: "Filicales and Pteridospermæ of the Monongahela Formations of Maryland, including certain Forms from Similar Formations in Pennsylvania."

Harry Bateman: "The Quartic Curve and its Inscribed Configurations."

Bessie Marion Brown: "On the Reactions of both the Ions and the Nonionized Forms of Electrolytes. On the Reactions of Methyl Iodide with Sodium, Potassium and Lithium Ethylates at 0° and 25°."

George Clyde Fisher: "Seed Development in the Genus *Peperomia*."

Theodore Thornbur Fitch: "The Influence of Density of Gas on the Formation of Corona."

Marcus Isaac Goldman: "Types of Sediments of the Upper Cretaceous of Maryland."

Lon. A. Hawkins: "The Influence of Calcium, Magnesium and Potassium Nitrates upon the Toxicity of certain Heavy Metals toward Fungous Spores."

Janet Tucker Howell: "The Fundamental Law of the Grating."

Horatio Hughes: "Conductivity and Viscosity of Solutions of Rubidium Salts in Mixtures of Acetone and Water."

Willis Thomas Lee: "Stratigraphy of the Coal Fields of Northern Central New Mexico."

Florence Parthenia Lewis: "A Geometrical Application of the Theory of the Binary Quintic."

Patrick Joseph Nicholson: "Some Experiments on the Physical Properties of Selenium, with a Theoretical Discussion based on the Electron Theory."

William Armstrong Price, Jr.: "The Invertebrate Fauna of the Pennsylvania of Maryland."

Philip Schneeberger: "The Fractionation of California Petroleum by Diffusion through Fuller's Earth."

Edward John Shaeffer: "A Study of the Conductivity, Dissociation and Temperature Coefficients of Conductivity of certain Inorganic Salts in Aqueous Solution as Conditioned by Temperature, Dilution, Hydration and Hydrolysis."

James Houston Shrader: "On the Reactions of both the Ions and the Nonionized Forms of Ethylates and Phenolates with Alkyl Halides."

Leslie Denis Smith: "Conductivity, Temperature, Coefficients of Conductivity, Dissociation and Constants of certain Organic Acids between 0° and 65°.

John Linck Ulrich: "The Number and Distribution of Trials in Learning in the White Rat."

Luther Ewing Wear: "On Self-dual Plane Curves of the Fourth Order."

John Brown Zinn: "Osmotic Pressure Measurements of Cane Sugar Solutions at Higher Temperatures."

HARVARD UNIVERSITY

David Francis Barrow: "Oriented Circles in Space."

Elmer Keiser Bolton: "Some Derivatives of Iodanil."

James Wittenmyer Chapman: "The Leopard Moth and other Insects Injurious to Shade Trees in the Vicinity of Boston."

Guy Roger Clements: "Implicit Functions Defined by Equations with Vanishing Jacobian."

Donald Walton Davis: "Asexual Reproduction and Regeneration in *Sagartia luciæ* Verrill."

Richard Maurice Elliott: "The Psychophysics of Handwriting."

Rollins Adams Emerson: (*a*) "A Genetic Study of Plant Height in *Phaseolus vulgaris*"; (*b*) "The Inheritance of a Recurring Somatic Variation in Variegated Ears of Maize."

Chester Henry Heuser: "The Development of the Cerebral Ventricles in the Pig."

John William Hotson: "Culture Studies of Fungi Producing Bulbils and similar Propagative Bodies."

Roger Arthur Johnson: "An Analytic Treatment of the Conic as an Element of Space of Three Dimensions."

Augustus Locke: "The Geology of El Oro and Tlalpujahua Mining Districts, Mexico."

James Watt Mavor: "Studies on Myxosporidia found in the Gall Bladder of Fishes from the Eastern Coast of Canada."

Raymond Edwin Merwin: "The Ruins of the Southern Part of the Peninsula of Yucatan, with special Reference to their Place in the Maya Culture."

Frederic Palmer, Jr.: "Volume Ionization Produced by Light of Extremely Short Wave-length."

Chauncey J. Vallette Pettibone: "The Quantitative Estimation of Urea in Urine."

John Wesley Shipley: "Floating Equilibrium Applied to Analysis and to Precise Thermometry; and the Compressibility of certain Liquids."

Edmund Ware Sinnott: "The Morphology of the Reproductive Structures in the Podocarpineæ."

Joseph Slepian: "On the Functions of a Complex Variable Defined by an Ordinary Differential Equation of the First Order and the First Degree."

Reynold Albrecht Spaeth: "The Physiology of the Chromatophores of Fishes."

Howard Moffitt Trueblood: "On the Measurement of the Coefficient of the Joule-Thomson Effect in Superheated Steam."

David Locke Webster: I., "On an Electromagnetic Theory of Gravitation"; II., "On the Existence and Properties of the Ether."

Orland Emile White: "Studies of Teratological Phenomena in their Relation to Evolution and the Problems of Heredity."

YALE UNIVERSITY

Joseph Alfred Ambler: "A New Method of Synthesizing N-Alkyl Derivatives of α-Amino Acids."

Alan Mara Bateman: "Geology and Ore Deposits of Bridge River District, British Columbia."

Robert Bengis: "The Synthesis of Amino Acids related to Adrenaline."

Theodore Henry Brown: "The Effect of Radiation on a Small Particle revolving about Jupiter."

Wilbur Haverfield Cramblet: "On Intermediate Functions, being an Extension of Semi-continuous or Upper and Lower Functions to a Classification of Discontinuous Functions."

Ralph Dixon Crawford: "Geology and Ore Deposits of the Monarch and Tomichi Districts, Colorado."

Arthur Joseph Hill: "The Catalytic Action of Esters in the Claisen Condensation."

David Upton Hill: "Experimental Studies on the Diffusion Theory of Reaction Velocity."

Simon Boghos Kuzirian: "The Elimination of Certain Volatile Products in Chemical Analysis."

Howard Bishop Lewis: "The Behavior of some Hydantoin and Thiohydantoin Derivatives in the Organism, together with a Study of Certain Related Sulphur Compounds."

George Augustus Linhart: "On the Kinetics of the Decomposition of Certain Organic and Inorganic Salts."

Ben Harry Nicolet: "Some Derivatives of Aminomalonic Acid, and their Biochemical Interest."

Willis Clarke Noble, Jr.: "Some Investigations into the Distribution and Habitat of the *Tetanus bacillus*."

Leigh Page: "The Photoelectric Effect."

Theophilus Shickel Painter: "Spermatogenesis in Spiders."

Ruth Wheeler: "Nutrition Experiments with Mice."

Jay Walter Woodrow: "Experiments on Columnar Ionization."

Bruce Rose: "Geology of Savona District, British Columbia."

Norman Arthur Shepard: "Researches on Pyrimidines: Uramils and Thiouramils."

UNIVERSITY OF CHICAGO

Aaron Arkin: "The Influence of Chemical Substances upon Immune Reactions, with Special Reference to Oxidations."

Joseph Kumler Breitenbecher: "The Effect of Varying Water Content in the Medium upon the Activities of *Leptinotarsa decemlineata* (Say) on Introduction into a Desert Habitat."

Albert Dudley Brokaw: "The Solution and Precipitation of Gold in Secondary Enrichment of Ore Deposits."

Harold Caswell Cooke: "The Secondary Enrichment of Silver Ores."

George Oliver Curme, Jr.: "The Thermal Decomposition of the Symmetrical Diaryl-hydrazines."

Neil Stanley Dungay: "A Study of the Effects of Injury upon the Fertilizing Power of Sperm."

Curvin Henry Gingrich: "A Determination of the Photographic Magnitudes of Comparison Stars in Certain of the Hagen Fields."

Walter Samuel Hunter: "The Delayed Reaction."

George Lester Kite: "The Relative Permeability of the Surface Protoplasm of Animal and Plant Cells."

Oliver Justin Lee: "The Spectroscope System of *Camelopardalis*."

Edward James Moore: "Reaction Effects Produced by the Discharge of Electricity from Points in Oases and the Bearing of these Effects on the Theory of the Small Ion."

Fleming Allen Clay Perrin: "An Experimental and Introspective Study of the Human Learning Process in the Maze."

Mildred Leonora Sanderson: "Formal Modular Invariants with an Application to Binary Modular Covariants."

Shiro Tashiro: "Chemical Change in Nerve Fiber during Passage of a Nerve Impulse."

Arthur Lawrie Tatum: "Studies in Experimental Cretinism."

Stella Burnham Vincent: "The Function of the Vibrissæ in the Behavior of the White Rat."

CLARK UNIVERSITY

George Davis Bivin: "A Study in Psychosynthesis."

Irving Angell Field: "The Biology and Economic Value of the Sea Mussel, *Mytilus edulis*."

Erwin Oliver Finkenbinder: "The Remembrance of Problems and of their Solution: A Study in Logical Memory."

Sara Carolyn Fisher: "The Processes of Abstraction and Generalization and their Products."

Albert Nicolay Gilbertson: "Some Ethical Phases of Eskimo Culture."

Arthur Taber Jones: "Acoustic Repulsion of Jets of Gas."

Roy Franklin Richardson: "A Study of Anger."

Kirkman K. Robinson: "The Evolution of Plato's Life and Philosophy: A Genetic Study."

Frank K. Sechrist: "The Psychology of Unconventional Language."

Asa George Steele: "The Organization and Control of the College."

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Elizabeth Lindley Woods: "An Experimental Study of Recognition."

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Robert Douglass Glasgow: "Relations and Distribution of *Phyllophaga* Harris (*Lachnosterna* Hope) in Temperate North America."

John Wesley Hornbeck: "Thermal and Electrical Conductivities of the Alkali Metals."

Lloyd Francis Nickell: "Derivatives of Isocamphoric Acid, Decomposition of Isodihydroaminocampholytic Acid with Nitrous Acid."

Ralph Sydney Potter: "Molecular Rearrangements in the Camphor Series. Structure of the Amino Acids."

Harley Jones Van Cleave: "Studies on Cell Constancy in *Neorhynchus* with Descriptions of New Species in that Genus."

Paul Smith Welch: "Studies on the Enchytræidæ of North America."

Guy Yandall Williams: "The Dependence of Ionic Mobility on the Viscosity of the Medium."

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Charles August Behrens: "An Attenuated Culture of *Trypanosoma Brucei*."

Charles Wiggins Cobb: "The Asymptotic Development for a Certain Integral Function of Zero Order."

Charles Wilford Cook: "Salts and Brines of

Michigan: their Origin, Distribution and Exploitation.''

Harry Wolven Crane: ''A Study in Association, Reaction and Reaction Times.''

Maynie Rose Curtis: ''A Quantitative Study of the Factors influencing the Size, Shape and Physical Constitution of the Eggs of the Domestic Fowl.''

Frank Caleb Gates: ''The Relation of Winter in the Xerofyty of Peat Bog Ericads.''

Clyde Elton Love: ''The Asymptotic Solutions of Linear Differential Equations.''

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Charles Herbert Otis: ''Transpiration of Emersed Water Plants: its Measurement and its Relationships.''

Lambert Thorp: ''Condensation of Nitromalonic Aldehyde with Certain γ-Diketones.''

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William Elijah Anderson: ''Determination of the Mean Declinations of 136 Stars for the Epoch 1912.''

William Ira Book: ''An Electric Converter.''

Lennie Phoebe Copeland: ''On the Theory of Invariants of Plane N-lines.''

Herbert Spencer Harned: ''Halide Bases of Columbium.''

Hiram Stanhope Lukens: ''The Electrolysis of Potassium Chloride,'' ''A Study of the Action of Sulphur Monochloride on Certain Minerals,'' ''Scandium in American Wolframite.''

Thomas Franklin Manns: ''Some New Bacterial Diseases of Legumes and the Relationships of the Organisms Causing the Same.''

David Mitchell: ''The Influence of Distractions on the Formation of Judgments in Lifted Weight Experiments.''

Francis Whittier Pennell: ''Studies in the Agalinanæ, a Subtribe of the Rhinanthaceæ.''

Jacob Joseph Taubenhaus: ''Diseases of the Sweet Pea.''

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John Howard Dellinger: ''High-frequency Current Distribution in Hot-wire Ammeters.''

James Cook Martin: ''Geology of the Canton, New York, Quadrangle.''

Elton Leroy Quinn: ''The Atomic Weight of Cadmium by the Investigation of Cadmium Chloride, Cadmium Bromide and Cadmium Oxide.''

Edwin Eustace Reinke: ''Dimorphic Spermatozoa in Prosobranchia with special reference to their Development in *Strombus*.''

Harlow Shapley: ''A Study of Eclipsing Binary Stars.''

Guy Baker Taylor: ''The Dissociation of Mercuric Oxide: A Study of Equilibrium in the System, Oxygen and Mercury.''

Kenneth Powers Williams: ''The Solutions of Non-homogeneous Linear Difference Equations and their Asymptotic Form.''

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Sturla Einarsson: ''On the Orbits of the Minor Planets (624) Hector and (588) Achilles of the Trojan Group.''

Anna Estelle Glancy: ''On v. Zeipel's Theory of the Perturbations of the Hecuba Group of Minor Planets.''

Eli Stuart Haynes: ''The Minor Planet 1911 MT, (719) Albert.''

Carl Clarence Keiss: ''The Cluster Variable RR Lyræ.''

Paul Willard Merrill: ''Class B Stars whose Spectra contain Bright Hydrogen Lines.''

Emma Phoebe Waterman: ''The Visual Region of the Spectrum of the Brighter Class A Stars.''

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Clinton Willard Clark: ''The Pyrogenic Decomposition of Petroleum Products with special reference to Gasoline Formation by Pressure Distillation.''

Hugh Clark: ''An Improved Method for the Manufacture of Hydrogen and Lampblack.''

Harry Percival Corliss: ''The Distribution of Colloidal Arsenic Trisulphide between the Phases in the System, Ether, Water and Alcohol and the Binodal Curve and Tie-lines for the System.''

Lester Albert Pratt: ''Studies in the Field of Petroleum.''

Robert Rex Shively: ''A Study of Magnesia Cements.''

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Samuel Stillman Berry: ''The Cephalopods of the North Pacific and the Hawaiian Islands.''

Harry Carleton Burbridge: ''The Thermal Coefficient of Contact Electromotive Force.''

Harry Drake Gibbs: ''Liquid Methylamine as a Solvent, and a Study of its Chemical Reactivity.''

Joseph Grinnell: ''An Account of the Mammals and Birds of the Lower Colorado Valley, with especial reference to the Distributional Problems presented.''

George Wilber Moffitt: "A Study of some Changes in the Air-Liquid Contact Potential Difference."

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Irving E. Melhus: "Germination and Injection in Certain Oomycetes."

William Harold Peterson: "Forms of Sulphur in Plants."

Roy Lee Primm: "Some Phenomena associated with Cellulose Fermentation."

Nellie Antoinette Wakeman: "Plant Pigments other than Chlorophyll."

Jerry Edward Wodsedalek: "Natural History and Behavior of Certain Ephemeridæ."

NEW YORK UNIVERSITY

Raymond Bartlett Earle: "The Genesis of Paleozoic Interbedded Iron Ores."

John Wesley Marden: "The Quantitative Determination of Perchlorates and a New Method for the Determination of the Specific Heat of Dilute Solutions."

Richard Edwin Lee: "A New Decision Method for determining the Density of Liquids."

WASHINGTON UNIVERSITY

Jacob Richard Schramm: "A Contribution to our Knowledge of the Problem of Free Nitrogen Fixation in Certain Species of Grass-green Algæ with special reference to Pure Culture Methods."

Mildred Webster Spargo Schramm: "The Genus *Chlamydomonas*."

Charles Oscar Chambers: "The Relation of Algæ to Dissolved Oxygen and Carbon Dioxide with special reference to Carbonate."

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Wilbur Alden Coit: "Introduction to Modern Geometry."

Winfield Hancock Stone: "The Elements of Harmonic Ratio."

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Sebastian J. Mauchly: "On the Action of a Magnetic Field on the Electric Discharge through Gases."

Charles H. Hecker: "A Study of some New Alkyl Hydroxylamines."

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Walter Richard Miles: "Discriminative Action in Singing."

Thomas Franklin Vance: "The Psychophysics of Tonal Gaps."

UNIVERSITY OF MINNESOTA

Lillian Cohen: "Equilibria in Systems of Acetone, Water and Salts."

Elvin Charles Stakman: "A Study in Cereal Rusts: Physiological Races."

UNIVERSITY OF NEBRASKA

Claude William Mitchell: "Sex Determination in *Asplanchna amphora*."

Raymond John Pool: "A Study of the Vegetation of the Sandhills of Nebraska."

UNIVERSITY OF VIRGINIA

John Wilbur Watson: "The Abstraction of Potassium during Sedimentation."

Charles Newman Wunder: "A Photometric Survey of the Huyghenian Region of the Great Nebula of Orion."

BROWN UNIVERSITY

Norman Edward Holt: "The Action of Acetic Anhydride on *s*-Tribromphenylpropiolic Acid."

GEORGE WASHINGTON UNIVERSITY

Marcus Ward Lyon: "Treeshrews: An Account of the Mammalian Family Tupaiidæ."

INDIANA UNIVERSITY

Jesse James Galloway: "The Stratigraphy and Paleontology of the Tanner's Creek Section of the Cincinnati Series of Indiana."

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Paul Vance Faragher: "Physico-chemical Investigations on Electrolytic Potentials and on the Equilibrium of Certain Organic Reactions."

UNIVERSITY OF MISSOURI

Leroy Sheldon Palmer: "Study of the Natural Pigment in the Fat of Cow's Milk."

TULANE UNIVERSITY

Eleanor Elmire Reames: "On Fresh-water Chlorophyceæ and Cyanaphyceæ of Southern States."

VANDERBILT UNIVERSITY

Paul C. Bowers: "Tellurium, Atomic Weight."

SCIENTIFIC NOTES AND NEWS

THE International Medical Congress, at its London meeting, awarded its three prizes as follows: The Moscow Prize to Professor