had a certain charm for me. The principle here expressed applied to our work might be interpreted, "Utility with Research." We have not, so far as I am aware, made any discoveries that will revolutionize the agricultural world, nor have we been looking for such; we have endeavored to do the work that came to our hands faithfully and with such skill as we possessed. Our results may not have been made the subjects of magazine articles, nor heralded in the public press under sensational head-lines, but we have the greater satisfaction of knowing that they have been helpful to the Canadian farmer. There is so much work to be done that one feels at times as if a beginning had not yet been made; nevertheless, on looking back it is not difficult to see wherein chemical research has played its part in the development of Canadian agriculture.

May I, in conclusion, say that our work in agricultural chemistry has been very greatly assisted by help in various ways from those in charge of the chemical investigations at the experiment stations in the United States? Many of our problems have been yours. You were the pioneers in the field; we have profited much by your work and experience. We acknowledge with gratitude our indebtedness, and trust that the friendly relations that have so far existed between us may always continue; and that we may always be able to work together, recognizing that our object is one and the same—the progress of agriculture on the North American continent.

Frank T. Shutt
Dominion Experiment Farm,
Ottawa, Can.

Doctorates Conferred by American Universities

For the tenth consecutive year we publish statistics in regard to the degrees of doctor of philosophy and doctor of science conferred by the universities of the United States. The total number of doctorates conferred was 327, almost exactly the same as in 1905 and 1906, when the numbers were, respectively, 325 and 326. The average number for the past ten years has been 271. There has thus been an increase, though probably not so large as in the number of positions to be filled. It must also be remembered that the number of American students receiving degrees from foreign universities is probably less now than it was ten years ago.

TABLE I.

DOCTORATES CONFERRED

	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	Total
Chicago	36	24	37	36	27	32	36	44	31	53	356
Harvard	26	24	36	29	31	28	46	38	46	34	338
Columbia	22	33	21	25	32	39	29	38	42	41	322
Yale	34	30	26	39	29	36	39	34	29	22	318
Johns Hopkins	33	38	33	30	17	23	31	35	32	33	305
Pennsylvania	24	20	15	25	14	29	18	26	28	26	225
Cornell	19	7	19	21	23	20	13	21	19	19	181
Clark	12	5	9	7	1	4	10	18	13	8	87
Wisconsin	5	6	5	6	11	4	12	9	9	19	86
Michigan	7	4	5	3	10	10	8	7	8	7	69
New York	5	9	7	6	4	4	9	7	9	7	67
Boston	0	0	0	0	0	4	7	14	10	9	44
California	1	3	2	2	1	3	3	4	9	5	33
Virginia	0	2	2	8	6	3	1	1	0	5	28
George Washington	1	0	5	3	2	4	3	3	2	5	28
Princeton	0	3	3	3	1	1	2	5	5	3	26
Minnesota	1	2	3	2	3	3	3	3	2	2	24
Brown	1	3	3	2	2	5	0	2	1	4	23
Bryn Mawr	3	3	1	2	2	0	5	2	2	1	21
Nebraska	2	1	1	1	0	0	2	3	7	3	20
Catholic	1	0	0	0	2	2	5	1	5	4	20
Stanford	2	0	2	2	2	1	1	1	2	1	14
Iowa	0	0	0	0	0	2	0	2	5	2	11
Georgetown	0	0	0	0	0	3	1	2	0	4	10
Washington	0	2	0	1	0	1	1	0	2	0	7
Vanderbilt	0	0	3	1	0	0	0	0	1	1	6
Colorado	0	1	0	0	0	0	2	0	2	0	5
Illinois	0	0	0	0	0	0	0	1	3	1	5
North Carolina	0	0	0	0	2	1	0	1	0	1	5
Missouri	0	1	0	0	0	0	0	2	0	1	4
Northwestern	1	1	0	1	0	0	0	0	0	1	4
Wash. and Lee	0	0	0	0	1	0	1	0	1	1	4
Cincinnati	0	0	0	0	0	1	1	1	0	0	3
Kansas	0	1	0	0	0	2	0	0	0	0	3
Lafayette	0	0	0	0	0	3	0	0	0	0	3
Massachusetts Inst.	0	0	0	0	0	0	0	0	0	3	3
Lehigh	0	0	0	0	0	2	0	0	0	0	2
Syracuse	0	1	0	0	1	0	0	0	0	0	2
Dartmouth	0	0	0	0	0	0	0	0	1	0	1
Tulane	0	0	1	0	0	0	0	0	0	0	1
Western of Pa.	0	0	0	0	0	0	0	0	0	1	1
	236	224	239	255	224	270	289	325	326	327	2,715

Chicago awarded last year 53 degrees, which is the largest number conferred so far by a single institution. This makes the total number of degrees conferred by Chi-

cago larger than the number conferred by Harvard, which latter institution last year stood at the head of the list. Then follow Columbia, Yale, Johns Hopkins, and, with much larger breaks, Pennsylvania and Cornell. There is then a drop to institutions that during the past ten years have conferred less than a hundred degrees—Clark, Wisconsin, Michigan and New York. Those that have conferred less than fifty degrees are headed by Boston and California. This year Chicago and Columbia conferred more than the average number of degrees, while Yale conferred fewer than usual. The most interesting change is the giving by Wisconsin of nineteen degrees, more than twice the average number for the past ten years. This places Wisconsin considerably in advance of Michigan, while among the state universities these two institutions form a separate class.

Table II. gives a comparison of the total number of graduate students and the number of doctorates conferred by nineteen of the leading institutions. The number of graduate students is taken from the statistics compiled by Professor Tombo and printed in SCIENCE. The registration in the graduate schools of these universities was 4,073 and the number of degrees conferred was 283, only about 7 per cent. It thus appears that a comparatively small proportion of the graduate students in our universities take the doctor's degree. A large number go to the universities with only the master's degree in view, and their academic work is regarded as complete when this degree has been received. There are also many students who devote only part of their time to graduate work, and these remain a good many years as graduate students, and often in the end do not take the degree.

TABLE II.

	Registration in Graduate Schools 1906–1907	Doctorates Conferred in 1907	Per Cent.	Average Number Doctorates Conferred Annually 1898–1907	Per Cent.
Johns Hopkins..	156	33	21	31	20
Virginia..	43	5	12	3	7
Chicago.....	358	53	15	36	10
Cornell	212	19	9	18	8
Pennsylvania.....	285	26	9	23	8
Harvard	437	34	8	34	8
Michigan.....	96	7	7	7	7
Wisconsin.....	302	19	6	9	3
Yale.....	357	22	6	32	9
Columbia.	808	41	5	32	4
Minnesota.....	53	2	4	2	4
Nebraska.....	95	3	3	2	2
New York.....	222	7	3	7	3
Northwestern.....	40	1	3	½	1
Princeton	110	3	3	3	3
California.....	204	5	2	3	1
Stanford	49	1	2	1	2
Missouri.....	107	1	1	½	½
Illinois.....	139	1	1	1	1
Total	4,073	283	7		

The institutions are arranged in the order of the percentage of graduate students who received degrees last year, and the differences are very striking. As the number of degrees conferred in a single year is subject to considerable chance variations, there is also given a comparison of the average number of degrees conferred during the past ten years with the registration for last year, data in regard to the average registration for the past ten years not being available. The Johns Hopkins has by far the best record, one fifth of its graduate students taking the degree each year. Chicago stands next, with one seventh this year and an average of over one tenth. Harvard, Yale, Pennsylvania and Cornell give the degree each year to 8 or 9 per cent. of their graduate students, Columbia to only 5 per cent.

If these results were due to a severe natural selection and the degree was given to the men who are most likely to contribute to the advancement of science and learning, there would be no ground for regret. But it is by no means certain that this is

the case, or that those who received the degree of doctor of philosophy were of greater average ability or better average training than graduates in medicine or law. The supply of men for academic positions and for positions in the government service and other places where the ability to conduct independent research should be a requisite is inadequate, and it is to be feared that it does not represent the intellectual aristocracy of the nation.

Table III. shows the number of degrees conferred in the sciences enumerated in

TABLE III.

DOCTORATES CONFERRED IN THE SCIENCES

	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	Total	Per Cent.
Hopkins	19	17	20	19	9	10	17	18	18	21	168	55
Chicago	12	11	16	14	13	21	14	21	14	28	164	46
Harvard	11	7	15	15	14	15	23	12	17	12	141	42
Columbia	10	19	10	11	14	15	11	13	16	15	134	42
Yale	11	14	9	18	10	13	15	13	15	6	124	40
Cornell	11	2	10	13	16	13	8	13	7	11	104	57
Penna.	8	7	5	12	5	13	9	12	11	8	90	40
Clark	12	5	6	6	1	4	10	18	9	6	77	89
Wisconsin	2	4	1	3	2	0	4	3	2	7	28	33
Michigan	0	3	1	0	5	4	6	?	5	4	28	41
California	1	3	1	2	1	3	2	3	3	5	24	73
Geo. Wash.	1	0	3	1	1	4	0	3	2	2	17	60
Nebraska	2	1	1	1	0	0	1	2	3	2	13	65
Brown	1	0	0	1	2	4	0	2	1	1	12	52
Stanford	2	0	0	1	2	1	1	1	2	1	11	78
Princeton	0	3	1	0	0	1	1	3	0	2	11	42
Virginia	0	2	0	4	1	2	0	0	0	2	11	39
Bryn Mawr	1	2	1	2	1	0	2	0	1	0	10	48
Iowa	0	0	0	0	0	1	0	2	3	1	7	64
Minnesota	0	0	1	0	1	1	0	1	1	2	7	29
Washington	0	2	0	1	0	1	1	0	2	0	7	100
New York	1	1	0	1	0	0	1	1	1	0	6	9
Catholic	0	0	0	0	1	2	1	0	0	1	5	25
Illinois	0	0	0	0	0	0	0	0	2	1	3	60
Kansas	0	1	0	0	0	2	0	0	0	0	3	100
Mass. Inst.	0	0	0	0	0	0	0	0	0	3	3	100
Missouri	0	1	0	0	0	0	0	1	0	1	3	75
N. Carolina	0	0	0	0	2	1	0	0	0	0	3	60
Vanderbilt	0	0	1	1	0	0	0	0	1	0	3	50
Wash. & Lee	0	0	0	0	1	0	1	0	1	0	3	75
Colorado	0	0	0	0	0	0	0	0	2	0	2	40
Lehigh	0	0	0	0	0	2	0	0	0	0	2	100
Northwestern	0	1	0	1	0	0	0	0	0	0	2	50
Boston	0	0	0	0	0	0	0	0	0	1	1	2
Cincinnati	0	0	0	0	0	0	0	1	1	0	1	100
Dartmouth	0	0	0	0	0	0	0	0	1	0	1	33
Georgetown	0	0	0	0	0	0	1	0	0	0	1	10
Lafayette	0	0	0	0	0	1	0	0	0	0	1	33
Syracuse	0	0	0	0	1	0	0	0	0	0	1	50
Total	105	106	102	127	103	134	129	143	140	143	1232	45

Table IV. Of 2,715 degrees conferred during the past ten years, 1,232, somewhat less than half, have been in the natural and exact sciences. The relative proportion of degrees in the humanities and in the sciences has not altered appreciably in the ten years covered by these statistics. The Johns Hopkins has conferred more degrees in the sciences than any other institution, but is closely followed by Chicago and at a not very considerable distance by Harvard, Columbia and Yale. Fifty-five per cent. of the degrees conferred at the Johns Hopkins have been in the sciences, and 57 per cent. at Cornell, whereas in the other leading institutions the percentage is decidedly less—46 at Chicago, 42 at Harvard and Columbia and 40 at Yale and Pennsylvania. It is rather surprising to note that at Wisconsin only one third of the degrees are in the sciences. At California and Stanford, where the numbers are, however, too few to give reliable figures, the percentages are 73 and 78.

Table IV. gives the degrees conferred in each of the sciences. Chemistry, as always, leads with about the usual number of degrees. There is an increase this year in the number of degrees in physics and zoology, 22 and 18, respectively, and a decrease in the number in psychology to 10. In previous years sociology and education

TABLE IV.

DOCTORATES CONFERRED IN THE SCIENCES

	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	Total
Chemistry	27	32	26	28	27	33	35	36	38	38	320
Physics	11	7	15	24	12	14	17	14	19	22	155
Zoology	12	11	11	15	16	12	15	15	22	18	147
Psychology	18	15	9	13	8	18	10	21	12	10	134
Botany	11	11	12	8	12	9	17	15	16	15	126
Mathematics	11	13	11	18	8	7	13	20	9	11	121
Geology	6	5	5	10	6	10	7	4	11	7	71
Physiology	4	1	4	1	8	8	1	3	3	8	41
Astronomy	3	2	4	5	2	4	4	3	4	3	34
Paleontology	0	4	2	1	0	2	2	3	2	0	16
Bacteriology	0	1	1	1	1	3	3	0	1	3	14
Anthropology	2	0	2	1	0	1	2	1	0	1	10
Agriculture	0	0	0	0	2	2	2	2	0	2	10
Anatomy	0	1	0	1	0	4	0	0	0	3	9
Engineering	0	0	0	1	0	3	1	3	0	0	8
Mineralogy	0	2	0	0	1	1	0	1	1	0	6
Pathology	0	0	0	0	0	3	0	0	1	1	5
Metallurgy	0	0	0	0	0	0	0	1	1	1	3
Geography	0	0	0	0	0	0	0	1	0	0	1
Meteorology	0	1	0	0	0	0	0	0	0	0	1
Total	105	106	102	127	103	134	129	143	140	143	1232

have been included among the sciences, when the work of the candidates was supposed to be inductive or statistical in character. But it is not possible, with the information at hand, to discriminate between work that is scientific and work that is historical or literary, and the degrees in sociology and education have this year been eliminated from the table.

The institutions that conferred three degrees or more in special subjects are as follows: *Chicago,* chemistry 5, zoology 3, botany 4, mathematics 4, physiology 4; *Columbia,* chemistry 5; *Cornell,* chemistry 4; *Harvard,* zoology 3, psychology 3; *Johns Hopkins,* chemistry 11, physics 3; *Massachusetts Institute of Technology,* chemistry 3; *Pennsylvania,* physics 4; *Yale,* chemistry 3.

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:

UNIVERSITY OF CHICAGO

George David Birkhoff: "Asymptotic Properties of Certain Ordinary Differential Equations with Applications to Boundary Value and Expansion Problems."

William Richards Blair: "The Index of Refraction of Water for Electric Waves by Interference Methods."

Roy Hutchison Brownlee: "On Precipitated Sulphur."

Stephen Reid Capps, Jr.: "The Pleistocene Geology of the Leadville Quadrangle, Colorado."

Charles MacDonald Carson: "A Study of the Equilibrium Relations of $S\lambda$ and $S\mu$."

Rollin Thomas Chamberlin: "The Gases occluded in Rocks."

William Crocker: "The Rôle of Seed in Delayed Germination."

Edna Daisy Day: "The Digestibility of Starch as affected by Cooking."

Emil Goettsch: "The Nature, Structure and Distribution of the Œsophageal Glands of Mammals."

Lawrence Emery Gurney: "The Viscosity of Water at Low Rates of Shear."

Charles Claude Guthrie: "The Relation of Pressure in the Coronary Vessels to the Activity of the Isolated Heart and Some Closely Related Problems."

Paul Gustav Heinemann: "The Kinds of Bacteria concerned in the Natural Souring of Milk."

Willis Stose Hilpert: "The Stereoisomerism of Nitrogen Compounds: Stereoisomeric Chlorimido Esters."

Hemming Gerhard Jensen: "Toxic Limits and Stimulation Effects of Some Salts and Poisons on Wheat."

James Wright Lawrie: "The Chemistry of the Acetylidene Compounds."

Hugh McGuigan: "Oxidations of Various Sugars in the Animal Body."

Andrew Fridley McLeod: "On Aldol, Pentarrythrose and the Action of Copper Acetate on the Hexoses."

Arthur Ranum: "On a New Kind of Congruence Groups."

Oscar Riddle: "The Genesis of Fault-bars in Feathers and the Cause of Alternation of Light and Dark Fundamental Bars."

Gustav Ferdinand Ruediger: "The Mechanism of Streptococcus Immunity."

Victor Ernest Shelford: "The Life-histories and Larval Habits of the Tiger Beetles."

Frances Grace Smith: "Morphology of the Trunk and Development of the Microsporangium of Cycads."

John Sundwall: "The Structure of the Lacrymal Gland."

Reinhardt Thiessen: "The Vascular Anatomy of the Seedling of Dioon."

Charles Henry Turner: "The Homing of Ants: An Experimental Study of Ant Behavior."

Anthony Lispenard Underhill: "Invariants under Point Transformations in the Calculus of Variations."

Buzz M. Walker: "On the Resolution of Higher Singularities of Algebraic Curves into Ordinary Double Points."

Shigeo Yamanouchi: "A Study of Apogamy."

JOHNS HOPKINS UNIVERSITY

John August Anderson: "Absorption and Emission Spectra of Neodymium and Erbium Compounds."

Clyde Shepherd Atchison: "Curves with a Directrix."

Frederick Conrad Blanck: "The Nitration of Aniline and Certain of its Derivatives."

Taylor Scott Carter: "The Fluorescence, Ab-

sorption and Magnetic Rotation Spectra of Potassium Vapor."

Frank Lawrence Cooper: "Measurements of Wave-lengths of the Spark Spectra of Chromium, Manganese and Calcium; also of the Arc Spectra of Cerium and Thorium; together with a Study of the possible Influence of Variations of Current, Capacity, etc., in the Spark Circuit."

Paul Brown Dunbar: "The Osmotic Pressure of Cane Sugar Solutions in the Vicinity of 4° Centigrade."

William Davis Furry: "The Epistemological Use of the Esthetic Consciousness."

William West Holland: "The Osmotic Pressure of Cane Sugar Solutions in the Vicinity of the Freezing Point of Water."

Harry Nichols Holmes: "Electric Osmose."

Aubrey Edward Landry: "A Geometrical Interpretation of Binary Syzygies."

Benjamin Franklin Lovelace: "The Osmotic Pressure of Glucose Solutions."

Bartgis McGlone: "Notes on the Anatomy and Life-history of *Moira Atropos*."

Daniel Webster Ohern: "The Trilobita, Mollusca and Echinodermata of the Paleodevonian of Maryland."

James Newton Pearce: "Dissociation as measured by the Freezing-point Lowering and by Conductivity-bearing on the Hydrate Theory. The Composition of the Hydrates formed by a Number of Electrolytes."

Francis Mitchell Rogers: I. "The Osmotic Pressure of Glucose Solutions in the Vicinity of the Freezing-point of Water." II. "The Use of Weight-normal Solutions in the Measurement of Osmotic Pressure."

William Henry Schultz: "The Effect of Chloralhydrate upon the Properties of Heart-muscle."

Guy Howard Shadinger: I. "On the Affinity Constants and Constitution of several Urazoles." II. "On the Velocity Constants of the Reactions between Alkyl Halides and Urazoles."

Lloyd William Stephenson: "The Mesozoic Deposits of the Coastal Plain of North Carolina."

Charles Milton Stine: "The Effect of one Salt on the Hydrating Power of another Salt present in the same Solution."

William Reed Veazey: "The Conductivity and Viscosity of Solutions of certain Salts in Water, Methyl Alcohol, Ethyl Alcohol, Acetone, Nitrobenzene and Binary Mixtures of these Solvents."

Leon Franklin Williams: I. "A Study of the Action of Primary, Secondary and Tertiary Amines on Camphoroxalic Acid." II. "Acyl Derivatives of Ortho- and Paraminophenol."

COLUMBIA UNIVERSITY

Henry Kreitzer Benson: "On the Use of Molten Salts containing Water of Crystallization as Solvents."

William Nathan Berg: "The Digestibility of Various Proteins in Solutions of the same Acids."

Louis Jacob Cohen: "Some New Double Phosphates."

William Klaber: "On Certain 7-nitro-4-quinazolones."

Elsie Kupfer: "Studies in Plant Regeneration."

Albert Buell Lewis: "Tribes of the Columbia Valley."

Abram Lipsky: "Rhythm as a Distinguishing Characteristic of Prose Style."

Robert Cecil McMahon: "Technical History of the White Lecythi."

John Maurice Nelson: "Some Compounds derived from Succinylosuccinic Ester."

Raemer Rex Renshaw: "4-aminophthalic Acid and some of its Derivatives."

William Carl Ruediger: "The Field of Distinct Vision."

Charles H. Shamel: "Geology in the Law."

Charles Rupert Stockard: "The Development of the Mouth and Gills in Bdellostoma Stanti."

George Booker Waterhouse: "The Influence of Nickel and Carbon in Iron and the Overheating, Burning and Restoring of Nickel Steel."

Anne Sewell Young: "The Stellar Clusters h and x Persei; Measurement and Reduction of the Rutherford Photographs."

HARVARD UNIVERSITY

John Mead Adams: "The Transmission of Röntgen Rays through Metallic Sheets."

Arthur Mangun Banta: "A Comparison of the Reactions of a Species of Terranean with those of a Species of Subterranean Isopod."

Marshall Albert Barber: "On Heredity in certain Microorganisms."

Charles Scott Berry: "An Experimental Study of Imitation in Animals."

William Charles Brenke: "A Contribution to the Theory of Trigonometric and Zonal Harmonic Series."

Herbert Spencer Davis: "Spermatogenesis in Acrididæ and Locustidæ."

Louville Eugene Emerson: "An Investigation in the Simultaneous Stimulation of Adjacent Touch Spots on the Skin."

Calvin Olin Esterly: "The Light-recipient Organs of the Copepod Eucalanus Elongatus."

Herman Brunswick Kipper: "Ketone Substitution Derivatives of Orthohydroxyketones, Alkali-insoluble Phenols."

Edward Mueller: "The Atomic Weights of Potassium and Chromium."

Ernest Linwood Walker: "The Parasitic Amœbæ of the Intestinal Tract of Man and other Animals."

Karl Tinsley Waugh: "The Rôle of Vision in the Mental Life of the Mouse."

CORNELL UNIVERSITY

John Eliot Coit: "The Cultivated Peony."

Thomas G. Delbridge: "Tetrachlorgallein and its Derivatives."

Philena Belle Fletcher: "The Bees of the Cayuga Fauna."

Lee Fred Hawley: "Contributions to the Chemistry of Thallium II."

John Peter Magnusson: "Equilibrium between Hydrogen Sulphide and Ammonia."

Frank Curry Mathers: "A Study of the Atomic Weight of Indium."

Richard Morris: "On the Automorphic Functions of the Group $(O, 3; l_1, l_2, l_3)$."

Elsie Murray: "Organic Sensation."

Charles Smith Prosser: "The Classification and Distribution of the Series of Central and Eastern New York."

Effie Alberta Read: "A Contribution to the Knowledge of the Olfactory Apparatus in Dog, Cat and Man."

Francis Robert Sharpe: "The General Circulation of the Atmosphere."

UNIVERSITY OF PENNSYLVANIA

Harold Charles Barker: "Thermo-electromotive Forces of Potassium and Sodium with Platinum and Mercury."

Bertha May Clark: "On the Variation of the Heat of Mixture with Concentration and Temperature."

Charles Aaron Culver: "A Study of the Propagation and Interception of Energy in Wireless Telegraphy."

John Frazer: "The Application of the Rotating Anode to Certain Electrolytic Separations and an Investigation of the Electro-deposition of Indium with the Use of the Rotating Anode."

William Peter Haseman: "A Method for the Determination of the Optical Constants of Metals in the Infra-red."

Thomas Potter McCutcheon, Jr.: "New Results in Electro-analysis."

Mary Isabel Steele: "Regeneration in the Compound Eyes of Crustacea."

Frank Macy Surface: "The Early Development of a Polyclad, Planocera Inquilina, Wheeler."

UNIVERSITY OF WISCONSIN

Florence Eliza Allen: "On the Determination of Cyclic Involutions of Order Three."

William Ballantyne Anderson: "A Spectroscopic Study of the Spark Spectrum in Various Gases at High Pressure."

Lewis Fussell: "Self-excited Polyphase Asynchronous Generator."

William George Marquette: "Concerning the Organization of the Spore-mother-cells of *Marsilia quadrifolia*."

George Matthew Reed: "Injection Experiments with *Erysiphe cichoracearum* DC."

Frederick Lafayette Shinn: "On the Optical Rotatory Power of Salts in Dilute Solutions."

John Weinzirl: "The Action of Sunlight upon Bacteria with Special Reference to Tuberculosis."

CLARK UNIVERSITY

Horace Leslie Brittain: "A Study in Imagination."

William Franklin Copeland: "Periodicity in Spirogyra."

Oris Polk Dellinger: "Comparative Study of Cilia as a Key to the Structure of Contractile Protoplasm."

Tadasu Misawa: "A Sketch of the History of the Modern Philosophy of Education."

George Edwin Stebbins: "Sound Distortion by the Telephone Transmitter and Receiver."

William Edward Story, Jr.: "An Investigation on the Poulsen Arc in Wireless Telegraphy."

YALE UNIVERSITY

Henry H. Conover: "On Certain Problems in the Calculus of Variations."

Arthur Harmount Graves: "The Morphology of *Ruppia Maritima*."

William Barri Kirkham: "The Early Development of the Mammalian Egg."

Philip Henry Mitchell: "Purin Metabolism in the Embryo."

David Lindsey Randall: "The Use of Potassium Permanganate in the Estimation of Iron, Mercury and Molybdenum."

Tadasu Saiki: "The Chemistry of Non-striated Muscle."

UNIVERSITY OF CALIFORNIA

Benjamin Marshall Davis: "Early Life-history of *D. pusillus* Ritter."

Harvey Monroe Hall: "The Compositæ of Southern California."

James Davis Maddrill: "A Study of Several Stars of the Delta Cephei Type."

Thorburn Brailsford Robertson: I. "On the Conditions of Equilibrium of an Associating Amphoteric Electrolyte."

Charles Edwin Weaver: "Geology of the Napa Quadrangle, California."

UNIVERSITY OF MICHIGAN

Benjamin Franklin Bailey: "Induction Coils, an Experimental and Theoretical Research."

Calvin Henry Kauffman: "Contribution to the Physiology of Saprolegnia."

Frederick Arthur Osborn: "Change of Index of Refraction of Liquids with Temperature."

Donald Dexter Van Slyke: "Action of Molecular Silver, Silver Sulphate and Silver Chloride upon some Halogenated Triphenyl-carbinol-chlorides."

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Raymond Haskell: "The Effect of Concentration and Ionization on the Rates of Diffusion of Salts in Aqueous Solutions."

Robert Browning Sosman: "The Hydrolysis of Ammonium Acetate and the Ionization of Water at High Temperature."

Morris Archer Stewart: "The Dissociation Relations of Sulphuric Acid."

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