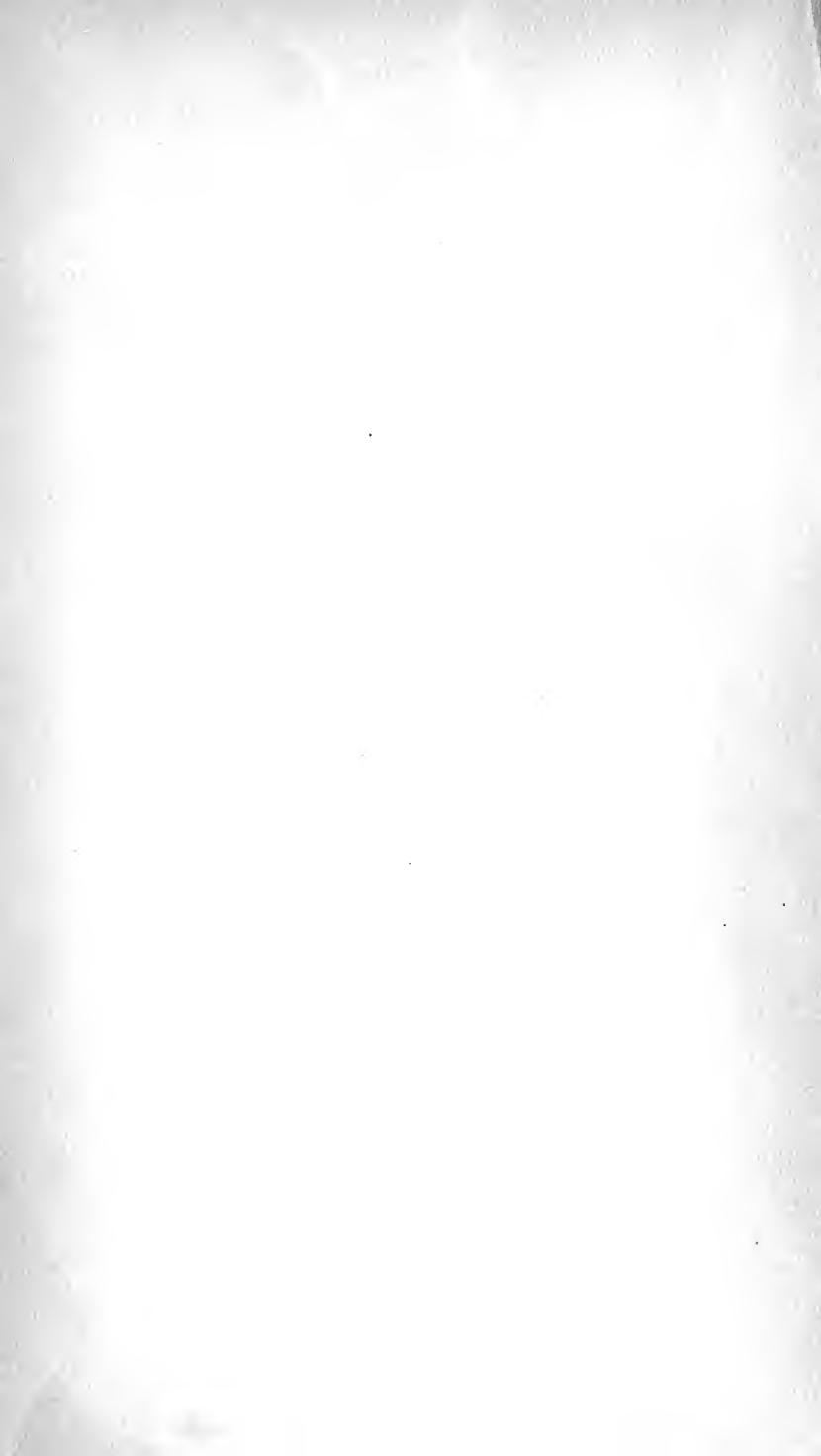








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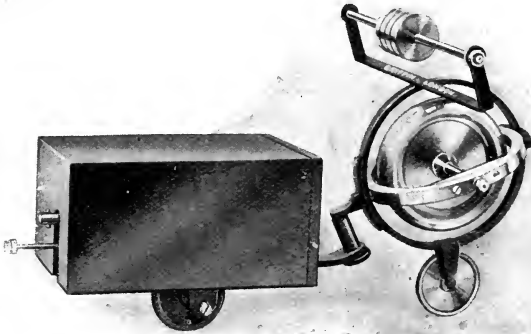
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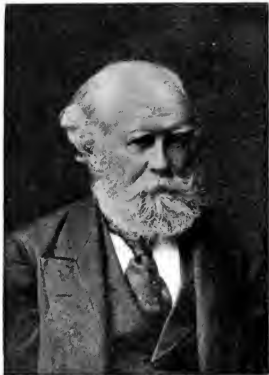
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WHO'S WHO IN SCIENCE
INTERNATIONAL

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PREFACE

THE third annual issue of this publication contains biographies and classified index of over 9,000 scientists. The international character of the book is shown by the fact that the British element constitutes less than a quarter of the whole. Additional information is also given in the sections on the world's Universities and Societies. The aim of this work is to represent every science in every country, and we are entitled to say that no other publication, official or otherwise, attempts all these various sections even for any one country.

The frontispiece, representing eminent scientists recently deceased, consists this year of portraits of Lord Avebury, Sir G. H. Darwin, A. M. Picard and Ferdinand Zirkel. Russell Wallace's regrettable death occurred while the book was in the press.

With regard to language, everything except the names of Journals, and of Societies (in that section), has been translated into its English equivalent. The reader should bear in mind, therefore, that publications of scientists in foreign countries are not available in English unless a translation is specifically mentioned.

A similar policy has prevailed with regard to indexing. No notice has been taken of signs such as the Slav Č or Š, in so far as alphabetical placing is concerned. They will be found amongst C, S, or whatever letter may be the nearest English equivalent. The only exceptions to this are the German *umlaut* and the Scandinavian Å and Ø, which correspond to *e* placed after the vowel.

Scientists are requested to keep us informed of changes as soon as conveniently possible. The exigencies of the post, especially to far countries, make serious inroads on the time, necessarily short, accorded to us in compiling an up-to-date book of reference, and a few omissions or scanty references are inevitable. We hope that

PREFACE

readers who use the recommendation forms will not omit to add biographical details of the person suggested.

Registrars and Secretaries of Universities and Societies are particularly asked to fill in the forms we send. They have not the personal sentiment which a scientist may feel in relation to his biography, and we are accordingly indebted to those who supply us with information. We acknowledge with thanks the efficient co-operation of our official foreign correspondents.

It is interesting to note that our inclusion of Psychology has been endorsed by the formation of a new section in the British Association.

H. H. S.

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ABBREVIATIONS

A.B.	Bachelor of Arts.	Counc.	Council.
Abh.	<i>Abhandlungen.</i>	Crypt.	Cryptogamic.
(Aber.)	Aberdeen University.	C.S.I.	Companion Order of the Star of India.
Acad.	Academy.	C.V.O.	Commander Royal Victorian Order.
Adv.	Advancement.	(Dart.)	Dartmouth University.
Agric.	Agriculture, Agricultural.	D.C.	District of Columbia.
Agron.	Agronomy.	D.C.L.	Doctor of Civil Law.
(Alleg.)	Alleghany University.	D.D.S.	Doctor of Dental Surgery.
A.M.	Master of Arts.	Dec.	Decorations.
A.M.C.	Army Medical Corps.	Del.	Delaware.
Amer.	American.	Deleg.	Delegate.
(Amh.)	Amherst University.	Dem.	Demonstrator.
A.M.S.	Army Medical Staff.	(Den.)	Denver University.
Anal.	Analyst, Analysis, Analytical.	Descrip.	Descriptive.
Anat.	Anatomy.	Determ.	Determination.
Anthrop.	Anthropology.	D.Eng.	Doctor of Engineering.
App.	Applied.	Dipl.	Diploma.
Art.	Article.	Direc.	Directory, Director.
Assoc.	Associate, Association.	Disc.	Discovered.
Astron.	Astronomy, Astronomical.	D.M.L.	Doctor of Dental Medicine.
B.A.	Bachelor of Arts.	Doz.	Dozent.
Bact.	Bacteriology, Bacteriological.	D.P.H.	Diplomate in Public Health.
B.C., B.Ch.	Bachelor of Surgery.	(Dres.)	Dresden University.
Ber.	<i>Berichte.</i>	D.Sc.	Doctor of Science.
(Ber.)	Berlin University.	D.S.O.	Companion Distinguished Service Order.
(Birm.)	Birmingham University.	D.T.M.	Diploma in Tropical Medicine.
B.M.A.	British Medical Association.	(Dub.)	Dublin University.
Bot.	Botany, Botanical.	(Dun.)	Durham University (Dunelm).
(Bres.)	Breslau University.	Ed.	Editor.
Brit.	British.	(Edin.)	Edinburgh University.
B.S.	Bachelor of Science (American).	Edn.	Edition.
B.Sc.	Bachelor of Science.	Educ.	Education, Educated.
Bt.	Baronet.	Encyc.	Encyclopaedia.
Calif.	California.	Eng.	England, English.
Can.	Canada.	Engnr.	Engineer.
Cand.	Candidate.	Engnrg.	Engineering.
(Cantab.)	Cambridge University.	Estim.	Estimation.
C.B.	Companion of the Bath.	Exper.	Experimental.
C.G.L.I.	City and Guilds of London Institute.	Expts.	Experiments.
Chem.	Chemistry, Chemical, Chemist.	F.A.A.	Fell. Amer. Assoc. Adv. Sci.
(Chic.)	Chicago University.	F.C.S.	Fellow Chemical Society.
Chir.	Chirurgy, Chirurgical.	Fed.	Federal, Federation.
C.I.E.	Companion Order of the Indian Empire.	Fell.	Fellow.
C.M.	Corresponding Member.	F.E.S.	Fellow Entomological Society.
C.M.G.	Companion Order of St. Michael and St. George.	F.G.S.	Fellow Geological Society.
Co.	Company, County.	F.I.C.	Fellow Institute of Chemistry.
(Colg.)	Colgate University.	F.L.S.	Fellow Linnean Society.
Coll.	College.	F.M.R.S.	Foreign Member Royal Society.
Colo.	Colorado.	Fr.	France, French.
(Colum.)	Columbia University.	(Frei.)	Freiburg University.
Comm.	Committee, Commission, Commander.	F.R.A.S.	Fellow Royal Astronomical Society.
Comp.	Comparative.	F.R.C.P.	Fellow Royal College of Physicians.
Conn.	Connecticut.	F.R.C.S.	Fellow Royal College of Surgeons.
Contrib.	Contribution.		
(Copen.)	Copenhagen University.		
Cornell	Cornell University.		

WHO'S WHO IN SCIENCE—ABBREVIATIONS

F.R.G.S.	Fellow Royal Geographical Society.	Laryng.	Laryngology, Laryngological.
F.R.H.S.	Fellow Royal Horticultural Society.	L.C.C.	London County Council.
F.R.M.S.	Fellow Royal Microscopical Society.	L.D.S.	Licentiate in Dental Surgery.
F.R.S.	Fellow Royal Society.	Lect.	Lecture, Lecturer.
F.R.S.C.	Fellow Royal Society Canada.	Leg. Hon. Fr.	Legion of Honour, France.
F.R.S.E.	Fellow Royal Society Edinburgh.	(Leip.)	Leipzig University.
F.S.A.	Fellow Society of Antiquaries.	(Ley.)	Leyden University.
F.Z.S.	Fellow Zoological Society.	(Liv.)	Liverpool University.
G.B. and I.	Great Britain and Ireland.	LL.D.	Doctor of Civil and Canon Law.
G.C.I.E.	Knight Grand Cross Order of the Indian Empire.	M.	Member.
G.C.M.G.	Knight Grand Cross Order of St. Michael and St. George.	M.A.	Master of Arts.
G.C.S.I.	Knight Grand Cross Order of Star of India.	(Mad.)	Madrid University.
G.C.V.O.	Knight Grand Cross Royal Victorian Order.	Mag.	Magazine.
Geh.	Geheimer.	(Manc.)	Manchester.
Gen.	General.	Mass.	Massachusetts.
(Gen.)	Geneva University.	Maths.	Mathematics.
Geod.	Geodasy, Geodatic.	M.B.	Bachelor of Medicine.
Geol.	Geology, Geological.	M.C., M.Ch.	Master of Surgery.
Geom.	Geometry.	M.D.	Doctor of Medicine.
Ger.	German, Germany.	Md.	Maryland.
Glasg.	Glasgow.	Me.	Maine.
(Gött.)	Göttingen.	Mech.	Mechanics.
Gynaec.	Gynaecology.	Med.	Medicine, Medical.
(Hart.)	Hartford University.	(Mel.)	Melbourne University.
(Heid.)	Heidelberg University.	Mem.	Member.
Hist.	History.	Met., Meteorol.	Meteorology, Meteorological.
Histol.	Histology.	Metall.	Metallurgy, Metallurgical.
Homoeop.	Homoeopathy, Homoeopathic.	Metrop.	Metropolitan.
Hon.	Honourable, Honorary, <i>Honoris causa</i> .	Mich.	Michigan.
Hort.	Horticulture, Horticultural.	Micr.	Microscopy, Microscopical.
Hosp.	Hospital.	Min.	Mining.
Ia.	Iowa.	Miner.	Mineralogy, Mineralogical.
Ill.	Illinois.	Minn.	Minnesota.
I.M.S.	Indian Medical Service.	M.Inst. C.E.	Member Institute Civil Engineers.
I.N.A.	Institute of Naval Architects.	M.I.E.E.	Member Institute Electrical Engineers.
Ind.	Indiana, Industry, Industrial.	M.I.Mech.E.	Member Institute Mechanical Engineers.
Inorg.	Inorganic.	M.I.M.M.	Member Institute Mining and Metallurgy.
Inst.	Institute.	Miss.	Mississippi.
Internat.	International.	M.I.T.	Massachusetts Inst. of Technology.
Inv.	Invented.	M.M.	Mining and Metallurgy.
Inverteb.	Invertebrate.	Mo.	Missouri.
Investig.	Investigation, Investigated.	M.O.H.	Medical Officer of Health.
I.S.O.	Imperial Service Order.	M.R.C.P.	Member Royal College of Physicians.
Ital.	Italy, Italian.	M.R.C.S.	Member Royal College of Surgeons.
I.Y.	Imperial Yeomanry.	M.R.I.A.	Member Royal Irish Academy.
J.	Journal.	M.V.O.	Member Royal Victorian Order.
Jap.	Japanese.	Nat.	Natural, National, Naturalist.
Jkh.	Jonkheer.	N.B.	New Brunswick.
J.P.	Justice of the Peace.	N.C.	North Carolina.
Jtly.	Jointly.	N.D.	North Dakota.
Kans.	Kansas.	Neb.	Nebraska.
K.C.B.	Knight Commander of the Bath.	N.H.	New Hampshire.
K.C.I.E.	Knight Commander Order of the Indian Empire.	N.J.	New Jersey.
K.C.M.G.	Knight Commander Order of St. Michael and St. George.	Norweg.	Norwegian.
K.C.S.I.	Knight Commander Order of the Star of India.	N.S.	Nova Scotia.
K.C.V.O.	Knight Commander Royal Victorian Order.	N.U.I.	National University of Ireland.
Kt.	Knight.	N.Y.	New York.
Kt. Bach.	Knight Bachelor.	N.Z.	New Zealand.
La.	Louisiana.	O.	Ohio.
Lab.	Laboratory.	Obstet.	Obstetries, Obstetrical.
		O.M.	Order of Merit.
		Ont.	Ontario.
		Ophthalm.	Ophthalmology, Ophthalmic.
		Org.	Organic.
		Otol.	Otology.
		(Oxon.)	Oxford University.

WHO'S WHO IN SCIENCE—ABBREVIATIONS

Pa., Penna.	. . . Pennsylvania.	S.P.E.E.	. . . Society for Promotion of Engineering Education.
(Pal.)	. . . Palermo University.	S.P.R.	. . . Society for Psychical Research.
Paleont.	. . . Paleontology.	(Stan.)	. . . Stanford University.
Pat.	. . . Patent.	(St. And.)	. . . St. Andrews.
Path.	. . . Pathology, Pathological.	(Strass.)	. . . Strassburg University.
Pharm.	. . . Pharmacy, Pharmaceutical.	Surg.	. . . Surgery, Surgical, Surgeon.
Pharmacol.	. . . Pharmacology.	Swed.	. . . Swedish.
Ph.D.	. . . Doctor of Philosophy.	(Syr.)	. . . Syracuse University.
Phila.	. . . Philadelphia.	T.C.D.	. . . Trinity College, Dublin.
Phys.	. . . Physics, Physical.	Tech.	. . . Technical.
Physiol.	. . . Physiology, Physiological.	Technol.	. . . Technology.
Polytech.	. . . Polytechnic.	Tenn.	. . . Tennessee.
P.P.	. . . Past President.	Theor.	. . . Theoretical.
(Prince.)	. . . Princetown University.	(Tor.)	. . . Toronto University.
Priv. Doz.	. . . Privat Dozent.	(Tüb.)	. . . Tübingen.
Prof.	. . . Professor.	U.K.	. . . United Kingdom.
P.V.-P.	. . . Past Vice-President.	U.S.A.	. . . United States of America.
Q.	. . . Quarterly.	Va.	. . . Virginia.
Qual.	. . . Qualitative.	V.C.	. . . Victoria Cross.
Quant.	. . . Quantitative.	V.D.	. . . Volunteer Decoration.
R.A.M.C.	. . . Royal Army Medical Corps.	Veg.	. . . Vegetable.
Reg.	. . . Regierung.	Verteb.	. . . Vertebrate.
Rhinol.	. . . Rhinology.	(Vict.)	. . . Victoria University, Manchester.
R.I.	. . . Rhode Island.	V.-P.	. . . Vice-President.
R.N.	. . . Royal Navy.	Vt.	. . . Vermont.
Roy.	. . . Royal.	(Wash.)	. . . Washington.
R.U.I.	. . . Royal University of Ireland.	(Wesl.)	. . . Wesleyan University.
Russ.	. . . Russian.	Wis.	. . . Wisconsin.
Ry.	. . . Railway.	(Würz.)	. . . Würzburg University.
S.A.	. . . South Africa or South America (as context).	Z.	. . . Zeitung.
San.	. . . Sanitary.	Zschr.	. . . Zeitschrift.
Sc.D.	. . . Doctor of Science.	Zool.	. . . Zoology, Zoological.
Sci.	. . . Science, Scientific.	(Zur.)	. . . Zurich University.
Scotl.	. . . Scotland.		
(Sheff.)	. . . Sheffield University.		
Span.	. . . Spanish.		

OBITUARY, 1913

- ADAMS, MATTHEW ALGERNON**, F.R.C.S.; Pub. Anal. for Kent, Maidstone and Rochester; P.P. Soc. Pub. Anal.; F.I.C. (Counc.). (April 29, aged 76.)
- ALCOCK, NATHANIEL HENRY**, Prof. of Physiol., McGill Univ. Can. (June, aged 42.)
- ARROL, Sir WILLIAM**, Engrn., G.B. (Feb. 20, aged 73.)
- ARZELA, CESARE**, Ord. Prof. of Math., Roy. Univ. Bologna, Italy; Corresp. Acad. Lincei.
- ASCHERSON, PAUL F. A.**, Extraord. Prof. of Bot., Univ. Berlin, Ger. (April, aged 78.)
- AVEBURY, Rt. Hon. (Sir JOHN LUBBOCK)** Lord, F.R.S.; Biologist. (May 28, aged 79.)
- BAATH, A. U.**, Chief, Ethnog. Dept., Mus., Gothenburg, Sweden.
- BAELZ, ERWIN v.**, Geh. Reg. Rat; Prof. of Med., Stuttgart, Ger. (Sept. 1, aged 64.)
- BAILEY, F.**, Col. R.E. (ret.); Hon. Ed. of Publications and P.P., Roy. Scott. Arboric. Soc., Edinburgh. (Dec. 21, 1912, aged 73.)
- BASTIAN, Dr.**, Lect., Med. Fac., Univ. Geneva, Switz. (May.)
- BAUER, JOSEF Ritter v.**, Geh. Rat; Ord. Prof. of Intern. Med. and Direc. of Med. Clin., Univ. Munich, Ger.
- BAUMANN, ANTON**, Hon. Prof. of Moor Culture, Tech. H. Sch., Munich, Ger.
- BECKER, ERNST E. H.**, Emer. Prof. of Astron., Univ. Strassburg, Ger. (Aged 70.)
- BELL, JOS. CARTER**, Chem., Manchester, Eng. (July 3, aged 74.)
- BEZJIAN, H. ALEXANDER**, Teacher of Phys. Sci., Central Turkey Coll., Aintab, Turkey-in-Asia. (April, aged 76.)
- BILLINGS, JOHN SHAW**, Col.; Direc. of N.Y. Pub. Library, U.S.A. (March 11, aged 76.)
- BINZ, KARL**, Prof. of Pharmacol. and Toxicol., Univ. Bonn, Ger. (Aged 81.)
- BLASIUS, WILHELM**, Geh. Hofrat; Prof. of Zool. and Bot., Tech. Hochsch., Braunschweig, Ger. (Aged 68.)
- BOCHENEK, ADAM**, Prof. of Descrip. Anat., Univ. Cracow, Austria. (June.)
- BOURLET, CARLO**, Prof. of Mech., Conserv. des Arts et Métiers, Paris. (Aug., aged 47.)
- BRAMANN, FRIEDRICH**, Prof. of Surg., Halle, Ger. (April 28, aged 58.)
- BRIGHT, E. B.**, Mem. Counc., Inst. E.E.; Telegraph Engrn. (April 14, aged 82.)
- BRISTOW, ALGERNON T.**, Clin. Prof. of Surg., Long Island Coll. Hosp., Brooklyn, N.Y., U.S.A. (April.)
- BROWN, W. CARNEGIE**, Joint Sec., Soc. Trop. Med. and Hyg., London. (Oct., aged 54.)
- BÜRKNER, KURD**, Geh. Med. Rat; Extraord. Prof. of Laryngol., Univ. Göttingen, Ger. (Sept., aged 60.)
- CAILLETET, LOUIS PAUL**, Mem. Inst. Fr.; Physicist, Fr. (Jan. 5, aged 80.)
- CALLEJA, JULIAN Count de**, Dean of Med. Fac., Univ. Madrid, Spain. (May.)
- CANDY, Sir EDWARD T.**, late Vice-Chanc., Univ. Bombay, and Chairman of Provis. Comm., Indian Research Inst., Bangalore. (April 13, aged 68.)
- CARTER, WILLIAM**, Emer. Prof. of Therap., Univ. Liverpool. (Feb. 2, aged 76.)
- CHAVASSE, Sir THOMAS FREDERICK**, Cons. Surg., General Hosp., Birmingham, Eng. (March 1, aged 59.)
- CLARK, ANDREW**, Lect. on Surg., Middlesex Hosp. Med. Sch., London. (Aged 66.)
- CLAUDET, ARTHUR C.**, Treas. and P.P., Inst. Min. and Metall., London. (Jan. 17, aged 57.)
- CLERK, HENRY**, Major-General, F.R.S. (Feb. 28, aged 91.)
- CODY, S. F.**, Aerial Engrn., England. (Aug. 7, aged 47.)
- COLLETT, ROBERT**, Prof. of Zool., Univ. Christiania, Norway. (Jan., aged 70.)
- CONKLIN, W. A.**, late Direc. of Zool. Dept., Central Park, N.Y., U.S.A. (June, aged 76.)
- COOPER, Sir RICHARD POWELL**, Bt.; Chem. Manuf. and Agric., Eng. (July 30, aged 66.)
- CRAWFORD, JAMES LUDOVIC**, Earl of, K.T., F.R.S.; P.P. Roy. Astron. Soc. (Jan. 31, aged 65.)
- CREDNER, HERMANN**, Prof. of Hist. Geol. and Palæont., Direc. of Geol. Inst., Univ. Leipzig, Ger. (Aged 72.)
- CURTIN, ROWLAND G.**, late Lect. on Phys. Methods of Diagnosis, Univ. Penna., Philadelphia. (April.)
- DARICARRÈRE, Dr.**, formerly Inspect. Med. Off., French Milit. Med. Service. (Sept.)
- DE SADOW-PITTARD, HAROLD ARTHUR PENRHYN**, Prof. of Math., Sibpur, India. (Aged 32.)
- DICKINSON, W. H.**, P.P., Roy. Med. and Chir. Soc. and Path. Soc., London. (Jan., aged 80.)
- DIESEL, RUDOLF**, Inv. of internal combustion engine. (Sept. 29, aged 55.)
- DUPUIS, JEAN**, Fr. Explorer of Indo-China. (Nov. 28, 1912, aged 84.)
- DWELSHAUVERS-DEERY**, Corresp. Paris Acad. Sci. (Mech. Sect.) (April, aged 78.)
- EASTMAN, JOHN ROBIE**, Rear-Admiral; formerly Prof. of Math. and Astron., U.S. Navy. (Oct. 12, aged 77.)
- EGGER, J. G.**, Ober-Med. Rat; Geol. and Palæont., Munich, Ger. (April, aged 89.)
- ELLIOTT, ARCHIBALD CAMPBELL**, Prof. of Engrng., Univ. Coll. S. Wales; Pres., Inst. of Loco. Engrns. (April, aged 52.)
- FAGES Y VIRGIL, JUAN**, Fell. Span. Acad. Sci.; Prof. of Chem. Anal., Univ. Madrid, Spain.
- FERGUSON, R. M.**, Chem. and Physicist, Edinburgh, Scot. (Jan., aged 83.)
- FOVILLE, ALFRED de**, Permanent Sec., Acad. Sci. Morales et Polit., Paris. (May, aged 71.)
- FONTAINE, WILLIAM MORRIS**, Prof. of Geol. and Nat. Hist., Univ. Virginia, Charlottesville, Va., U.S.A. (May, aged 78.)

- FRÄNKEL, BERNHARD**, Geh. Med. Rat; Hon. Prof. of Laryngol. and Rhinol., Univ. Berlin, Ger.
- GAUJOT**, late Inspect. Med. Off., French Army Med. Dept. (June.)
- GEMMELL, SAMSON**, Prof. of Med., Univ. Glasgow, Scot. (Aged 65.)
- GENZMER, ALFRED**, Ord. Prof. of Surg., Univ. Halle, Ger. (April, aged 62.)
- GIBSON, GEORGE ALEXANDER**, Prof. of Med., Sch. of Med. of the Roy. Colls., Edinburgh. (Jan., aged 59.)
- GOLDMAN, EDWIN**, Prof. of Surg., Univ. Freiburg i. Br., Ger. (Aug. 12, aged 51.)
- GORDAN, PAUL**, Prof. of Math., Erlangen, Ger. (Dec. 21, 1912, aged 75.)
- GOTCH, FRANCIS, F.R.S.**; Waynflete Prof. of Physiol., Univ. Oxford, Eng. (July 15, aged 60.)
- GRAHAM, Sir JAMES**, Lect. in Midwif., Sydney Univ. (May 17, aged 57.)
- GREAVES, JOHN**, Bursar and Senr. Math. Lect., Christ's Coll. Cambridge, Eng. (Sept. 19.)
- HAACKE, J. W.**, late Chief Lect. on Zool., Real Sch., Otterndorf, Ger.
- HÄLLSTÉN, CONRAD GABRIEL**, late Prof. of Anat. and Physiol., Univ. Helsingfors, Finland. (June, aged 80.)
- HAGENBECK, KARL**, Zool., Stellingen, Hamburg, Ger. (April 14, aged 69.)
- HALLOCK, WILLIAM**, Prof. of Phys., Columbia Univ., N.Y., U.S.A. (May, aged 55.)
- HAMPEL, J.**, Archæol., Budapest, Hungary. (March 25.)
- HARTLEY, Sir WALTER NOEL**, F.R.S.; formerly Prof. of Chem., Roy. Coll. Sci. Dublin. (Sept. 11, aged 67.)
- HELLER, ARNOLD**, Ord. Prof. of Gen. Path., Univ. Kiel, Ger. (April, aged 73.)
- HENRY, LOUIS**, Prof. of Chem., Univ. Louvain, Belgium. (March 9.)
- HERON, JOHN**, P.P. Inst. Brewing; V.-P. Soc. Chem. Ind.; F.I.C. (March 29, aged 63.)
- HILL, Sir CLEMENT LLOYD**, K.C.B., K.C.M.G., F.R.G.S.; formerly Supt. of African Protectorates. (March, aged 68.)
- HISS, PHILIP HANSON, Jr.**, Prof. of Bact., Coll. Physicians and Surg., Columbia Univ., N.Y., U.S.A. (March, aged 44.)
- HOERNES, RUDOLF**, Prof. of Geol. and Palæont., Univ. Graz, Austria. (Aged 63.)
- HOLZAPFEL, EDUARD**, Ord. Prof. of Geol. and Palæont., Univ. Strassburg, Ger. (Aged 60.)
- HUNTER, JOHN**, Pub. Anal. for County of Edinburgh, Scot. (April 10.)
- HUNTING, WILLIAM**, formerly Chief Vet. Inspec., L.C.C., London. (Oct. 24, aged 69.)
- HUTCHINSON, Sir JONATHAN**, F.R.S.; Cons. Surg., London Hosp., etc. (June, aged 85.)
- ILKESTON, (Sir B. W. FOSTER)** Lord, Emer. Prof. of Med., Queen's Coll., Birmingham, Eng. (Jan. 31, aged 72.)
- JACCOUD, FRANÇOIS**, Permanent Sec., Acad. Med., Paris. (May, aged 83.)
- JENTINK, FREDERICUS ANNA**, Dirca. of State Mus. of Nat. Hist., Leyden, Holland. (Nov. 4, aged 69.)
- JOHANSEN, HJALMAR**, Arctic Explorer, Christiania, Norway. (Jan. 3, aged 45.)
- KASSOWITZ, MAX**, Extraord. Prof. of Childr. Dis., Univ. Vienna, Austria. (July, aged 70.)
- KATTER, F. C. A.**, Zool., Roy. Gymn., Putbus auf Rügen, Ger.
- KITTL, ERNST**, Dirca. of Geol. and Palæont. Sect., Imper. Mus. Nat. Hist., Vienna, Austria. (May, aged 59.)
- KOENIG, GEORG AUGUST**, Prof. of Chem., Michigan Coll. Mines, Houghton, U.S.A. (Jan., aged 68.)
- KOHTS, W. E. K. OSWALD**, Emer. Prof. and Dirca. of Med. Polyclin. and Childr. Clin., Univ. Strassburg, Ger.
- KOLTHOFF, GUSTAF ISAK**, Curator, Zool. Mus., Univ. Upsala, Sweden. (Oct. 26, aged 67.)
- KORKKAUNOFF, A. P.**, late Prof. of Therap., Univ. Tomsk, Siberia. (May.)
- KUTNER, ROBERT**, Prof.; Dirca. of Empress Frederick House for Med. Study, Univ. Berlin. (Oct. 5.)
- KYGER, JOHN W.**, Prof. of Childr. Dis., Univ. Kansas, U.S.A. (June.)
- LATTIMORE, SAMUEL ALLEN**, Emer. Prof. of Chem., Univ. Rochester, N.Y., U.S.A. (March, aged 84.)
- LAVAL, G. de**, Engrn., Stockholm, Sweden. (Feb., aged 67.)
- LEMEN, JOSEPHUS R.**, late Prof. of Respiratory Dis., Univ. St. Louis, U.S.A. (April.)
- LENDLMAYR v. LENDENFELD, ROBERT**, Prof. of Zool. and Rector, Ger. Univ., Prague, Bohemia. (July 3, aged 55.)
- LENZ, HEINRICH W. C.**, Dirca. of Nat. Hist. Mus. and Lect., Realsch., Lübeck, Ger. (Aged 67.)
- LÉON, LUIS G.**, Gen. Sec., Astron. Soc. of Mexico. (April 23.)
- LEWKOWITZSCH, JULIUS**, Chem. and Chem. Engrn.; For. Sec., Soc. Chem. Ind., London. (Sept. 16, aged 56.)
- LLOYD, JORDAN, J.P.**; Prof. of Surg., Univ. Birmingham, Eng. (Aged 59.)
- LUCAS-CHAMPIONNIERE, JUST MARIE MARCELLIN**, Mem. Fr. Acad. Med.; Surg. to Hôtel Dieu, Paris. (Oct., aged 70.)
- McBURNIE, CHARLES**, Surg., New York; Hon. F.R.C.S. Edin. (Nov. 7, aged 68.)
- McCLELLAN, GEORGE**, Prof. of Anat., Jefferson Coll., Philadelphia, U.S.A. (May.)
- MacFARLANE, ALEXANDER**, Phys., Chatham, Ont., Can. (Aged 62.)
- MacGREGOR, JAMES GORDON**, F.R.S.; Prof. of Nat. Phil., Univ. Edinburgh, Scot. (May 21, aged 61.)
- MacHARDY, MALCOLM MacDONALD**, Prof. of Ophthalm., King's Coll., London. (Feb. 8, aged 60.)
- MARRO, ANTONIO**, Priv. Doz. of Psychiat., Univ. Turin, Italy. (June.)
- MARSHALL, HUGH, F.R.S.**; Prof. of Chem., Univ. Coll. Dundee. (Sept. 6, aged 45.)
- MARVIN, JOSEPH BENSON**, Prof. of Med. and Neurol., Univ. Louisville, U.S.A. (Aged 61.)
- MATHEY, GEORGE, F.R.S.**; P.V.-P., Roy. Inst. G.B.; Platinum worker. (Feb. 14, aged 87.)
- MEHLHAUSEN, GUSTAV WILHELM**, Surg. Gen.; late Dirca. of Charité Hosp., Berlin, Ger. (July, aged 89.)
- MERTZ, Dr.**, Swiss Antarctic Explorer.
- MILNE, JOHN, F.R.S.**; Seismol., Eng. (July 31, aged 63.)
- MITTWEK, K.**, Geh. Med. Rat, Trier, Ger. (June.)

MORET, TEOFILO E., Extraord. Prof. of Ophthalm., Univ. of Buenos Aires, S. Amer. (April.)

MORRIS, E. L., Curator of Nat. Sci. Mus., Brooklyn Inst.; Plant Expert, U.S. Dept. Agric. (Sept., aged 42.)

MORROW, PRINCE A., late Prof. of Genito-Urinary Dis., Bellevue Hosp. Med. Coll., N.Y., U.S.A. (April.)

MOSENTHAL, HENRY de, Tech. Sec., Dynamite Trust Co., Eng. (Dec. 18, 1912.)

NETTLESHIP, EDWARD, F.R.S.; late Ophthalmic Surg., St. Thomas's Hosp., London. (Oct. 30, aged 68.)

NORTH, Rt. Hon. Sir FORD, P.C., F.R.S.; formerly Judge of Chanc. Div., High Court of Justice, Eng. (Oct. 15, aged 83.)

OBBER, F. A., Ornith., U.S.A. (June, aged 64.)

O'FARRELL, Sir GEORGE PLUNKETT, late Comm. of Control and Inspec. of Lunatic Asyl., Ireland.

OGIER, JULES, Direc. of Toxicol., Prefecture of Police, Paris. (Sept., aged 60.)

PARSONS, HENRY FRANKLIN, formerly Asst. M.O., H.M. Local Govt. Bd., London. (Nov., aged 67.)

PERTIK, OTTO, Ord. Prof. of Path. Anat., Univ. Budapest, Hungary.

PERVINQUIERE, LEON, Lect. on Palæont., Univ. Paris. (May, aged 40.)

PICARD, ALFRED MAURICE, Mem. Inst. Fr.; V.-P. Counc. of State, Fr.; Hon. Mem. Inst. C.E. (March, aged 69.)

PONCET, ANTONIN, Mem. Acad. Med. Fr.; Prof. of Surg. Clin., Univ. Lyons. (Sept., aged 67.)

POWERS, GEORGE H., late Prof. of Ophthalm., Univ. California, Cal., U.S.A. (June.)

PREECE, Sir WILLIAM HENRY, K.C.B., F.R.S.; Engineer. (Nov. 6, aged 79.)

RAINER, Archduke, Curator, Vienna Acad. Sci. (Jan. 27, aged 85.)

RAVENSTEIN, ERNEST GEORGE, F.R.G.S.; Cartographer, London. (March 13, aged 79.)

REDFERN, PETER, formerly Regius Prof. of Anat. and Physiol., Queen's Coll., Belfast, Irel. (Dec. 1912, aged 91.)

REUTER, ODO MORANNAL, Emer. Prof. of Zool., Univ. Helsingfors, Finland. (Sept. 2, aged 63.)

REYNOLDS, C. LESLIE, Supt., Natl. Bot. Gardens, Washington, U.S.A. (Sept., aged 56.)

RIEDER-PASCHA, ROBERT, Geh. Med. Rat; Extraord. Prof. of Surg., Bonn, Ger. (Aug. 25, aged 51.)

RIEFLER, SIGMUND, Math. Instrument Maker, Munich, Ger. (Aged 66.)

ROBERTS, SAMUEL, F.R.S.; P.P. London Math. Soc. (Sept. 18, aged 85.)

ROCKWOOD, CHARLES GREEN, late Prof. of Math., Princeton Univ., U.S.A. (July, aged 70.)

SAEMISCH, E. T., Geh. Med. Rat; Prof. of Ophthalm. and Direc. of Eye Clin., Univ. Bonn, Ger.

SCHAER, EDWARD, Prof. of Pharm., Univ. Strassburg, Ger. (Oct., aged 70.)

SCHINELKA, HUGO, Hofrat; Prof., K.K. Vet. H. Sch., Vienna, Austria. (May.)

SCHOUTE, P. H., Fell. Dutch Acad. Sci.; Prof. of Math., Groningen Univ., Holland.

SLATER, PHILIP LUTLEY, F.R.S.; formerly Sec. to Zool. Soc. of London. (June 27, aged 84.)

SCOTT, ROBERT FALCON, Capt., R.N., C.V.O.; Antarctic Explorer (S. Pole, Jan. 17, 1912). (March 27, 1912, aged 44.)

SEDGWICK, ADAM, F.R.S.; Prof. of Zool., Imper. Coll. Sci. and Technol., London. (Feb. 27, aged 58.)

SEEGER, A. v., Surgeon-General, Leipzig, Ger. (Oct.)

SEGOND, PAUL FERDINAND, Prof. of Surg. Clin., Univ. Paris, Fr. (Aged 62.)

SEIDEL, MORITZ, Ord. Hon. Prof. of Pharmacol., Univ. Jena, Ger.

SHELDON, J. R., late Prof. of Agric., Cirencester, Eng. (Sept., aged 73.)

SHIMOYAMA, JUN-ICHIRO, Prof. of Pharm., Imper. Univ. Tokyo, Japan. (Feb., aged 50.)

SLABY, ADOLF C. H., Prof. of Theor. Machine Constr. and Electrotech., Tech. H. Sch. Berlin, Ger. (Aged 64.)

SLATER, HERBERT KELSALL, Geol. to Mysore Govt., India. (May, aged 37.)

SMART, F. G., F.L.S., F.R.G.S. (April 7, aged 69.)

SMITH, B. LEIGH, Arctic Explorer. (Jan. 4, aged 85.)

SMITH, H. HERBERT, formerly Gilbey Lect. on Hist. and Econ. of Agric., Univ. Cambridge, Eng. (Oct., aged 62.)

SPENCER, PERCIVAL, Aeronaut, Eng. (April, aged 48.)

SPEZIA, GIORGIO, Fell. Acad. Lincei; Prof. of Miner., Univ. Turin, Italy. (Aged 71.)

STEENSTRUP, K. I. V., Geol. Copenhagen, Denmark. (May 13.)

STORM, VILHELM F. J., late Conserv. of Zool., Roy. Norweg. Acad. Sci., Trondhjem. (May 19, aged 78.)

STUART, Rt. Hon. JAMES, P.C.; Fell. Trin. Coll. Cambridge; A.M. Inst. C.E. (Oct. 12, aged 70.)

SWANZY, Sir HENRY R., P.P. Roy. Coll. Surg. Irel.; Ophthalmist. (April 26, aged 70.)

SWEETING, RICHARD DEANE, Senr. Med. Inspec., Local Govt. Bd., London. (Nov. 10, aged 57.)

SWIFT, LEWIS, Astron., U.S.A. (Jan., aged 82.)

SYKES, JOHN FREDERICK JOSEPH, M.O.H., St. Paneras, London. (Feb., aged 59.)

TATE, W., Prof. of Chem. and Metall., Civ. Engrng. Coll., Sibpur, India. (Feb. 19.)

TEISSERENC de BORT, LÉON PHILIPPE, Mem. Inst. Fr.; Meteorol., Fr. (Jan., aged 57.)

TELLER, FRIEDRICH, Chief Geol., Roy. Geol. Survey, Vienna; Mem. Vienna Acad. Sci. (Jan. 10, aged 61.)

TELLIER, CHARLES, Inv. of cold storage system, Paris, Fr. (Oct. 20, aged 86.)

THIRIAR, JULES, Prof. of Clin. Surg., Univ. Brussels, Belgium. (July.)

THOMPSON, JAMES L., late Prof. of Ophthalm. and Otol., Ind. Univ. Sch. Med., Indianapolis, U.S.A. (April.)

TSUBOI, SHOGORO, Prof. of Anthropol., Imper. Univ. Tokyo, Japan. (May 27, aged 51.)

TUKE, Sir JOHN BATTY, F.R.S.E.; Morison Lect. on Insanity, R.C.P. Edin., and on Mental Dis., R.C.S. Edin. (Oct. 12, aged 78.)

TYLER, Sir JOHN WILLIAM, C.I.E.; formerly Inspec. Gen. of Prisons, N.W. Prov. and Oudh, India. (May, aged 74.)

UHLER, PHILIP REESE, LL.D., Entom. and Geol.; Provost and Librarian, Peabody Inst., Baltimore, U.S.A. (Nov., aged 78.)

- UPSON, HENRY S.**, Prof. of Neurol., Western Reserve Univ., Cleveland, U.S.A. (June.)
- USSING, NIELS V.**, Fell. Dan. Acad. Sci.; Ord. Prof. of Miner., Univ. Copenhagen, Denmark.
- VAMBÉRY, ARMINIUS**, Geog. and Orientalist, Budapest. (Sept. 14, aged 81.)
- VERGELY, P.**, late Prof. of Gen. Path. and Therap., Univ. Bordeaux, Fr. (June.)
- VOGL, ANTON v.**, Surg.-Gen., Munich, Ger. (July, aged 79.)
- WAIT, LUCIEN**, late Prof. and Head of Dept. of Maths., Cornell Univ., U.S.A. (Sept., aged 68.)
- WALLACE, ALFRED RUSSEL**, O.M., F.R.S.: Biologist. (Nov. 7, aged 90.)
- WARD, J. ROWLAND**, Taxidermist, Eng. (Dec. 28, 1912.)
- WARD, LESTER FRANK**, Prof. of Sociol., Brown Univ., Providence, R.I., U.S.A. (April 18, aged 71.)
- WEBER, HEINRICH**, Ord. Prof. of Math., Univ., Strassburg, Ger. (May 17, aged 71.)
- WEYL, THEODOR**, Lect. on Hyg., Charlottenburg Tech. Sch., Ger. (June, aged 62.)
- WHITE, Sir WILLIAM HENRY**, K.C.B., F.R.S.; Naval Architect, Eng. (Feb. 27, aged 68.)
- WHITEHEAD, WALTER**, P.P. Brit. Med. Assoc.; late Prof. of Clin. Surg., Vict. Univ. Manchester, Eng. (Sept., aged 71.)
- WILDE, EDUARDO**, Argentine Minister to Span. Govt.; late Prof. of Hyg., Univ. Buenos Aires. (October.)
- WILLIAMS, OWEN THOMAS**, Lect. on Pharmacol. and Dem. of Biochem., Univ. Liverpool, Eng. (Jan., aged 35.)
- WILSON, EDWARD ADRIAN**, Chief of Sci. Staff, Scott Antarctic Exped. (S. Pole, Jan. 17, 1912.) (March 26, 1912, aged 40.)
- WINSLOW, L. S. FORBES**, Med. Direc., Brit. Hosp. of Ment. Dis., London. (June 8, aged 68.)
- WITKOWSKI, AUGUSTUS VICTOR**, Ord. Prof. of Phys., Univ. Cracow, Austria. (Jan. 21, aged 58.)
- WOLFBAUER, JOHANN**, Agric. Chem., Vienna, Austria. (Jan. 28, aged 75.)
- YVON, PAUL**, Mem. Fr. Acad. Med.; Co-founder of *Arch. de Neurol.* and *Progrès Medical*, Fr. (May, aged 65.)

THE WORLD'S UNIVERSITIES.

Principal = President, Rector, or Vice-Chancellor.

UNIVERSITY.	AACHEN.	ABERDEEN.	ADELAIDE.
<i>SITE</i>	Aachen, Ger.	Aberdeen, Scot.	Adelaide, S. Australia.
<i>FOUNDED</i>	1870.	1494.	1874.
<i>PRINCIPAL</i>	Prof. Hirsch.	Very Rev. G. A. Smith.	Sir S. J. Way (Chanc.).
<i>REGISTRAR</i>	—	D. R. Thom (Sec.).	C. R. Hodge.
Senior Professors:			
<i>Chemistry</i>	{ J. Bredt (Org.). A. Classen (Inorg.).	F. R. Japp.	E. H. Rennie.
<i>Physics</i>	J. Stark.	C. Niven.	K. Grant.
<i>Mathematics</i>	{ O. Blumenthal. G. Hamel.	H. M. Macdonald.	R. W. Chapman.
<i>Astronomy</i>	—	—	—
<i>Engineering</i>	—	—	{ H. W. Gartrell (Min.). E. V. Clark (Elec.).
<i>Geology</i>	A. Dannenberg.	A. W. Gibb (Lect.).	W. Howchin (Lect.).
<i>Mineralogy</i>	F. Klockmann.	—	D. Mawson (Lect.).
<i>Geography</i>	—	—	—
<i>Agriculture</i>	—	J. Hendrick.	—
<i>Botany</i>	<i>Ry. Constr.</i>	J. W. H. Trail.	T. G. B. Osborn.
<i>Zoology</i>	A. Hertwig.	J. A. Thomson.	—
<i>Anthropology</i>	<i>Machine Constr.</i>	R. W. Reid.	—
<i>Anatomy</i>	O. Köchy.	”	A. Watson.
<i>Physiology</i>	<i>Electrotech.</i>	J. A. MacWilliam.	E. C. Stirling.
<i>Pharmacology</i>	G. Rasch.	J. T. Cash.	—
<i>Medicine</i>	<i>Mining.</i>	A. W. Mackintosh.	J. C. Verco (Lect.).
<i>Surgery</i>	F. Herbst.	J. Marnoch.	B. Poulton (Lect.).
<i>Pathology</i>	<i>Chem. Tech.</i>	G. Dean.	Cavenagh - Mainwaring (Lect.).
	O. Rau.	”	T. Borthwick (Lect.).
	<i>Mech.</i>	J. L. McIntyre (Lect.).	W. Mitchell.
	H. Rcissner.		
<i>Bacteriology</i>	—		
<i>Psychology</i>	—		

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	AGRAM.	AIX-MARSEILLES.	ALABAMA.
<i>SITE</i> . . .	Agram, Croatia.	Marseilles, France.	University, Ala., U.S.A.
<i>FOUNDED</i> . . .	1776.	1409.	1831.
<i>PRINCIPAL</i> . . .	J. Pazman.	J. Payot.	G. H. Denny.
<i>REGISTRAR</i> . . .	F. Pevalek.	G. Bouat.	S. C. Houser.
Senior Professors:			
<i>Chemistry</i> . . .	G. Janeček.	{ L. Perdrix. { Rivals (Industr. Chem.).	S. J. Lloyd.
<i>Physics</i> . . .	S. Hondl.	{ L. Houlléviqne. { C. Fabry (Industr.).	G. Wittig.
<i>Mathematics</i> . . .	V. Varićak.	L. Sauvage.	H. A. Sayre.
<i>Astronomy</i> . . .	—	H. Bourget.	G. Wittig.
<i>Engineering</i> . . .	—	L. Charve (Mech.).	G. J. Davis, Jr.
<i>Geology</i> . . .	D. Gorjanović-Kram- berger.	G. Vasseur.	E. A. Smith.
<i>Mineralogy</i> . . .	M. Klšpatić.	—	W. F. Prouty.
<i>Geography</i> . . .	H. v. Hranilović.	—	—
<i>Agriculture</i> . . .	—	H. Jumelle.	—
<i>Botany</i> . . .	A. Heinz.	H. J. Cotte.	J. Y. Graham.
<i>Zoology</i> . . .	A. Langhoffer.	{ G. Darboux. { A. Vayssière (Agric. Zool.).	—
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	Lazar Car (Comp.).	L. Magon.	W. F. R. Phillips.
<i>Physiology</i> . . .	—	C. Livon.	A. H. Ryan.
<i>Pharmacology</i> . . .	J. Domac.	A. Domergue.	H. A. Moody.
<i>Medicine</i> . . .	—	{ O. Caillol de Poncy. { E. Laget.	C. A. Mohr.
<i>Surgery</i> . . .	—	{ L. Imbert. { E. Delanglade.	W. R. Jackson.
<i>Pathology</i> . . .	—	J. Silhol.	A. E. Thayer.
<i>Bacteriology</i> . . .	—	L. Simond.	F. L. Haley.
<i>Psychology</i> . . .	—	—	T. C. McCorvey.

UNIVERSITY.	ALBERTA.	ALGIERS.	ALLAHABAD.
<i>SITE</i> . . .	Edmonton, Can.	Algiers, Africa.	Allahabad, India.
<i>FOUNDED</i> . . .	1913.	1879.	1887.
<i>PRINCIPAL</i> . . .	—	Ardaillon.	Hon. Sir J. S. Meston.
<i>REGISTRAR</i> . . .	—	Duc.	M. G. V. Cole.
Senior Professors:			
<i>Chemistry</i> . . .	—	{ Malosse. { Muller.	
<i>Physics</i> . . .	—	{ Thomas. { Guillemin.	
<i>Mathematics</i> . . .	—	Carrus.	
<i>Astronomy</i> . . .	—	Gonnessiat.	
<i>Engineering</i> . . .	—	—	
<i>Geology</i> . . .	—	Ficheur.	
<i>Mineralogy</i> . . .	—	Brives.	Examining University.
<i>Geography</i> . . .	—	{ Gautier.	Affiliated Colleges:—
<i>Agriculture</i> . . .	—	{ Yver.	Muir Central;
<i>Botany</i> . . .	—	Pouget (Chem.).	Agra;
<i>Zoology</i> . . .	—	{ Maire.	Aligarh;
<i>Anthropology</i> . . .	—	{ Trabut.	Benares;
<i>Anatomy</i> . . .	—	{ Viguier.	Lucknow.
<i>Physiology</i> . . .	—	{ Bounhiol.	
<i>Pharmacology</i> . . .	—	—	
<i>Medicine</i> . . .	—	Weber.	
<i>Surgery</i> . . .	—	Rey.	
<i>Pathology</i> . . .	—	Battandier.	
<i>Bacteriology</i> . . .	—	Ardin-Delteil.	
<i>Psychology</i> . . .	—	Curtillet.	
		Raynaud.	
		Soulié.	
		Gauthier.	

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	AMHERST.	AMSTERDAM.	ARIZONA.
<i>SITE</i> . . .	Amherst, Mass., U.S.A.	Amsterdam, Holland.	Tucson, Arizona, U.S.A.
<i>FOUNDED</i> . . .	1821.	—	
<i>PRINCIPAL</i> . . .	A. Meiklejohn (Pres.).	Jhr. H. Röell.	
<i>REGISTRAR</i> . . .	A. S. Goodale.	S. Van Brakel.	
Senior Professors:			
<i>Chemistry</i> . . .	A. J. Hopkins.	A. F. Holleman.	
<i>Physics</i> . . .	A. L. Kimball.	R. Sissingh.	
<i>Mathematics</i> . . .	G. D. Olds.	D. J. Korteweg.	
<i>Astronomy</i> . . .	D. Todd.	"	
<i>Engineering</i> . . .	—	—	
<i>Geology</i> . . .	B. K. Emerson.	E. Dubois.	Details not to hand.
<i>Mineralogy</i> . . .	—	"	
<i>Geography</i> . . .	—	"	
<i>Agriculture</i> . . .	—	—	
<i>Botany</i> . . .	A. Goodale.	Hugo de Vries.	
<i>Zoology</i> . . .	—	C. P. Sluiter.	
<i>Anthropology</i> . . .	—	S. R. Steinmetz.	
<i>Anatomy</i> . . .	—	L. Bolk.	
<i>Physiology</i> . . .	—	G. Van Rijnberk.	
<i>Pharmacology</i> . . .	—	P. Ruitinga.	
<i>Medicine</i> . . .	—	P. K. Pel.	
<i>Surgery</i> . . .	—	J. Rotgans.	
<i>Pathology</i> . . .	—	W. M. de Vries.	
<i>Bacteriology</i> . . .	—	R. H. Saltet.	
<i>Psychology</i> . . .	—	—	

UNIVERSITY.	ARKANSAS.	ATHENS.	ATHENS, PANTECH.
<i>SITE</i> . . .	Fayetteville, Ark., U.S.A.	Athens, Greece.	Athens, Greece.
<i>FOUNDED</i> . . .	1871.	1835, 1837.	1837.
<i>PRINCIPAL</i> . . .	—	T. Zaïmis.	—
<i>REGISTRAR</i> . . .	W. H. Cravens (Sec.).	K. Palamas.	G. Oekonomos.
Senior Professors:			
<i>Chemistry</i> . . .	C. G. Carroll.	{ K. Zengelli. G. Matthäopoulos (Org.). D. Chondros. G. Athanasiadis (Exper.). J. N. Hatzidakis. K. Stephanos. D. Eginitis.	A. Vurnasos (Technol. and Exper.). —
<i>Physics</i> . . .	G. E. Ripley.	—	—
<i>Mathematics</i> . . .	G. W. Droke.	—	{ N. Karakatzanidis. K. Stephanos.
<i>Astronomy</i> . . .	"	—	—
<i>Engineering</i> . . .	W. N. Gladson.	—	{ A. Kussidis (Mech.). A. Ginis (Hydraul.).
<i>Geology</i> . . .	A. A. Steel.	T. Skuphos.	—
<i>Mineralogy</i> . . .	—	K. Ktenas.	T. Skuphos.
<i>Geography</i> . . .	A. A. Steel.	—	—
<i>Agriculture</i> . . .	C. F. Adams.	—	—
<i>Botany</i> . . .	F. W. Pickel.	S. Miliarakis.	<i>Electrotech.</i> G. Sarropulos.
<i>Zoology</i> . . .	"	N. Apostolidis.	—
<i>Anthropology</i> . . .	J. H. Lenow.	—	—
<i>Anatomy</i> . . .	J. L. Dibrell.	{ E. Kalliontzis. G. Sklavunos.	—
<i>Physiology</i> . . .	E. M. Pemberton.	R. J. Nikolaidis.	—
<i>Pharmacology</i> . . .	—	N. Kallikunis.	—
<i>Medicine</i> . . .	E. R. Dibrell.	{ P. Livieratos. J. Georgiadis.	—
<i>Surgery</i> . . .	J. P. Runyan.	{ T. Zaimis. G. Phokas.	—
<i>Pathology</i> . . .	—	{ A. Christomanos. W. Bensis.	—
<i>Bacteriology</i> . . .	—	K. Sawas.	—
<i>Psychology</i> . . .	W. S. Johnson.	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	BARCELONA.	BASEL.	BELFAST (Queen's Univ.).
	<i>SITE</i>	Barcelona, Spain.	Basel, Switz.
<i>FOUNDED</i>	1450.	1460.	1908. [(Vice-Ch.)]
<i>PRINCIPAL</i>	J. Bonet y Amigó.	R. Metzner.	Rev. T. Hamilton
<i>REGISTRAR</i>	C. Calleja y Borja-Tarrius.	J. Wendland.	J. M. Finnigan (Sec.).
Senior Professors:	S. Vila y Vendrell.		
<i>Chemistry</i>	{ E. Mascareñas y Hernandez (Inorg.). M. Bonet y Amigó (Org.).	{ H. Rupe. F. Fichter.	E. A. Letts.
<i>Physics</i>	E. Alcobé y Arenas.	A. Hagenbach.	W. B. Morton.
<i>Mathematics</i>	A. Berenguer y Ballester.	H. Kinkelin.	A. C. Dixon.
<i>Astronomy</i>	E. Hernandez y Perez.	A. Riggenbach.	—
<i>Engineering</i>	—	—	F. H. Hummel.
<i>Geology</i>	—	C. Schmidt.	A. E. Derryhouse (Lect.)
<i>Mineralogy</i>	A. Vila Nadal.	" —	"
<i>Geography</i>	M. San Miguel de la Camara.	—	"
<i>Agriculture</i>	—	—	—
<i>Botany</i>	A. Vila Nadal.	G. Senn.	D. T. Gwynne-Vaughan.
<i>Zoology</i>	—	F. Zchokke.	Gregg Wilson.
<i>Anthropology</i>	—	—	—
<i>Anatomy</i>	A. Planellas y Llanos.	J. Kollmann.	J. Symington.
<i>Physiology</i>	R. Coll y Pujol.	R. Metzner.	J. Milroy.
<i>Pharmacology</i>	E. S. Batlle.	A. Jaquet.	Sir W. Whitla.
<i>Medicine</i>	I. Valenti y Vivo.	{ A. Bueckhardt. D. Gerhardt.	J. A. Lindsay.
<i>Surgery</i>	J. M. B. Tomas.	F. de Quervain.	T. Sinclair.
<i>Pathology</i>	E. Oliver y Aznar.	E. Hedinger.	W. St. Clair Symmers.
<i>Bacteriology</i>	—	—	"
<i>Psychology</i>	C. Calleja.	—	W. J. Wilson (Lect.).

UNIVERSITY.	BELGRADE.	BERLIN.	
		UNIV.	TECH. H. SCH.
<i>SITE</i>	Belgrade, Servia.	Berlin, Ger.	Berlin-Charlottenburg.
<i>FOUNDED</i>	1905.	1809.	1879.
<i>PRINCIPAL</i>	B. Gavrilović.	Baudissin.	Prof. Josse.
<i>REGISTRAR</i>	D. Novaković.	Wetzell.	Dr. Daude.
Senior Professors:			
<i>Chemistry</i>	S. Losanić.	{ E. Fischer. W. Nernst (Phys.).	{ Hofmann (Inorg.). Liebermann (Inorg.).
<i>Physics</i>	G. Stanojević.	H. Rubens.	{ Dolezalek. Grunmach.
<i>Mathematics</i>	M. Petrović.	H. A. Scharz.	{ Hattner. Jolles.
<i>Astronomy</i>	B. Gavrilović.	W. Foerster.	—
<i>Engineering</i>	M. Nedeljković.	—	{ Weihe. Boost.
<i>Geology</i>	{ J. Stefanović. S. Marković.	W. Branca.	—
<i>Mineralogy</i>	S. Radovanović.	T. Liebisch.	<i>Photochem.</i>
<i>Geography</i>	S. Uroschević.	A. Penck.	Miethe.
<i>Agriculture</i>	J. Cvijić.	—	<i>Ry. Constr.</i>
<i>Botany</i>	—	A. Engler.	Obergethmann.
<i>Zoology</i>	—	F. E. Schulze.	<i>Nav. Machine Constr.</i>
<i>Anthropology</i>	Z. Gjorgjević.	F. v. Luschan.	Krainer.
<i>Anatomy</i>	—	W. Waldeyer.	<i>Electrochem.</i>
<i>Physiology</i>	<i>Hydraul.</i>	M. Rubner.	F. Fischer.
<i>Pharmacology</i>	V. Mitrović.	A. Heffer.	<i>Metall.</i>
<i>Medicine</i>	—	F. Kraus.	Hanemann.
<i>Surgery</i>	—	A. Bier.	—
<i>Pathology</i>	—	J. Orth.	—
<i>Bacteriology</i>	—	—	—
<i>Psychology</i>	—	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	BERNE.	BESANÇON.	BEYROUTH (Catholic).
<i>SITE</i> . . .	Berne, Switz.	Besançon, France.	Beyrouth, Syria.
<i>FOUNDED</i> . . .	1834.	1422, 1691.	1875.
<i>PRINCIPAL</i> . . .	M. Gmür.	M. Padé.	—
<i>REGISTRAR</i> . . .	G. Tobler.	M. Suffren.	—
Senior Professors:			
<i>Chemistry</i> . . .	{ V. Kohlschütter. J. Tambor.	{ L. Boutroux. L. Tissier.	Desribes.
<i>Physics</i> . . .	A. Forster.	E. Perreau.	Colangettes.
<i>Mathematics</i> . . .	{ J. H. Graf. E. Ott.	{ Traynard. J. Andrade.	—
<i>Astronomy</i> . . .	G. Huber.	A. Lebeuf.	—
<i>Engineering</i> . . .	—	—	—
<i>Geology</i> . . .	A. Baltzer.	E. Fournier.	—
<i>Mineralogy</i> . . .	"	"	—
<i>Geography</i> . . .	H. Walser.	{ J. Guiraud. Mathiez.	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	E. Fischer.	{ A. Magnin. P. Parmentier (Agric.).	Bouloumoy.
<i>Zoology</i> . . .	T. Studer.	L. Charbonnel-Salle.	—
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	H. Strasser.	Mandereau.	Nègre.
<i>Physiology</i> . . .	H. Kronecker.	Bolot.	Dauber.
<i>Pharmacology</i> . . .	{ E. Bürgi. A. Tschirch.	F. M. Thouvenin.	Guigues.
<i>Medicine</i> . . .	H. Sahli.	E. Gauderon.	Calmette.
<i>Surgery</i> . . .	T. Kocher.	Chapoy.	—
<i>Pathology</i> . . .	—	{ Roland. Heitz.	de Brun.
<i>Bacteriology</i> . . .	W. Kolle.	—	de Vrégille.
<i>Psychology</i> . . .	E. Dürr.	—	—

UNIVERSITY.	BIRMINGHAM.	BOLOGNA.	BOMBAY.
<i>SITE</i> . . .	Birmingham, Eng.	Bologna, Italy.	Bombay and Poona, India.
<i>FOUNDED</i> . . .	1900.	1188.	1857.
<i>PRINCIPAL</i> . . .	Sir O. Lodge.	L. Pesci.	Sir N. G. Chandavarka (Vice-Chanc.).
<i>REGISTRAR</i> . . .	R. S. Heath.	U. Bassini.	F. M. Dastur.
Senior Professors:			
<i>Chemistry</i> . . .	P. F. Frankland.	{ G. Ciamician. L. Pesci (Pharm.).	A. R. Normand.
<i>Physics</i> . . .	J. H. Poynting.	A. Righi (Exper.).	Rev. D. Mackichan.
<i>Mathematics</i> . . .	R. S. Heath.	{ S. Pincherle. F. Enriques.	—
<i>Astronomy</i> . . .	—	M. Rajna.	K. D. Naegamvala.
<i>Engineering</i> . . .	{ F. W. Burstall (Mech.). G. Kapp (Elec.).	{ S. Canevazzi (Direc.). F. Masi.	R. S. C. Brown.
<i>Geology</i> . . .	C. Lapworth.	G. Capellini.	N. D. Daru.
<i>Mineralogy</i> . . .	—	G. Boeris.	—
<i>Geography</i> . . .	C. Lapworth.	C. Bertacchi.	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	G. S. West.	F. Morini.	A. Powell.
<i>Zoology</i> . . .	F. W. Gamble.	{ C. Emery. E. Giacomini (Comp. Anat.).	H. M. Chibber.
<i>Anthropology</i> . . .	P. Thompson.	—	—
<i>Anatomy</i> . . .	"	G. Valenti.	Major A. Street.
<i>Physiology</i> . . .	E. W. Carlier.	P. Albertoni (Exper.).	Capt. L. T. R. Hutchinson.
<i>Pharmacology</i> . . .	—	I. Novi (Exper.).	Capt. A. W. Tuke.
<i>Medicine</i> . . .	R. Saundby.	A. Murri.	Lt.-Col. L. F. Child.
<i>Surgery</i> . . .	G. Barling.	G. Ruggi.	Major A. Street.
<i>Pathology</i> . . .	R. F. C. Leith.	{ G. Tizzoni. F. Brazzola.	Lt.-Col. C. H. L. Meyer.
<i>Bacteriology</i> . . .	"	—	N. F. Surveyor.
<i>Psychology</i> . . .	J. H. Muirhead.	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	BONN.	BORDEAUX.	BOSTON.
<i>SITE</i> . . .	Bonn, Ger.	Bordeaux, France.	Boston, Mass., U.S.A.
<i>FOUNDED</i> . . .	1818.	—	1869.
<i>PRINCIPAL</i> . . .	K. Sell.	R. Thamin.	L. H. Morlin
<i>REGISTRAR</i> . . .	Riefenstahl.	Dubroca.	E. W. Lord.
Senior Professors:			
<i>Chemistry</i> . . .	R. Anschütz.	{ Gayon. { Vèzes (Mineral).	L. C. Newell.
<i>Physics</i> . . .	H. Kayser.	{ Duhem. { Marchis.	N. A. Kent.
<i>Mathematics</i> . . .	F. London.	Cousin.	J. B. Coit.
<i>Astronomy</i> . . .	K. F. Küstner.	Picart.	"
<i>Engineering</i> . . .	—	—	—
<i>Geology</i> . . .	G. Steinmann.	Fallot.	—
<i>Mineralogy</i> . . .	H. Laspeyres.	"	—
<i>Geography</i> . . .	J. J. Rein.	—	—
<i>Agriculture</i> . . .	—	Dubourg (Maitre d. Conf.).	—
<i>Botany</i> . . .	J. Fitting.	Sauvageau.	A. W. Weyssé (Biol.).
<i>Zoology</i> . . .	H. Ludwig.	Boutan (Chargé).	"
<i>Anthropology</i> . . .	P. Schiefferdecker.	—	—
<i>Anatomy</i> . . .	R. Bonnet.	Gentes.	J. P. Sutherland.
<i>Physiology</i> . . .	M. Verworn.	Jolyet.	A. W. Weyssé.
<i>Pharmacology</i> . . .	H. Leo.	Layet.	F. B. Percy.
<i>Medicine</i> . . .	F. Schultze.	Arnozan.	—
<i>Surgery</i> . . .	K. Garré.	Denucé.	H. Packard.
<i>Pathology</i> . . .	H. Ribbert.	Le Dantée (Trop.).	—
<i>Bacteriology</i> . . .	H. Reichenbach (Extr.).	—	—
<i>Psychology</i> . . .	—	—	W. M. Warren.

UNIVERSITY.	BOWDOIN COLL.	BRAUNSCHWEIG TECH. SCH.	BRESLAU.
<i>SITE</i> . . .	Brunswick, Me., U.S.A.	Braunschweig, Ger.	Breslau, Ger.
<i>FOUNDED</i> . . .	1794.	1745.	1506, 1702, 1811.
<i>PRINCIPAL</i> . . .	W. deWitt Hyde (Pres.).	H. Beckurts.	—
<i>REGISTRAR</i> . . .	K. C. M. Sills (Dean).	Wilkens (Sec.).	—
Senior Professors:			
<i>Chemistry</i> . . .	M. P. Cram.	{ H. Beckurts. { R. Meyer. { O. Reinke (Technol.).	{ T. Pfeiffer (Agric.). { H. Biltz.
<i>Physics</i> . . .	C. C. Hutchins.	{ H. Diesselhorst. { H. Weber (Theor.).	{ O. Lummer (Exper.). { E. Pringsheim (Theor.).
<i>Mathematics</i> . . .	W. A. Moody.	{ R. Dedekind. { R. Fricke.	{ J. Rosanes. { R. Sturm.
<i>Astronomy</i> . . .	H. B. Alvord.	H. Timerding.	J. Franz.
<i>Engineering</i> . . .	"	—	—
<i>Geology</i> . . .	M. P. Cram.	{ O. Denecke. { K. Friedmann. { E. Giese (Railway).	F. Frech.
<i>Mineralogy</i> . . .	"	E. Stolley.	C. Hintze.
<i>Geography</i> . . .	—	"	A. Supan.
<i>Agriculture</i> . . .	—	H. Schultze (Chem.).	F. Holdefeiss.
<i>Botany</i> . . .	M. Copeland.	—	{ O. Brefeld.
<i>Zoology</i> . . .	"	—	{ F. Pax.
<i>Anthropology</i> . . .	"	—	W. Küenthal.
<i>Anatomy</i> . . .	W. E. Tobie.	<i>Mech. Technol.</i>	C. Hasse.
<i>Physiology</i> . . .	C. D. Smith.	A. Lüdicke.	C. Hürthle.
<i>Pharmacology</i> . . .	C. H. Hunt.	<i>Machine Constr.</i>	{ W. Filehne.
<i>Medicine</i> . . .	A. S. Thayer.	Pfe'derer.	{ J. Pohl.
<i>Surgery</i> . . .	A. King.	<i>Tech. Mech.</i>	O. Minkowski.
<i>Pathology</i> . . .	F. N. Whittier.	R. Schöttler.	H. Küttner.
<i>Bacteriology</i> . . .	"	—	F. Henke.
<i>Psychology</i> . . .	C. T. Burnett.	W. H. Schultze (Extraord.).	—
		—	W. Stern (Extraord.).

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	BRISTOL.	BROWN.	BRÜNN. GER. TECH. SCH.
<i>SITE</i> . . .	Bristol, Eng.	Providence, R.I., U.S.A.	Brünn, Austria.
<i>FOUNDED</i> . . .	1909.	1764.	1850.
<i>PRINCIPAL</i> . . .	Sir I. Owen (Vice-Chanc.).	Rev. W. H. P. Faunce.	G. Jaumann.
<i>REGISTRAR</i> . . .	J. Rafter.	F. T. Guild.	W. Jaumann.
<i>Senior Professors:</i>	{ F. Francis.	J. H. Appleton.	{ J. Habermann.
<i>Chemistry</i> . . .	{ J. Wertheimer (App.).	C. Barns.	{ E. Donath (Tech.).
<i>Physics</i> . . .	(Vac.)	N. F. Davis.	G. Jaumann.
<i>Mathematics</i> . . .	{ F. R. Barrell.	W. Upton.	E. Waelsch.
<i>Astronomy</i> . . .	{ E. S. Boulton (App.).	J. E. Hill.	—
<i>Engineering</i> . . .	—	C. W. Brown (Assist.).	{ A. Musil (Machine).
<i>Geology</i> . . .	{ R. M. Ferrier (Civ.).	—	{ P. Kresnik (Hydraul.).
<i>Mineralogy</i> . . .	{ J. Munro (Mech.).	—	{ K. Zickler (Elect.).
<i>Geography</i> . . .	{ D. Robertson (Elec.).	—	A. Rzehak.
<i>Agriculture</i> . . .	S. H. Reynolds.	—	—
<i>Botany</i> . . .	—	—	—
<i>Zoology</i> . . .	—	—	—
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	—	—	—
<i>Physiology</i> . . .	—	—	—
<i>Pharmacology</i> . . .	—	—	—
<i>Medicine</i> . . .	{ J. M. Clarke.	—	Mech. Tech.
<i>Surgery</i> . . .	{ F. H. Edgeworth.	—	A. Haussner.
<i>Pathology</i> . . .	{ C. A. Morton.	—	Bridge Construc.
<i>Bacteriology</i> . . .	{ J. Swain.	—	A. Walzel.
<i>Psychology</i> . . .	I. W. Hall.	—	—
	—	—	—
	C. L. Morgan.	—	—

UNIVERSITY.	BRÜNN. BOHEM. TECH. SCH.	BRUSSELS.	BRYN MAWR.
<i>SITE</i> . . .	Brünn, Austria.	Brussels, Belgium.	Bryn Mawr, Pa., U.S.A.
<i>FOUNDED</i> . . .	1899.	—	1885.
<i>PRINCIPAL</i> . . .	—	J. Demoor.	M. Carey Thomas.
<i>REGISTRAR</i> . . .	F. J. Pavelka.	A. Lavachery.	Isabel Maddison.
<i>Senior Professors:</i>			
<i>Chemistry</i> . . .	B. Kužma (Inorg.).	A. Van Engelen.	E. P. Kohler.
<i>Physics</i> . . .	V. Novák.	Verschaffelt (Assist.).	W. B. Huff.
<i>Mathematics</i> . . .	{ K. Zahradnik.	Brand.	Charlotte A. Scott.
<i>Astronomy</i> . . .	{ M. Lerch.	Stroobant.	—
<i>Engineering</i> . . .	—	de Keyser.	—
<i>Geology</i> . . .	{ Z. Elger v. Elgenfeld.	Leriche (Assist.).	Florence Bascom.
<i>Mineralogy</i> . . .	{ L. Grimm.	—	—
<i>Geography</i> . . .	J. I. Jahn.	—	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	—	{ Bommer.	Harriet Randolph.
<i>Zoology</i> . . .	—	{ Massart.	D. H. Tennent.
<i>Anthropology</i> . . .	—	A. Lameere.	—
<i>Anatomy</i> . . .	—	Houzé.	—
<i>Physiology</i> . . .	—	Brachet.	—
<i>Pharmacology</i> . . .	—	J. de Moor.	J. W. Warren.
<i>Medicine</i> . . .	—	Jacques.	—
<i>Surgery</i> . . .	—	Stiénon.	—
<i>Pathology</i> . . .	—	Thiriart.	—
<i>Bacteriology</i> . . .	—	Spehl.	—
<i>Psychology</i> . . .	—	Gengou.	—
	—	H. Denis.	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	BUCHAREST.	BUDAPEST.	
		UNIV.	POLYTECH.
<i>SITE</i> . . .	Bucharest, Roumania.	Budapest, Hungary.	Budapest, Hungary.
<i>FOUNDED</i> . . .	1864.	1635; 1777; 1873.	1856.
<i>PRINCIPAL</i> . . .	T. Jonescu.	—	G. Rados.
<i>REGISTRAR</i> . . .	G. Chelaru.	—	S. Csorba.
Senior Professors:	{ C. I. Istrati (Org.).	{ B. v. Lengyel.	L. Ilosvay.
<i>Chemistry</i> . . .	{ G. G. Longinescu (Inorg.).	{ L. Winkler.	
<i>Physics</i> . . .	{ D. Bungetianu.	{ I. Fröhlich.	{ A. Schuller (Exper.).
	{ C. Miculescu.	{ Baron R. Eötvös.	{ F. Wittmann (Tech.).
<i>Mathematics</i> . . .	{ A. Davidoglu.	{ E. Beke.	{ B. Tötössy.
	{ E. A. Pangrati.	{ L. Fejér.	{ G. Rados.
<i>Astronomy</i> . . .	N. Coculescu.	—	D. Nagy.
<i>Engineering</i> . . .	—	—	O. Jonas.
<i>Geology</i> . . .	S. Athanasiu.	A. Koch.	F. Schafarzki.
<i>Mineralogy</i> . . .	L. Mrazec.	J. Krenner.	"
<i>Geography</i> . . .	S. Mehedint̄.	G. Czirbusz.	—
<i>Agriculture</i> . . .	—	—	P. Lazar (Machine Constr.).
<i>Botany</i> . . .	{ E. Theodorescu.	A. Mágócsy-Dietz.	G. Klein.
	{ M. Vlădescu.	G. Entz.	J. Daday.
<i>Zoology</i> . . .	D. N. Voinov.	A. Török.	—
<i>Anthropology</i> . . .	—	{ M. v. Lenhossék.	<i>Electrotech.</i>
<i>Anatomy</i> . . .	{ V. Babes.	{ K. Tellyesniczky.	K. Zipernowsky.
	{ P. Petrini.	L. v. Udránszky.	S. Söpke.
<i>Physiology</i> . . .	{ I. Athanasiu.	A. Bókay v. Bóka.	<i>Machine Constr.</i>
	{ N. Paulescu.	{ A. K. v. Ajtay.	E. Schimanek.
<i>Pharmacology</i> . . .	N. Măldărescu.	{ K. Kétly v. Csurgó.	<i>Railway Constr.</i>
<i>Medicine</i> . . .	{ C. Angelescu.	{ E. Réczey.	S. Zielinski.
	{ C. S. Buciu.	{ J. Dollinger.	—
<i>Surgery</i> . . .	P. Herescu.	{ F. Tangl (Exper.).	—
<i>Pathology</i> . . .	G. Proca.	H. Preisz.	—
<i>Bacteriology</i> . . .	V. Babes.	M. Kármán.	—
<i>Psychology</i> . . .	—	—	—

UNIVERSITY.	BUFFALO.	CAEN.	CAGLIARI.
<i>SITE</i> . . .	Buffalo, N. Y., U.S.A.	Caen, France.	Cagliari, Sardinia, Italy.
<i>FOUNDED</i> . . .	1845.	1432.	1603.
<i>PRINCIPAL</i> . . .	C. P. Norton (Chanc.).	R. Moniez.	C. Sacerdotti.
<i>REGISTRAR</i> . . .	F. M. Hollister.	J. Gallou.	E. Loy-Peluffo.
Senior Professors:	A. P. Sy.	(Vac.)	L. Francesconi.
<i>Chemistry</i> . . .	—	Maurain.	G. Guglielmo.
<i>Physics</i> . . .	—	C. Riquieux.	A. Fais.
<i>Mathematics</i> . . .	—	—	—
<i>Astronomy</i> . . .	—	Zoretti (Mech.).	—
<i>Engineering</i> . . .	—	A. Bigot.	D. Lovisato.
<i>Geology</i> . . .	—	—	"
<i>Mineralogy</i> . . .	—	A. Rainaud.	—
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	—	O. Lignier.	L. Nicotra.
<i>Botany</i> . . .	—	J. Joyeux-Laffaie.	G. Sterzi (Lect.).
<i>Zoology</i> . . .	—	—	—
<i>Anthropology</i> . . .	—	A. Gidon.	G. Sterzi.
<i>Anatomy</i> . . .	J. A. Gibson.	U. Gosselin.	G. Fasola.
<i>Physiology</i> . . .	F. C. Busch.	E. Danjou.	—
<i>Pharmacology</i> . . .	E. J. Kiepe (Adjunct.).	Osmont.	I. Fenoglio.
<i>Medicine</i> . . .	{ C. G. Stockton.	—	R. Binaghi.
	{ E. H. Long.	A. G. Montier.	C. Sacerdotti.
<i>Surgery</i> . . .	R. Park.	—	—
<i>Pathology</i> . . .	H. U. Williams.	—	—
<i>Bacteriology</i> . . .	"	—	—
<i>Psychology</i> . . .	—	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	CALIFORNIA.	CAMBRIDGE.	CAMERINO.
<i>SITE</i> . . .	Berkeley, Cal., U.S.A.	Cambridge, Eng.	Camerino, Italy.
<i>FOUNDED</i> . .	1868.	1209.	1727.
<i>PRINCIPAL</i> . .	B. I. Wheeler (Pres.).	Lord Rayleigh (Chanc.).	A. Checchini.
<i>REGISTRAR</i> . .	J. Sutton.	J. N. Keynes.	M. Orazi.
Senior Professors:			
<i>Chemistry</i> . .	G. N. Lewis (Phys.).	{ Sir J. Dewar. W. J. Pope.	A. Fabrini.
<i>Physics</i> . . .	F. Slate.	Sir J. J. Thomson.	G. Gallerani.
<i>Mathematics</i> .	M. W. Haskell.	{ Sir J. Larmor. E. W. Hobson.	—
<i>Astronomy</i> . .	A. O. Leuschner.	{ Sir R. S. Ball (Geom.). H. F. Newall (Phys.).	—
<i>Engineering</i> . .	{ C. L. Cory (Elec.). C. Derleth, jr. (Civ.). S. B. Christy (Min.).	B. Hopkinson.	—
<i>Geology</i> . . .	A. C. Lawson.	T. McK. Hughes.	—
<i>Mineralogy</i> . .		W. J. Lewis.	—
<i>Geography</i> . .	R. S. Holway.	H. Y. Oldham.	—
<i>Agriculture</i> . .	T. F. Hunt.	{ R. H. Biffen. T. B. Wood.	—
<i>Botany</i> . . .	W. A. Setchell.	A. C. Seward.	D. Filippi (Extraord.).
<i>Zoology</i> . . .	C. A. Kofoid.	{ J. S. Gardiner. G. H. F. Nuttall (Biol.).	A. Arcangeli (Lect.).
<i>Anthropology</i> .	A. L. Kroeber.	A. C. Haddon (Reader).	—
<i>Anatomy</i> . . .	R. O. Moody.	A. Macalister.	{ G. Kazzander. G. Pacinotti.
<i>Physiology</i> . .	S. S. Maxwell.	J. N. Langley.	G. Gallerani.
<i>Pharmacology</i> .	F. T. Green.	W. E. Dixon (Lect.).	R. Luzzatto.
<i>Medicine</i> . . .	H. C. Moffit (Dean).	{ Sir T. C. Allbutt. J. B. Bradbury.	A. Ferrannini (Extraord.)
<i>Surgery</i> . . .	W. I. Terry.	F. H. Marsh.	G. Razzaboni (Lect.).
<i>Pathology</i> . .	F. P. Gay.	G. S. Woodhead.	—
<i>Bacteriology</i> .	K. F. Meyer.	"	—
<i>Psychology</i> . .	G. M. Stratton.	C. S. Myers.	—

UNIVERSITY.	CAPE OF GOOD HOPE.		
<i>SITE</i> . . .	S. African Coll., Cape Town.	Rhodes Univ. Coll., Grahamstown.	S. African Sch. Mincs and Technol., Johannesburg.
<i>FOUNDED</i> . . .	1829.	1904.	1903.
<i>PRINCIPAL</i> . .	—	Justice Kotzee.	G. S. Corstorphine.
<i>REGISTRAR</i> . .	A. D. R. Tugwell.	Lt.-Col. H. Greener.	W. E. Cursons (Sec.).
Senior Professors:			
<i>Chemistry</i> . .	P. D. Hahn.	G. E. Cory.	J. A. Wilkinson.
<i>Physics</i> . . .	J. C. Beattie.	A. Ogg.	R. A. Lehfeldt.
<i>Mathematics</i> .	{ L. Crawford. T. P. Kent.	D. Williams.	H. G. Breijer.
<i>Astronomy</i> . .	—	—	—
<i>Engineering</i> . .	{ A. E. Snape. H. Bohle.	—	{ J. Orr (Mech.). R. H. Charters (Civ.). W. Buchanan (Elec.).
<i>Geology</i> . . .	A. Young.	E. H. L. Schwarz.	R. B. Young.
<i>Mineralogy</i> . .	"	—	G. H. Stanley.
<i>Geography</i> . .	—	—	—
<i>Agriculture</i> . .	—	—	—
<i>Botany</i> . . .	H. H. W. Pearson.	S. Schönland.	—
<i>Zoology</i> . . .	J. D. F. Gilchrist.	J. E. Duerden.	—
<i>Anthropology</i> .	—	—	<i>Mining.</i>
<i>Anatomy</i> . . .	R. B. Thomson.	—	J. Cellier.
<i>Physiology</i> . .	W. A. Jolly.	—	<i>Surveying.</i>
<i>Pharmacology</i> .	—	—	T. E. Robertson.
<i>Medicine</i> . . .	—	—	—
<i>Surgery</i> . . .	—	—	—
<i>Pathology</i> . .	—	—	—
<i>Bacteriology</i> .	—	—	—
<i>Psychology</i> . .	—	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	CATANIA.	CATHOLIC OF AMERICA.	CHICAGO.
<i>SITE</i> . . .	Catania, Sicily, Italy.	Washington, D.C., U.S.A.	Chicago, U.S.A.
<i>FOUNDED</i> . . .	1445.	1889.	1892.
<i>PRINCIPAL</i> . . .	G. Majorana.	Right Rev. T. J. Shahan.	H. P. Judson.
<i>REGISTRAR</i> . . .	N. Landolfi.	C. I. Borden.	A. K. Parker.
Senior Professors:			
<i>Chemistry</i> . . .	G. Grassi-Cristaldi.	Rev. J. J. Griffin.	J. U. Nef.
<i>Physics</i> . . .	G. P. Grimaldi.	D. W. Shea.	A. A. Michelson.
<i>Mathematics</i> . . .	{ G. Pennacchietti. G. Lauricella.	A. E. Landry.	E. H. Moore.
<i>Astronomy</i> . . .	A. Ricco.	—	{ G. E. Hale. S. W. Burnham.
<i>Engineering</i> . . .	—	{ T. J. Thompson. G. F. Harbin (Elec- trotech.).	—
<i>Geology</i> . . .	—	—	T. C. Chamberlin.
<i>Mineralogy</i> . . .	L. Bucca.	—	A. Johansen.
<i>Geography</i> . . .	F. S. Giardina.	—	R. D. Salisbury.
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	L. Buscalioni.	<i>Biology.</i>	J. M. Coulter.
<i>Zoology</i> . . .	A. Russo (Comp. Anat.).	J. B. Parker. <i>Mech. Engrng.</i>	C. O. Whitman.
<i>Anthropology</i> . . .	—	L. H. Crook.	—
<i>Anatomy</i> . . .	{ A. Petrone. R. Staderini.	—	R. B. Bensley.
<i>Physiology</i> . . .	A. Capparelli.	—	A. P. Mathews.
<i>Pharmacology</i> . . .	F. A. Fodera.	—	—
<i>Medicine</i> . . .	R. Feletti.	—	F. Billings.
<i>Surgery</i> . . .	G. Clementi.	—	A. D. Bevan.
<i>Pathology</i> . . .	G. B. Ughetti.	—	L. Hektoen.
<i>Bacteriology</i> . . .	E. Di Mattei (Lect.).	—	E. O. Jordan.
<i>Psychology</i> . . .	—	{ Rev. T. E. Shields. T. V. Moore.	J. R. Angell.

UNIVERSITY.	CHRISTIANIA.	CINCINNATI.	CLARK.
<i>SITE</i> . . .	Christiania, Norway.	Cincinnati, U.S.A.	Worcester, Mass., U.S.A.
<i>FOUNDED</i> . . .	1811.	1871.	1887.
<i>PRINCIPAL</i> . . .	B. H. v. Munthe af Morgenstjerne.	C. W. Dabney.	G. Stanley Hall.
<i>REGISTRAR</i> . . .	C. A. Orland.	Miss L. A. Garvin.	Florence Chandler.
Senior Professors:			
<i>Chemistry</i> . . .	Th. Hiortdahl.	L. W. Jones.	M. A. Rosanoff.
<i>Physics</i> . . .	O. E. Schiötz.	L. T. More.	A. G. Webster.
<i>Mathematics</i> . . .	L. Sylow.	H. Hancock.	W. E. Story.
<i>Astronomy</i> . . .	H. Geelmuyden.	J. G. Porter.	—
<i>Engineering</i> . . .	A. Thüe.	{ H. Schneider (Civil). J. T. Faig (Mech.).	—
<i>Geology</i> . . .	A. Helland.	N. M. Fenneman.	—
<i>Mineralogy</i> . . .	W. C. Brögger.	—	—
<i>Geography</i> . . .	{ F. Nansen (Oceanog.). H. Mohn (Meteorol.).	N. M. Fenneman.	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	N. Wille.	H. M. Benedict.	—
<i>Zoology</i> . . .	G. O. Sars.	H. L. Wieman.	—
<i>Anthropology</i> . . .	K. E. Schreiner.	—	A. F. Chamberlain.
<i>Anatomy</i> . . .	—	H. M. Knower.	—
<i>Physiology</i> . . .	S. Torup.	M. H. Fischer.	—
<i>Pharmacology</i> . . .	E. Poulsson.	J. H. Eichberg.	—
<i>Medicine</i> . . .	S. Laache.	F. Forchheimer.	—
<i>Surgery</i> . . .	J. Nicolaysen.	J. Ransohoff.	—
<i>Pathology</i> . . .	{ P. F. Holst (Med.). F. Harbitz (Surg.).	P. G. Woolley.	—
<i>Bacteriology</i> . . .	A. Holst.	—	—
<i>Psychology</i> . . .	A. Löchen.	B. B. Breese.	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	CLERMONT.	CÖTHEN POLYTECH.	COIMBRA.
<i>SITE</i> . . .	Clermont-Ferrand, Fr.	Cöthen, Anhalt, Ger.	Coimbra, Portugal.
<i>FOUNDED</i> . . .	—	1891.	1288.
<i>PRINCIPAL</i> . . .	A. Coville.	C. F. Foehr.	—
<i>REGISTRAR</i> . . .	Laborde.	Harms.	M. da Silva Gayo.
Senior Professors:			
<i>Chemistry</i> . . .	{ Chavastelon. Huguet.	{ Dupré. Hinz (Technol.).	Alvaro Basto.
<i>Physics</i> . . .	E. Mathias.	K. v. Bardeleben.	Antonio S. Viégas.
<i>Mathematics</i> . . .	Pellet.	Gillmer.	L. da Costa e Almeida.
<i>Astronomy</i> . . .	Haag.	C. Hänig.	J. J. D. Souto Rodrigues.
<i>Engineering</i> . . .	—	{ Michel. Groshcim.	—
<i>Geology</i> . . .	Glangeaud.	Foehr.	A. Gonçalves Guimarães.
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	L. Bréhier.	Blum.	A. Ferraz de Carvalho.
<i>Agriculture</i> . . .	—	Kayser.	—
<i>Botany</i> . . .	Dubard.	Bensemann.	J. Henriques.
<i>Zoology</i> . . .	Calvet.	—	B. Ayres.
<i>Anthropology</i> . . .	J. Buy.	<i>Metalurgy.</i>	E. Tamagnini.
<i>Anatomy</i> . . .	Billard.	Bräutigam.	B. Freire.
<i>Physiology</i> . . .	Rocher.	<i>Mechanics.</i>	F. da Camara.
<i>Pharmacology</i> . . .	Maurin.	Galka.	M. Fernandez Costa.
<i>Medicine</i> . . .	Bousquet.	<i>Ceramics.</i>	F. da Camara.
<i>Surgery</i> . . .	—	Kraze.	D. de Mattos.
<i>Pathology</i> . . .	{ Lepetit. Mornac.	<i>Electrotech.</i>	A. Vieira de Campos.
<i>Bacteriology</i> . . .	—	Zipp.	L. Pereira da Costa.
<i>Psychology</i> . . .	—	Pfeiffer.	A. J. Alves des Santos.

UNIVERSITY.	COLORADO.	COLUMBIA.	COPENHAGEN.
<i>SITE</i> . . .	Boulder, Colo., U.S.A.	New York, U.S.A.	Copenhagen, Denmark.
<i>FOUNDED</i> . . .	1877.	1754.	1479.
<i>PRINCIPAL</i> . . .	J. H. Baker (Pres.).	N. M. Butler.	H. F. E. Jungersen.
<i>REGISTRAR</i> . . .	F. E. Hagen.	W. A. Hervey.	P. Foss.
Senior Professors:			
<i>Chemistry</i> . . .	J. B. Ekeley.	M. T. Bogert.	{ E. Biilmann. J. Petersen.
<i>Physics</i> . . .	O. C. Lester.	W. Hallock.	{ J. N. Brönsted. C. Christiansen.
<i>Mathematics</i> . . .	I. M. De Long.	T. S. Fiske.	{ N. Nielsen. P. Heegaard.
<i>Astronomy</i> . . .	—	H. Jacoby.	E. Stromgren.
<i>Engineering</i> . . .	M. S. Ketchum.	{ W. H. Burr. F. B. Crocker (Elec.).	—
<i>Geology</i> . . .	R. D. George.	J. F. Kemp.	O. B. Böggild.
<i>Mineralogy</i> . . .	—	A. J. Moses.	—
<i>Geography</i> . . .	—	R. E. Dodge.	H. P. Steensby.
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	F. Ramaley.	N. L. Britton.	{ C. Raunkjær. W. Johannsen.
<i>Zoology</i> . . .	T. D. A. Cockerell.	H. F. Osborn.	H. F. E. Jungersen.
<i>Anthropology</i> . . .	—	F. Boaz.	—
<i>Anatomy</i> . . .	C. Gillaspie.	G. S. Huntington.	F. C. C. Hansen.
<i>Physiology</i> . . .	E. B. Queal.	F. S. Lee.	V. Henriques.
<i>Pharmacology</i> . . .	T. R. Love.	C. A. Herter.	J. C. Boch.
<i>Medicine</i> . . .	G. H. Cattermole.	F. P. Kinnicutt.	K. Faber.
<i>Surgery</i> . . .	L. M. Giffin.	F. Hartley.	{ O. Bloch. T. Rovsing.
<i>Pathology</i> . . .	R. C. Whitman.	F. C. Wood.	C. Gram.
<i>Bacteriology</i> . . .	C. T. Burnett.	H. Zinsser.	C. J. Salomonsen.
<i>Psychology</i> . . .	L. W. Cole.	J. M. Cattell.	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	COPENHAGEN POLYTECH.	CORNELL.	CRACOW.
<i>SITE</i> . . .	Copenhagen, Denmark.	Ithaca, N.Y., U.S.A.	Cracow, Austrian Poland.
<i>FOUNDED</i> . . .	1829.	1865.	1400.
<i>PRINCIPAL</i> . . .	H. I. Hannover.	J. G. Schurman.	F. Zoll.
<i>REGISTRAR</i> . . .	M. C. Harding.	D. F. Hoy.	W. Ottmann.
Senior Professors:			
<i>Chemistry</i> . . .	{ E. Biilmann. J. Petersen.	L. M. Dennis.	K. Olszewski.
<i>Physics</i> . . .	{ C. Christiansen. K. Prytz.	E. L. Nichols.	M. Smoluchowski.
<i>Mathematics</i> . . .	{ P. C. V. Hansen. C. Juel.	J. H. Tanner.	K. Zorawski.
<i>Astronomy</i> . . .	{ J. Hjelmslev.	—	M. Rudzki.
<i>Engineering</i> . . .	{ S. C. Borch (Mech.). H. Bache (Mech.). A. Lütken (Civ.).	{ A. W. Smith. E. E. Haskell.	T. Sikorski.
<i>Geology</i> . . .	—	{ H. S. Williams. H. Ries. G. D. Harris.	W. Szajnocha
<i>Mineralogy</i> . . .	O. B. Böggild.	A. C. Gill.	J. Morozewicz.
<i>Geography</i> . . .	—	R. S. Tarr.	F. Szwarcenberg-Czerny.
<i>Agriculture</i> . . .	—	O. D. v. Englin.	K. Rogoyski.
<i>Botany</i> . . .	<i>Mech. Technol.</i>	G. F. Atkinson.	M. Raciborski.
<i>Zoology</i> . . .	H. I. Hannover.	H. D. Reed.	M. Siedlecki.
<i>Anthropology</i> . . .	<i>Shipbuilding.</i>	F. W. Kemmerrer.	J. Talko-Hryncewicz.
<i>Anatomy</i> . . .	C. Hansen.	A. T. Kerr.	{ H. Hoyer. K. Kostanecki.
<i>Physiology</i> . . .	<i>Phys. Chem.</i>	S. Simpson.	N. Cybulski.
<i>Pharmacology</i> . . .	J. N. Brönsted.	P. A. Fish.	J. Lazarski.
<i>Medicine</i> . . .	<i>App. Chem.</i>	D. H. Udall.	W. Jaworski.
<i>Surgery</i> . . .	N. Steenberg.	W. W. Williams.	B. Kader.
<i>Pathology</i> . . .	O. Jensen.	O. A. Moore.	K. Klecki.
<i>Bacteriology</i> . . .	<i>Geodasy.</i>	E. B. Titchener.	O. Bujwid.
<i>Psychology</i> . . .	P. Thygesen.		W. Heinrich.
	—		

UNIVERSITY.	CREIGHTON.	CZERNOWITZ.	DALHOUSIE.
<i>SITE</i> . . .	Omaha, Neb., U.S.A.	Czernowitz, Austria.	Halifax, N.S., Can.
<i>FOUNDED</i> . . .	1878.	1875.	1818.
<i>PRINCIPAL</i> . . .	E. Magevney.	M. Friedwagner.	A. S. Mackenzie.
<i>REGISTRAR</i> . . .	F. McMenamy.	A. Norst.	M. Macneill.
Senior Professors:			
<i>Chemistry</i> . . .	D. Hickey.	C. Pomeranz.	E. Mackay.
<i>Physics</i> . . .	W. F. Rigge.	J. Geitler R. v. Armingen.	H. P. Bronson.
<i>Mathematics</i> . . .	W. P. Quinlan.	J. Plemelj.	M. Macneill.
<i>Astronomy</i> . . .	W. F. Rigge.	M. Radovic.	—
<i>Engineering</i> . . .	—	—	C. D. Howe.
<i>Geology</i> . . .	—	A. Böhm E. v. Böhmer- sheim.	D. S. Macintosh.
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	J. C. Arledge.	K. Linsbauer (Assist.).	C. L. Moore.
<i>Zoology</i> . . .	—	C. Zelinka.	—
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	H. Wightman.	—	A. W. H. Lindsay.
<i>Physiology</i> . . .	A. L. Muirhead.	—	D. F. Harris.
<i>Pharmacology</i> . . .	H. F. Gerald.	—	A. F. Buckley.
<i>Medicine</i> . . .	A. D. Dunn.	—	L. M. Silver.
<i>Surgery</i> . . .	C. C. Allison.	—	E. V. Hogan.
<i>Pathology</i> . . .	J. S. Foote.	—	M. A. Lindsay.
<i>Bacteriology</i> . . .	M. Langfeld.	—	—
<i>Psychology</i> . . .	F. Meyer.	—	J. Laird.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	DANZIG TECH. H. SCH.	DARMSTADT TECH. H. SCH.	DARTMOUTH COLL.
<i>SITE</i> . . .	Danzig, Ger.	Darmstadt, Ger.	Hanover, N.H., U.S.A.
<i>FOUNDED</i> . . .	—	1836.	1769.
<i>PRINCIPAL</i> . . .	Prof. Wagener.	Geh. Baurat Wickop.	E. F. Nichols.
<i>REGISTRAR</i> . . .	—	J. Petry.	H. M. Tibbetts.
Senior Professors:			
<i>Chemistry</i> . . .	{ O. Ruff, A. Wohl.	H. Finger (Org.).	E. J. Bartlett.
<i>Physics</i> . . .	J. Zenneck.	K. Schering.	G. F. Hull.
<i>Mathematics</i> . . .	{ H. v. Mangoldt, F. Schilling.	Henneberg.	J. W. Young.
<i>Astronomy</i> . . .	A. v. Brunn (Priv. Doz.).	—	J. M. Poor.
<i>Engineering</i> . . .	—	{ H. Kayser. A. Koch. E. Schmitt. R. Lepsius.	J. V. Hazen.
<i>Geology</i> . . .	F. v. Wolff.	"	J. W. Goldthwait.
<i>Mineralogy</i> . . .	"	Grein.	J. W. Merritt.
<i>Geography</i> . . .	—	Klaas.	—
<i>Agriculture</i> . . .	—	H. Schenck.	G. R. Lyman.
<i>Botany</i> . . .	—	List.	W. Patten.
<i>Zoology</i> . . .	—	—	C. H. Hawes.
<i>Anthropology</i> . . .	—	—	F. P. Lord.
<i>Anatomy</i> . . .	—	—	C. C. Stewart.
<i>Physiology</i> . . .	—	—	—
<i>Pharmacology</i> . . .	—	Heyl.	G. B. Frost.
<i>Medicine</i> . . .	—	—	J. M. Gile.
<i>Surgery</i> . . .	—	—	H. N. Kingsford.
<i>Pathology</i> . . .	—	—	G. S. Graham.
<i>Bacteriology</i> . . .	—	{ Heyl. Schenck.	W. V. Bingham.
<i>Psychology</i> . . .	—	—	

UNIVERSITY.	DELFT TECH. H. SCH.	DENISON.	DENVER.
<i>SITE</i> . . .	Delft, Holland.	Granville, O., U.S.A.	Denver, Colo., U.S.A.
<i>FOUNDED</i> . . .	—	1831.	1864, 1880.
<i>PRINCIPAL</i> . . .	J. Cardinaal.	E. W. Hunt.	H. A. Buechel.
<i>REGISTRAR</i> . . .	M. de Haas.	R. S. Colwell (Dean).	—
Senior Professors:			
<i>Chemistry</i> . . .	{ J. Böescken. H. ter Meulen.	A. M. Brumback.	W. D. Engle.
<i>Physics</i> . . .	{ M. de Haas. L. H. Siertsema.	E. E. Lawton.	R. E. Nyswander.
<i>Mathematics</i> . . .	{ J. A. Barrau. J. Cardinaal.	F. B. Wiley.	H. E. Russell.
<i>Astronomy</i> . . .	—	P. Biefeld.	H. A. Howe.
<i>Engineering</i> . . .	{ W. K. Behrens. G. H. de Vries Broek- man.	T. S. Johnson.	—
<i>Geology</i> . . .	{ H. G. Jonker. G. A. F. Molengraaff.	F. Carney.	—
<i>Mineralogy</i> . . .	J. A. Grutterink.	"	—
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	—	M. Stieckney.	<i>Biology.</i>
<i>Zoology</i> . . .	—	G. E. Coghill.	I. E. Cutler.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	{ M. W. Beyerinck. G. van Iterson, jr.	—	A. G. Staunton.
<i>Physiology</i> . . .	—	—	G. C. Wallace.
<i>Pharmacology</i> . . .	<i>Machine Constr.</i>	—	—
<i>Medicine</i> . . .	G. Brouwer.	—	—
<i>Surgery</i> . . .	—	—	—
<i>Pathology</i> . . .	—	—	J. F. Morning.
<i>Bacteriology</i> . . .	—	—	R. W. Arndt.
<i>Psychology</i> . . .	—	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	DIJON.	DORPAT.	DRAKE.
<i>SITE</i> . . .	Dijon, Fr.	Dorpat, Russia.	Des Moines Ia., U.S.A.
<i>FOUNDED</i> . . .	1722.	1802.	1881.
<i>PRINCIPAL</i> . . .	M. Boirac.	V. G. Alexéjev.	H. M. Bell.
<i>REGISTRAR</i> . . .	M. Battut.	V. G. Vosnesenski.	C. F. Hanna.
Senior Professors:			
<i>Chemistry</i> . . .	Pigeon.	A. D. Bogojavlensky.	C. N. Kinney.
<i>Physics</i> . . .	{ Hurion. Pionchon.	A. I. Sadovsky.	D. W. Morehouse.
<i>Mathematics</i> . . .	Baire.	V. G. Alexéjev.	I. F. Neff.
<i>Astronomy</i> . . .	Duport.	C. D. Pokrovski.	D. W. Morehouse.
<i>Engineering</i> . . .	—	—	—
<i>Geology</i> . . .	L. Collot.	(Vac.)	R. E. Conklin.
<i>Mineralogy</i> . . .	"	V. J. Tarasenko.	—
<i>Geography</i> . . .	H. Hauser.	—	—
<i>Agriculture</i> . . .	—	S. K. Boguševski.	—
<i>Botany</i> . . .	Quéva.	N. I. Kuznetzov.	R. E. Conklin.
<i>Zoology</i> . . .	Topsent.	J. v. Kennel.	L. S. Ross.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	Zipfel.	H. Adolfi.	S. W. Hobbs.
<i>Physiology</i> . . .	Michaut.	V. P. Kurčinsky.	"
<i>Pharmacology</i> . . .	Vincent.	D. M. Lavrov.	—
<i>Medicine</i> . . .	Deroye.	K. Dehio.	—
<i>Surgery</i> . . .	Parizot.	W. Zoega v. Manteuffel.	—
<i>Pathology</i> . . .	{ Petitjean. Broussolle.	V. A. Afanasjev.	—
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	—	V. F. Čiž.	Florence Richardson.

UNIVERSITY.	DRESDEN TECH. H. SCH.	DUBLIN.	DURHAM.
<i>SITE</i> . . .	Dresden, Ger.	Dublin, Ireland.	Newcastle, Eng.
<i>FOUNDED</i> . . .	1828.	1591.	1832 (Med.); 1871 (Arm- strong).
<i>PRINCIPAL</i> . . .	H. Weisst.	A. Traill (Provost).	{ Sir G. H. Philipson (Med.) W. H. Hadow (Arm- strong). F. Page.
<i>REGISTRAR</i> . . .	—	R. Y. Tyrrell.	—
Senior Professors:			
<i>Chemistry</i> . . .	{ R. Dietz. F. Förster (Inorg.) W. Hallwachs.	S. Young.	P. P. Bedson.
<i>Physics</i> . . .	{ M. Toepler. R. Heger. G. Helm.	W. E. Thrift.	H. Stroud.
<i>Mathematics</i> . . .	—	W. S. Burnside.	C. M. Jessop.
<i>Astronomy</i> . . .	—	E. T. Whittaker.	—
<i>Engineering</i> . . .	{ H. Engels (Hydr.) M. Buhle.	T. Alexander.	R. L. Weighton.
<i>Geology</i> . . .	E. Kalkowsky.	J. Joly.	G. A. Lebour.
<i>Mineralogy</i> . . .	"	"	—
<i>Geography</i> . . .	H. Gravelius.	—	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	O. Drude.	H. Dixon.	M. C. Potter.
<i>Zoology</i> . . .	A. Jacobi.	W. H. Mackintosh.	A. Meek.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	Org. Chem.	A. F. Dixon.	R. Howden.
<i>Physiology</i> . . .	E. v. Meyer.	—	F. A. Bainbridge.
<i>Pharmacology</i> . . .	Ry. Constr.	W. G. Smith.	W. E. Hume.
<i>Medicine</i> . . .	G. Lucas.	J. Little.	{ Sir G. H. Philipson Sir T. Oliver.
<i>Surgery</i> . . .	Elec. Machine Constr.	Sir C. Ball.	J. R. Morison.
<i>Pathology</i> . . .	W. Kübler.	A. C. O'Sullivan.	S. McDonald.
<i>Bacteriology</i> . . .	—	—	H. J. Hutchens.
<i>Psychology</i> . . .	—	—	T. W. McDowall.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	EDINBURGH.		ERLANGEN.
<i>SITE</i> . . .	Edinburgh, Scotland.	Sch. Med. of Roy. Colls., Edinburgh.	Erlangen, Ger.
<i>FOUNDED</i> . . .	1583.	1505.	1743.
<i>PRINCIPAL</i> . . .	Sir W. Turner.	Major D. G. Marshall.	Geiger.
<i>REGISTRAR</i> . . .	Sir L. J. Grant, Bt. (Sec.).	A. S. Taylor (Clerk).	H. Rhombert.
Senior Professors :			
<i>Chemistry</i> . . .	J. Walker.	Drinkwater.	O. Fischer.
<i>Physics</i> . . .	C. G. Barkla.	D. Turner.	E. Wiedemann.
<i>Mathematics</i> . . .	E. T. Whittaker.	—	M. Noether.
<i>Astronomy</i> . . .	R. A. Sampson.	—	—
<i>Engineering</i> . . .	T. Hudson Beare.	—	—
<i>Geology</i> . . .	J. Geikie.	—	H. Lenk.
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	G. C. Chisholm (Lect.).	—	W. Volz.
<i>Agriculture</i> . . .	R. Wallace.	—	—
<i>Botany</i> . . .	I. B. Balfour.	—	H. Solereder.
<i>Zoology</i> . . .	J. C. Ewart.	M. Laurie.	A. Fleischmann.
<i>Anthropology</i> . . .	A. Robison.	—	—
<i>Anatomy</i> . . .	—	J. R. Whitaker.	L. Gerlach.
<i>Physiology</i> . . .	E. A. Schäfer.	A. Goodall.	F. Rosenthal.
<i>Pharmacology</i> . . .	Sir T. R. Fraser.	W. Craig.	R. Heinz.
<i>Medicine</i> . . .	J. Wyllie.	G. L. Gulland.	F. Penzoldt.
<i>Surgery</i> . . .	A. Thomson.	H. Wade.	E. Graser.
<i>Pathology</i> . . .	J. Lorrain Smith.	T. Shennan.	G. Hauser.
<i>Bacteriology</i> . . .	W. E. C. Dickson (Lect.).	—	L. Heim.
<i>Psychology</i> . . .	W. G. Smith (Lect.).	—	G. Spechts.

UNIVERSITY.	FERRARA.	FLORENCE.	FORDHAM (Jesuit).
<i>SITE</i> . . .	Ferrara, Italy.	Florence, Italy.	New York, N.Y., U.S.A.
<i>FOUNDED</i> . . .	1391.	1859.	1841.
<i>PRINCIPAL</i> . . .	P. Sitta.	—	Rev. T. J. McCluskey.
<i>REGISTRAR</i> . . .	A. E. Bassani.	—	J. Matthews.
Senior Professors :			
<i>Chemistry</i> . . .	G. Barbieri.	U. Schiff.	C. E. Shaffrey.
<i>Physics</i> . . .	G. Bongiovanni.	A. Roiti.	F. D. O'Laughlin.
<i>Mathematics</i> . . .	{ F. Rimondini. F. D'Arcais.	U. Grassi.	J. I. Fink.
<i>Astronomy</i> . . .	—	A. Abetti.	H. A. Judge.
<i>Engineering</i> . . .	—	—	—
<i>Geology</i> . . .	—	C. De Stefani.	C. R. H. Risacher.
<i>Mineralogy</i> . . .	—	F. Millosevich.	—
<i>Geography</i> . . .	—	O. Marinelli.	A. H. Raines (Phys.).
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	C. Massalongo.	P. Baccarini.	R. C. Benedict.
<i>Zoology</i> . . .	A. Ghigi.	D. Rosa.	A. J. Goldforb (Lect.).
<i>Anthropology</i> . . .	—	A. Mochi.	—
<i>Anatomy</i> . . .	L. Giannelli.	G. Chiarugi.	T. D. Merrigan.
<i>Physiology</i> . . .	E. Cavazzani.	G. Fano.	R. H. Nicholl.
<i>Pharmacology</i> . . .	—	G. Bufalini.	T. J. Dunn.
<i>Medicine</i> . . .	—	P. Grocco.	J. H. Coughlin.
<i>Surgery</i> . . .	—	E. Burci.	J. A. Bodine.
<i>Pathology</i> . . .	N. Tiberti.	F. Schüpfer.	V. E. Sorapure.
<i>Bacteriology</i> . . .	—	A. Lustig.	C. Z. Garside.
<i>Psychology</i> . . .	—	F. De Sarlo.	J. J. Walsh.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	FREIBURG.	FRIBOURG.	GENEVA.
<i>SITE</i> . . .	Freiburg i. Br., Ger.	Fribourg, Switz.	Geneva, Switz.
<i>FOUNDED</i> . . .	1457.	1889.	1559.
<i>PRINCIPAL</i> . . .	—	L. Michel.	{ W. Rosier.
<i>REGISTRAR</i> . . .	—	N. Weyrich.	{ E. Montet.
Senior Professors:			{ A. Roussy.
<i>Chemistry</i> . . .	{ H. Kiliani.	{ A. Bistrzycki.	{ A. Pictet.
	{ L. Gattermann.	{ T. v. Estreicher.	{ P. A. Guye (Tech.).
<i>Physics</i> . . .	F. Himstedt.	J. de Kowalski.	C. E. Guye (Dean).
<i>Mathematics</i> . . .	{ L. Stichelberger.	F. Daniels.	C. Cailler.
	{ L. Heffter.	A. Gockel.	R. Gautier.
<i>Astronomy</i> . . .	—	—	—
<i>Engineering</i> . . .	—	—	—
<i>Geology</i> . . .	W. Deecke.	R. Girard.	C. Sarasin.
<i>Mineralogy</i> . . .	A. Osann.	H. Baumhauer.	L. Duparc.
<i>Geography</i> . . .	L. Neumann.	P. Girardin.	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	F. Oltmanns.	A. Ursprung.	R. Chodat.
<i>Zoology</i> . . .	F. Doflein.	L. Kathariner.	E. Yung.
<i>Anthropology</i> . . .	—	H. Breuil.	—
<i>Anatomy</i> . . .	R. Wiedersheim.	—	S. Laskowski (Dean).
<i>Physiology</i> . . .	J. v. Kries.	C. Dhéré.	F. Batelli.
<i>Pharmacology</i> . . .	W. Straub.	—	L. Chavanne.
<i>Medicine</i> . . .	—	—	L. Bard.
<i>Surgery</i> . . .	P. Kraske.	—	C. Girard.
<i>Pathology</i> . . .	{ L. Aschoff.	—	M. Askanazy.
	{ O. de la Camp.	—	H. Cristiani.
<i>Bacteriology</i> . . .	—	—	T. Flournoy.
<i>Psychology</i> . . .	—	M. de Munnynck.	—

UNIVERSITY.	GENOA.	GEORGETOWN.	GEORGE WASHINGTON.
<i>SITE</i> . . .	Genoa, Italy.	Washington, D.C., U.S.A.	Washington, D.C., U.S.A.
<i>FOUNDED</i> . . .	—	1789.	1821.
<i>PRINCIPAL</i> . . .	E. Maragliano.	J. J. Hommel.	C. H. Stockton.
<i>REGISTRAR</i> . . .	T. Mozzani.	J. B. Creeden.	R. Cobb.
Senior Professors:			
<i>Chemistry</i> . . .	G. Pellizzari.	R. A. Martin.	C. E. Munroe.
<i>Physics</i> . . .	{ O. Tedone.	T. H. Miley.	H. L. Hodgkins.
	{ A. Garbasso.	—	—
<i>Mathematics</i> . . .	{ G. Loria.	J. T. Hedrick.	—
	{ G. Garbieri.	—	—
<i>Astronomy</i> . . .	F. Porro.	—	A. Hall, jr.
<i>Engineering</i> . . .	—	—	O. A. Mechlin.
<i>Geology</i> . . .	A. Issel.	J. A. Brosnan.	G. P. Merrill.
<i>Mineralogy</i> . . .	G. B. Negri.	—	—
<i>Geography</i> . . .	—	J. A. Dolan.	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	O. Penzig.	—	A. Mann.
<i>Zoology</i> . . .	{ C. Parona.	—	P. Bartsch.
	{ G. Cattaneo (Comp.	—	—
	{ Anat.).	—	—
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	P. Lachi.	—	W. C. Moore.
<i>Physiology</i> . . .	V. Grandis.	F. A. Tondorf.	S. I. Franz.
<i>Pharmacology</i> . . .	A. Benedicenti.	J. R. Devereux.	—
<i>Medicine</i> . . .	E. Maragliano.	S. S. Adams.	—
<i>Surgery</i> . . .	G. F. Novaro.	G. T. Vaughan.	S. Ruffin.
<i>Pathology</i> . . .	L. Griffini.	R. A. Hamilton.	W. C. Borden.
<i>Bacteriology</i> . . .	—	A. W. Macnamee.	F. F. Russell.
<i>Psychology</i> . . .	E. Morselli.	J. A. Conway.	W. C. Ruediger.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	GEORGIA.	GHENT.	GIESSEN.
<i>SITE</i> . . .	Athens, Ga., U.S.A.	Ghent, Belgium.	Giessen, Ger.
<i>FOUNDED</i> . . .	1785.	1816.	1607.
<i>PRINCIPAL</i> . . .	D. C. Barrow.	M. H. Schoentjes.	A. Körte.
<i>REGISTRAR</i> . . .	—	L. Hombrecht.	Erle.
Senior Professors :			
<i>Chemistry</i> . . .	H. C. White.	{ F. Swarts. M. Delacre.	{ A. Naumann. C. Elbs (Phys.).
<i>Physics</i> . . .	L. L. Hendren.	H. Schoentjes.	W. König.
<i>Mathematics</i> . . .	C. M. Snelling.	{ J. Van Rysselberghe. C. Servais.	{ L. Schlesinger. Engel.
<i>Astronomy</i> . . .	L. L. Hendren.	—	K. Fromme.
<i>Engineering</i> . . .	{ C. M. Strahan. U. H. Davenport.	J. Boulvin.	—
<i>Geology</i> . . .	—	X. Stainier.	E. Kaiser.
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	—	F. Van Ortrov.	W. Sievers.
<i>Agriculture</i> . . .	J. P. Campbell.	—	P. Gisevius.
<i>Botany</i> . . .	J. M. Reade.	J. MacLeod.	A. Hansen.
<i>Zoology</i> . . .	J. P. Campbell (Biol.).	C. de Brune.	J. W. Spengel.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	—	H. Leboucq.	H. Strahl.
<i>Physiology</i> . . .	—	E. Lahousse.	S. Garten.
<i>Pharmacology</i> . . .	S. C. Benedict.	J. F. Heymans.	J. Geppert.
<i>Medicine</i> . . .	—	E. Eeman.	F. Voit.
<i>Surgery</i> . . .	—	A. de Cock.	P. Poppert.
<i>Pathology</i> . . .	—	C. Verstraeten.	E. Bostroem.
<i>Bacteriology</i> . . .	—	E. van Ermengem.	R. O. Neumann.
<i>Psychology</i> . . .	—	J. J. Van Biervliet.	R. Sommer.

UNIVERSITY.	GLASGOW.		GÖTTINGEN
<i>SITE</i> . . .	Glasgow, Scot.	Roy. Tech. Coll., Glasgow.	Göttingen, Ger.
<i>FOUNDED</i> . . .	1451.	1796; 1886.	1737.
<i>PRINCIPAL</i> . . .	Sir D. MacAlister.	H. F. Stockdale.	Wackernagel.
<i>REGISTRAR</i> . . .	A. Morrison.	—	L. Gossmann.
Senior Professors :			
<i>Chemistry</i> . . .	J. Ferguson.	{ G. G. Henderson. T. Gray (Tech.). Metallurgy.	O. Wallach.
<i>Physics</i> . . .	A. Gray.	A. Campion.	{ E. Riecke. W. Voigt.
<i>Mathematics</i> . . .	G. A. Gibson.	J. Miller.	{ F. Klein. D. Hilbert.
<i>Astronomy</i> . . .	L. Becker.	—	{ J. Hartmann. L. Ambronn.
<i>Engineering</i> . . .	{ A. Barr. C. Latham (Mining). J. H. Biles (Naval). J. W. Gregory.	{ M. Maclean. G. Moncur (Civ.).	L. Prandtl.
<i>Geology</i> . . .	—	D. Burns.	Stille.
<i>Mineralogy</i> . . .	—	—	O. Mügge.
<i>Geography</i> . . .	J. D. Falconer.	—	H. Wagner.
<i>Agriculture</i> . . .	—	—	{ C. v. Seelhorst. W. Fleischmann.
<i>Botany</i> . . .	F. O. Bower.	D. Ellis.	{ A. Peter. G. Berthold.
<i>Zoology</i> . . .	J. G. Kerr.	—	E. Ehlers.
<i>Anthropology</i> . . .	—	—	F. Merkel.
<i>Anatomy</i> . . .	T. H. Bryce.	—	—
<i>Physiology</i> . . .	D. N. Paton.	—	P. Jensen.
<i>Pharmacology</i> . . .	R. Stockman.	—	C. Mannich.
<i>Medicine</i> . . .	W. K. Hunter.	—	K. Hirsch.
<i>Surgery</i> . . .	Sir W. MacEwen.	—	H. Reichenbach.
<i>Pathology</i> . . .	R. Muir.	—	E. Kaufmann.
<i>Bacteriology</i> . . .	W. B. M. Martin.	—	—
<i>Psychology</i> . . .	H. J. Watt.	—	E. Schultze.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	GOUCHER COLL.	GRANADA.	GRAZ UNIV.
<i>SITE</i> . . .	Baltimore, Md., U.S.A.	Granada, Spain.	Graz, Austria.
<i>FOUNDED</i> . . .	1885.	1530.	1585.
<i>PRINCIPAL</i> . . .	J. B. Van Meter.	F. Gutiérrez y Jiménez.	O. Zoth.
<i>REGISTRAR</i> . . .	Carrie M. Probst.	J. J. Gallego Ruiz.	—
Senior Professors :			
<i>Chemistry</i> . . .	C. C. Blackshear.	J. Alonso y Fernández.	K. B. Hofmann.
<i>Physics</i> . . .	S. N. Taylor.	A. Aparico Soriano.	H. Bendorf.
<i>Mathematics</i> . . .	C. L. Bacon (Assoc. Prof.).	{ J. A. Tercedor y Diaz. F. Atroyo Rojas. 1888.	A. Wassmuth.
<i>Astronomy</i> . . .	—	—	K. Hillebrand.
<i>Engineering</i> . . .	—	—	—
<i>Geology</i> . . .	—	P. Nacher y Vilar.	R. Scharizer.
<i>Mineralogy</i> . . .	—	—	R. Sieger.
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	—	P. Nacher y Vilar.	K. Fritsch.
<i>Botany</i> . . .	<i>Biology.</i>	—	L. Graff v. Pancsova.
<i>Zoology</i> . . .	W. E. Kellicott.	—	—
<i>Anthropology</i> . . .	—	{ F. Oloriz y Ortega. F. Porpeta y Llorente. F. Gutiérrez y Jiménez.	M. Holl.
<i>Anatomy</i> . . .	L. Welsh.	E. Esteve y Fernandez.	{ O. Zoth. O. Loewi. H. Lorenz.
<i>Physiology</i> . . .	"	A. V. de Castro y Fossati.	V. R. v. Hacker.
<i>Pharmacology</i> . . .	—	F. G. Quintana.	R. Klemensiewicz.
<i>Medicine</i> . . .	—	A. Amor y Rico.	W. Prausnitz.
<i>Surgery</i> . . .	—	—	A. Meinong R. v. Hand- schuchsheim.
<i>Pathology</i> . . .	—	—	
<i>Bacteriology</i> . . .	—	—	
<i>Psychology</i> . . .	—	—	

UNIVERSITY.	GRAZ TECH. SCH.	GREIFSWALD.	GRENOBLE.
<i>SITE</i> . . .	Graz, Austria.	Greifswald, Ger.	Grenoble, Fr.
<i>FOUNDED</i> . . .	1888.	1456.	1340.
<i>PRINCIPAL</i> . . .	—	K. Oldenberg.	C. Petit-Dutaillis.
<i>REGISTRAR</i> . . .	J. Piswanger.	B. Bohn.	Pascal.
Senior Professors :			
<i>Chemistry</i> . . .	{ R. Andreasch. F. Emich.	K. v. Auwers.	A. Recoura.
<i>Physics</i> . . .	{ A. v. Ettingshausen. F. Streintz.	G. Mie.	E. Pionchon.
<i>Mathematics</i> . . .	{ F. Hočevár. O. Peithner.	{ F. Engel. T. Vahlen.	{ J. Collet. E. Colton.
<i>Astronomy</i> . . .	—	—	J. Collet (Doz.).
<i>Engineering</i> . . .	{ P. Forchheimer. J. Bartl.	—	L. Barbillion.
<i>Geology</i> . . .	—	O. Jaekel.	W. Kilian.
<i>Mineralogy</i> . . .	—	L. Milch.	R. "Blanchard (Adj. Prof.).
<i>Geography</i> . . .	—	M. Friederichsen.	—
<i>Agriculture</i> . . .	—	—	M. Mirande.
<i>Botany</i> . . .	F. Reinitzer.	F. Schütt.	L. Léger.
<i>Zoology</i> . . .	A. R. v. Heider (Extra- ord. Prof.).	W. Müller.	—
<i>Anthropology</i> . . .	<i>Machine Constr.</i>	—	—
<i>Anatomy</i> . . .	E. Bendl.	E. Kallius.	J. Salva.
<i>Physiology</i> . . .	—	M. Bleibtreu.	J. Termier.
<i>Pharmacology</i> . . .	—	H. Schulz.	J. Verne.
<i>Medicine</i> . . .	—	{ P. Strübing. A. Steyrer.	"
<i>Surgery</i> . . .	—	F. Pels-Leusden.	—
<i>Pathology</i> . . .	—	P. Grawitz.	{ M. Perriol. C. Jacquemet.
<i>Bacteriology</i> . . .	—	—	J. Berlioz.
<i>Psychology</i> . . .	—	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	GRONINGEN.	HALLE.	HAMILTON COLL.
<i>SITE</i>	Groningen, Holland.	Halle, Ger.	Clinton, N. Y., U.S.A.
<i>FOUNDED</i>	1614.	1502; 1694; 1815.	1812.
<i>PRINCIPAL</i>	J. H. Kern.	P. Strauch.	M. W. Stryker.
<i>REGISTRAR</i>	W. J. Hamburger.	—	—
Senior Professors:			
<i>Chemistry</i>	{ J. F. Eykman (Org.) F. M. Jaeger (Inorg.).	D. Vörländer.	A. P. Saunders.
<i>Physics</i>	H. Haga.	E. Dorn.	S. J. Saunders.
<i>Mathematics</i>	F. Schuh.	G. Cantor.	H. S. Brown (Assist. Prof.).
<i>Astronomy</i>	J. C. Kapteyn.	A. Wangerin.	S. J. Saunders.
<i>Engineering</i>	—	—	—
<i>Geology</i>	J. H. Bonnema.	J. Walther.	W. J. Miller.
<i>Mineralogy</i>	—	—	—
<i>Geography</i>	—	O. Schlüter.	—
<i>Agriculture</i>	—	F. Wohltmann.	—
<i>Botany</i>	J. W. Moll.	G. Karsten.	<i>Biology.</i>
<i>Zoology</i>	J. F. van Bemmelen.	V. Haecker.	A. D. Morrill.
<i>Anthropology</i>	—	—	—
<i>Anatomy</i>	J. W. van Wijhe.	W. Roux.	—
<i>Physiology</i>	H. J. Hamburger.	E. Abderhalden.	—
<i>Pharmacology</i>	A. Klein.	E. Harnack.	—
<i>Medicine</i>	A. F. Hijmans van den Berg.	A. Schmidt.	—
<i>Surgery</i>	C. F. A. Koch.	F. Sauerbruch.	—
<i>Pathology</i>	—	R. Beneke.	—
<i>Bacteriology</i>	A. Klein.	K. Fränkel.	—
<i>Psychology</i>	E. Wiersma.	—	—

UNIVERSITY.	HANNOVER TECH. H. SCH.	HARVARD.	HAVANA.
<i>SITE</i>	Hannover, Ger.	Cambridge, Mass., U.S.A.	Havana, Cuba.
<i>FOUNDED</i>	1857.	1636.	—
<i>PRINCIPAL</i>	Prof. Mohrmann.	A. L. Lowell.	L. Berriel.
<i>REGISTRAR</i>	—	C. C. Little.	J. Gomez de la Maza (Sec.).
Senior Professors:			
<i>Chemistry</i>	{ K. Seubert (Inorg.) R. Behrend (Org.).	{ C. L. Jackson. T. W. Richards.	C. Theye.
<i>Physics</i>	{ J. Precht. G. Leithäuser.	E. H. Hall.	P. Biosca.
<i>Mathematics</i>	{ L. Kiepert. K. Rodenberg.	W. E. Byerly.	{ J. R. Villalón. Claudio Mimo.
<i>Astronomy</i>	—	E. C. Pickering.	V. Trelles.
<i>Engineering</i>	{ W. Launhardt. H. Arnold Lang.	{ G. F. Swain (Civ.) I. N. Hollis.	L. Arozarena.
<i>Geology</i>	H. Stille.	R. A. Daly.	S. de la Huerta.
<i>Mineralogy</i>	—	J. E. Wolff.	—
<i>Geography</i>	—	—	—
<i>Agriculture</i>	—	—	—
<i>Botany</i>	W. Hess.	W. G. Farlow.	J. Cadenas.
<i>Zoology</i>	<i>Electrotech.</i>	E. L. Mark.	M. Gomez de la Maza.
<i>Anthropology</i>	W. Kohlrausch.	R. B. Dixon (Assist.).	C. de la Torre.
<i>Anatomy</i>	<i>Tech. Chem.</i>	T. Dwight.	L. Montané.
<i>Physiology</i>	H. Ost.	W. B. Cannon.	J. V. Zequiera.
<i>Pharmacology</i>	—	F. Pfaff.	M. Sanchez.
<i>Medicine</i>	—	D. L. Edsall.	A. Perez Miró.
<i>Surgery</i>	—	M. H. Richardson.	E. Saladrigas.
<i>Pathology</i>	—	W. T. Councilman.	R. G. Menocal.
<i>Bacteriology</i>	R. Otto (Tit.-Prof.).	H. C. Ernst.	{ J. Guiteras. G. Casuso.
<i>Psychology</i>	—	H. Münsterberg.	A. Agramonte. E. J. Varona.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	HEIDELBERG.	HELSINGFORS.	
		UNIV.	TECH. SCH.
<i>SITE</i> . . .	Heidelberg, Ger.	Helsingfors, Finland.	Helsingfors, Finland.
<i>FOUNDED</i> . . .	1386.	1640.	—
<i>PRINCIPAL</i> . . .	Gottlieb.	A. S. Donner.	A. U. Albrecht.
<i>REGISTRAR</i> . . .	Kuhn.	A. Wiskman.	H. Snellman.
Senior Professors:			
<i>Chemistry</i> . . .	T. Curtius.	A. O. Aschan.	G. Komppa.
<i>Physics</i> . . .	P. Lenard.	H. Tallqvist.	K. F. Slotte.
<i>Mathematics</i> . . .	{ L. Koenigsberger.	E. L. Lindelöf.	R. H. Mellin.
<i>Astronomy</i> . . .	{ P. G. Stäckel.	K. F. Sundman.	—
<i>Engineering</i> . . .	M. Wolf.	V. T. Homén.	{ M. Strukel.
<i>Geology</i> . . .	—	W. Ramsay.	{ C. E. Holmberg.
<i>Mineralogy</i> . . .	W. Salomon.		G. B. Frosterus (Priv. Doz.).
<i>Geography</i> . . .	E. A. Wülfing	J. E. Rosberg.	"
<i>Agriculture</i> . . .	A. Hettner.	{ A. Rindell (Chem.).	—
<i>Botany</i> . . .	—	{ K. G. J. Grotenfelt.	K. Enckell (Priv. Doz.).
<i>Zoology</i> . . .	G. Klebs.	F. E. W. Elfving.	—
<i>Anthropology</i> . . .	O. Buetschli.	{ E. R. Reuter.	—
<i>Anatomy</i> . . .	—	{ K. M. Levander.	—
<i>Physiology</i> . . .	A. Kossel.	E. A. Westermarck.	—
<i>Pharmacology</i> . . .	R. Gottlieb.	G. H. Grönroos.	<i>Mech. Technology.</i>
<i>Medicine</i> . . .	L. Krehl.	R. A. A. Tigerstedt.	A. U. Albrecht.
<i>Surgery</i> . . .	G. Port.	E. E. Sundvik.	A. W. Gardberg.
<i>Pathology</i> . . .	P. Ernst.	T. W. Tallqvist.	—
<i>Bacteriology</i> . . .	H. Kossel.	F. A. B. Krogius.	—
<i>Psychology</i> . . .	—	E. A. Homén.	—
		W. O. Streng.	—
		A. Grotenfelt.	—

UNIVERSITY.	HONG KONG.	HOWARD (Negro).	IDAHO.
<i>SITE</i> . . .	Hong Kong, China.	Washington, D.C., U.S.A.	Moscow, Idaho, U.S.A.
<i>FOUNDED</i> . . .	1911.	1867.	1889.
<i>PRINCIPAL</i> . . .	H.E. Sir F. H. May.	W. P. Thirkield.	W. L. Carlyle (Acting).
<i>REGISTRAR</i> . . .	A. C. Franklin.	E. L. Parks.	F. Jenkins.
Senior Professors:			
<i>Chemistry</i> . . .	A. C. Franklin (Lect.).	H. C. Scurlock.	C. L. v. Ende.
<i>Physics</i> . . .	T. H. Matthewman (Lect.).	P. B. Perkins.	L. E. Gurney.
<i>Mathematics</i> . . .	H. W. Turnbull (Lect.).	K. Miller.	W. S. Morley.
<i>Astronomy</i> . . .	—	—	—
<i>Engineering</i> . . .	C. A. M. Smith (Dean).	F. W. Frederick.	C. N. Little.
<i>Geology</i> . . .	—	R. E. Schuh.	C. A. Stewart.
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	—	G. W. Cook.	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	—	R. E. Schuh.	W. L. Carlyle.
<i>Zoology</i> . . .	—	E. E. Just.	C. E. Temple.
<i>Anthropology</i> . . .	—	—	J. M. Aldrich.
<i>Anatomy</i> . . .	K. H. Digby.	D. S. Lamb.	—
<i>Physiology</i> . . .	G. E. Malcolmson.	(Vac.)	—
<i>Pharmacology</i> . . .	—	J. H. Purdy.	—
<i>Medicine</i> . . .	G. P. Jordan (Lect.).	H. P. Parker.	—
<i>Surgery</i> . . .	W. V. M. Koch (Lect.).	E. A. Balloch.	—
<i>Pathology</i> . . .	—	C. Marshall.	—
<i>Bacteriology</i> . . .	—	M. W. Lyon.	J. F. Nicholson.
<i>Psychology</i> . . .	—	L. B. Moore.	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	ILLINOIS.	INDIANA.	INNSBRUCK.
<i>SITE</i> . . .	Urbana, Ill., U.S.A.	Bloomington, Ind., U.S.A.	Innsbruck, Austria.
<i>FOUNDED</i> . . .	1868.	1820.	1673.
<i>PRINCIPAL</i> . . .	E. J. James.	W. L. Bryan.	P. Kretschmar.
<i>REGISTRAR</i> . . .	C. M. McConn.	J. W. Cravens.	W. Stricker.
Senior Professors:			
<i>Chemistry</i> . . .	W. A. Noyes.	R. E. Lyons.	K. Brunner.
<i>Physics</i> . . .	A. P. Carman.	A. L. Foley.	E. Ritter v. Schweidler.
<i>Mathematics</i> . . .	E. J. Townsend.	{ D. A. Rothrock.	K. Zindler.
<i>Astronomy</i> . . .	J. Stebbins.	{ S. C. Davison.	A. Prey.
	{ W. F. M. Goss (Dean).	W. A. Cogshall.	
	{ I. O. Baker (Civ.).		
<i>Engineering</i> . . .	{ E. J. Berg (Elec.).	—	—
	{ H. H. Stoeck (Mech.).		
	{ A. N. Talbot (Mun.).		
<i>Geology</i> . . .	C. W. Rolfe.	E. R. Cumings.	J. Blaas.
<i>Mineralogy</i> . . .	—	"	A. Cathrein.
<i>Geography</i> . . .	—	—	F. R. v. Wieser.
	{ E. Davenport (Dean).		
<i>Agriculture</i> . . .	{ F. H. Rankin.	—	—
	{ C. G. Hopkins.		
<i>Botany</i> . . .	W. Trelease.	D. M. Mottier.	E. Heinricher.
<i>Zoology</i> . . .	H. B. Ward.	C. H. Eigenmann.	K. Heider.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	L. C. Borland.	B. D. Myers.	R. Fick.
<i>Physiology</i> . . .	G. P. Dreyer.	W. J. Moenkhaus.	F. Hofmann.
<i>Pharmacology</i> . . .	B. Fantus.	(Vac.)	J. Nevinny.
<i>Medicine</i> . . .	W. E. Quine.	C. P. Emerson.	N. Ortner.
<i>Surgery</i> . . .	D. A. K. Steele.	—	H. Schloffer.
<i>Pathology</i> . . .	C. C. O'Byrne.	(Vac.)	G. Pommer.
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	J. M. Bentley.	E. H. Lindley.	—

UNIVERSITY.	IOWA.	IRELAND	
		(NATIONAL UNIV.), 1909.	
<i>SITE</i> . . .	Iowa, U.S.A.	Cork.	Dublin Univ. Coll.
<i>FOUNDED</i> . . .	1847.	1845.	1908.
<i>PRINCIPAL</i> . . .	—	Sir B. C. A. Windle	D. J. Coffey.
<i>REGISTRAR</i> . . .	F. C. Ensign.	J. P. Molohan.	A. W. Conway.
Senior Professors:			
<i>Chemistry</i> . . .	E. W. Rockwood.	A. E. Dixon.	H. Ryan.
<i>Physics</i> . . .	G. W. Stewart.	W. Bergin.	{ J. A. McClelland.
<i>Mathematics</i> . . .	A. G. Smith.	M. J. Conran.	{ A. W. Conway (Math.)
<i>Astronomy</i> . . .	—	—	H. C. McWeeney.
<i>Engineering</i> . . .	W. G. Raymond.	C. W. L. Alexander.	P. F. Purcell.
<i>Geology</i> . . .	G. F. Kay.	I. Swain.	H. J. Seymour.
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	—	—	M. T. Hayden.
<i>Agriculture</i> . . .	—	H. A. Cummins.	—
<i>Botany</i> . . .	B. Shimek.	"	J. B. Butler.
<i>Zoology</i> . . .	C. C. Nutting.	M. Hartog.	G. Sigerson.
<i>Anthropology</i> . . .	—	D. P. FitzGerald.	E. P. McLoughlin.
<i>Anatomy</i> . . .	H. J. Prentiss.	—	—
<i>Physiology</i> . . .	J. T. McClintock.	D. T. Barry.	B. J. Collingwood.
<i>Pharmacology</i> . . .	W. J. Teeters.	J. Dundon.	—
<i>Medicine</i> . . .	C. P. Howard.	W. A. Cummins.	Sir C. J. Nixon, Bt.
<i>Surgery</i> . . .	W. Jepson.	C. Y. Pearson.	J. S. McArdie.
<i>Pathology</i> . . .	H. Albert.	A. E. Moore.	E. J. McWeeney.
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	C. E. Seashore.	{ G. L. Stokes.	"
		{ Rev. T. E. FitzGibbon.	Rev. J. Shine.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	IRELAND [NATIONAL UNIV.].	JASSY.	JENA.
SITE . . .	Galway.	Jassy, Roumania.	Jena, Ger.
FOUNDED . . .	1845.	1860.	1558.
PRINCIPAL . . .	A. Anderson.	G. Bogdan.	Geh.-Hofrat Linck.
REGISTRAR . . .	J. P. Pye.	—	—
Senior Professors :			
Chemistry . . .	A. Senier.	{ N. Costăchescu (Inorg.). A. Obregia (Org.).	L. Knorr.
Physics . . .	—	D. Hurmuzescu.	M. Wien.
Mathematics . . .	M. Power.	{ A. Myller. A. Mănescu.	J. Thomae.
Astronomy . . .	—	C. Popovici (Lect.).	O. Knopf.
Engineering . . .	F. S. Rishworth.	—	K. Vollmer.
Geology . . .	R. J. Anderson.	J. Simionescu.	G. E. Linck.
Mineralogy . . .	"	"	"
Geography . . .	—	—	G. W. v. Zahn.
Agriculture . . .	—	—	W. Edler.
Botany . . .	—	A. Popovici.	E. Stahl.
Zoology . . .	—	J. Barcea.	L. Plate.
Anthropology . . .	—	—	—
Anatomy . . .	J. P. Pye.	{ V. Negel. E. Juvara.	Maurer.
Physiology . . .	"	G. Socor.	W. Biedermann.
Pharmacology . . .	N. W. Colahan.	D. Jonescu.	H. Kionka.
Medicine . . .	J. I. Lynham.	C. Bacaloglu.	R. Stintzing.
Surgery . . .	W. B. Brereton.	J. Bălăcescu.	E. Lexer.
Pathology . . .	T. Walsh.	C. Thiron.	{ O. Binswanger. R. Rössle.
Bacteriology . . .	—	A. Slatineanu.	A. Gärtner.
Psychology . . .	—	J. Gavănescul.	B. Bauch.

UNIVERSITY.	JOHNS HOPKINS.	KANSAS.	KARLSRUHE TECH. SCH.
SITE . . .	Baltimore, Md., U.S.A.	Lawrence, Kans., U.S.A.	Karlsruhe, Ger.
FOUNDED . . .	1876.	1866.	1825.
PRINCIPAL . . .	—	F. Strong.	Zwiedeneck v.Südenhorst
REGISTRAR . . .	T. R. Ball.	G. O. Foster.	—
Senior Professors :			
Chemistry . . .	H. N. Morse.	{ E. H. S. Bailey. R. K. Duncan (Ind.).	{ C. Engler. H. Bunte. G. Bredig. O. Lehmann. M. Disteli. A. Krazer. K. Heun. M. Haid.
Physics . . .	J. S. Ames.	F. E. Kester.	—
Mathematics . . .	F. Morley.	C. H. Ashton.	{ R. Baumeister. F. Engesser. Th. Rehbock. W. Paulcke.
Astronomy . . .	J. N. Anderson. (C. J. Tilden (Civ.).	M. E. Rice.	—
Engineering . . .	J. B. Whitehead (Elec.). C. C. Thomas (Mech.).	F. O. Marvin.	{ Cronberger. L. Klein. H. Hausratz (Forestry).
Geology . . .	W. B. Clark.	E. Haworth.	O. Nüsslin.
Mineralogy . . .	E. B. Mathews.	"	—
Geography . . .	—	—	—
Agriculture . . .	—	—	—
Botany . . .	D. S. Johnson.	W. C. Stevens.	Dieckhoff.
Zoology . . .	H. S. Jennings.	C. E. McClung.	{ L. Klein. H. Hausratz (Forestry).
Anthropology . . .	—	F. W. Blackmor.	O. Nüsslin.
Anatomy . . .	F. P. Mall.	—	—
Physiology . . .	W. H. Howell.	Ida H. Hyde.	—
Pharmacology . . .	J. J. Abel.	L. E. Sayre.	—
Medicine . . .	L. F. Barker.	F. E. Murphy.	Machinery.
Surgery . . .	W. S. Halsted.	M. T. Sudler.	G. Benoit.
Pathology . . .	W. H. Welch.	M. A. Barber.	H. Bonte.
Bacteriology . . .	"	F. H. Billings.	E. Brauer.
Psychology . . .	J. B. Watson.	O. Templin.	K. Grassmann. Electrotech. A. Schleiermacher.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	KENTUCKY.	KIEL.	KING'S COLL. UNIV.
<i>SITE</i> . . .	Danville, Ky., U.S.A.	Kiel, Ger.	Windsor, N.S., Canada.
<i>FOUNDED</i> . . .	1819.	1665.	1790.
<i>PRINCIPAL</i> . . .	F. W. Hinitt.	S. Sudhaus.	Rev. J. W. Powell.
<i>REGISTRAR</i> . . .	C. G. Crooks.	—	Rev. F. W. Vroom.
Senior Professors:			
<i>Chemistry</i> . . .	F. E. Clark.	C. Harries.	J. B. McCarthy.
<i>Physics</i> . . .	N. F. Smith.	{ K. Dieterici.	E. Howarth.
<i>Mathematics</i> . . .	C. G. Crooks.	{ L. Weber.	H. W. A. Wadley.
<i>Astronomy</i> . . .	—	L. Pochhammer.	J. B. McCarthy.
<i>Engineering</i> . . .	—	P. Harzer.	E. Howarth.
<i>Geology</i> . . .	—	—	—
<i>Mineralogy</i> . . .	—	A. Johnsen.	—
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	—	L. Schultz.	—
<i>Botany</i> . . .	—	H. Rodewald.	—
<i>Zoology</i> . . .	—	J. Reinke.	—
<i>Anthropology</i> . . .	F. L. Rainey.	K. Brandt.	—
<i>Anatomy</i> . . .	—	—	—
<i>Physiology</i> . . .	—	F. Graf v. Spee.	—
<i>Pharmacology</i> . . .	—	{ V. Hensen.	—
<i>Medicine</i> . . .	—	{ A. Bethe.	—
<i>Surgery</i> . . .	—	L. Rügheimer.	—
<i>Pathology</i> . . .	—	H. Lüthje.	—
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	F. W. Hinitt.	A. Heller.	—
		B. Fischer.	—
		G. Martius.	—

UNIVERSITY.	KIUSHU.	KNOX.	KÖNIGSBERG.
<i>SITE</i> . . .	Fukuoka, Japan.	Galesburg, Ill., U.S.A.	Königsberg, Ger.
<i>FOUNDED</i> . . .	1911.	1837.	1544.
<i>PRINCIPAL</i> . . .	Bunji Mano.	T. McClelland.	Prof. Dr. Winter.
<i>REGISTRAR</i> . . .	T. Sakane.	Mary Scott.	—
Senior Professors:			
<i>Chemistry</i> . . .	{ T. Nishikawa (App.).	H. E. Griffith.	H. Klinger.
	{ K. Usami.		{ P. Volkmann (Theor.).
<i>Physics</i> . . .	{ B. Arakawa.	A. C. Longden.	{ W. Kaufmann (Exper.)
	{ Y. Furuya.		{ F. Meyer.
<i>Mathematics</i> . . .	A. Kuwaki (Lect.).	G. T. Sellew.	{ G. Faber.
<i>Astronomy</i> . . .	—	—	H. Battermann.
<i>Engineering</i> . . .	{ S. Hattori (Civ.).	—	—
	{ J. Nakahara (Mech.).	—	—
	{ B. Arakawa (Elec.).	—	—
<i>Geology</i> . . .	—	—	A. Tornquist.
<i>Mineralogy</i> . . .	—	—	A. Bergeat.
<i>Geography</i> . . .	—	—	F. Hahn.
<i>Agriculture</i> . . .	—	—	{ A. Mitscherlich.
		<i>Biology.</i>	{ J. Hansen.
<i>Botany</i> . . .	—	H. V. Neal.	—
<i>Zoology</i> . . .	—	—	M. Braun.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	{ Ryotoku Oyama.	—	L. Stieda.
	{ T. Sakurai.	—	F. B. Hofmann.
<i>Physiology</i> . . .	M. Ishihara.	—	A. Ellinger.
<i>Pharmacology</i> . . .	T. Ishizaka.	—	A. Schittenhelm.
<i>Medicine</i> . . .	{ R. Inada.	—	P. Friedrich.
	{ H. Takeya.	—	C. Kaiserling.
<i>Surgery</i> . . .	Hayashi Miyake.	—	A. Stutzer.
<i>Pathology</i> . . .	H. Nakayama.	—	E. Meyer.
<i>Bacteriology</i> . . .	—	—	
<i>Psychology</i> . . .	—	—	

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	KYOTO.	LAFAYETTE COLL.	LAUSANNE.
<i>SITE</i> . . .	Kyoto, Japan.	Easton, Pa., U.S.A.	Lausanne, Switz.
<i>FOUNDED</i> . . .	1897.	1832.	1890.
<i>PRINCIPAL</i> . . .	M. Sawayanagi.	E. D. Warfield.	E. Rossier.
<i>REGISTRAR</i> . . .	H. Ishikawa.	C. B. Green.	—
Senior Professors:			
<i>Chemistry</i> . . .	Mitsuru Kuhara (Org.).	E. Hart.	F. Kehrman (Org.).
<i>Physics</i> . . .	Han-Ichi Muraoka.	C. McC. Gordon.	A. Perrier.
<i>Mathematics</i> . . .	Kwan-Ichiro Miwa.	W. S. Hall.	{ H. Amstein.
<i>Astronomy</i> . . .	—	J. J. Hardy.	{ B. Mayor.
<i>Engineering</i> . . .	{ K. Futami (Civ.).	{ J. M. Porter.	L. Maillard.
	{ K. Otsuka (Mech.).	{ W. T. Lyle.	A. Dommer.
	{ M. Namba (Elec.).	{ J. A. Ross.	M. Lugeon.
<i>Geology</i> . . .	—	F. B. Peck.	—
<i>Mineralogy</i> . . .	—	"	C. Biermann (Lect.).
<i>Geography</i> . . .	Takuji Ogawa.	—	—
<i>Agriculture</i> . . .	—	—	E. Wilezek.
<i>Botany</i> . . .	—	<i>Biology.</i>	H. Blanc.
<i>Zoology</i> . . .	—	A. Davison.	—
<i>Anthropology</i> . . .	Buntaro Adachi.	<i>Metallurgy.</i>	—
<i>Anatomy</i> . . .	Buntaro Suzuki.	H. Wysor.	A. Roud (Extraord.).
<i>Physiology</i> . . .	Semmatsu Amaya.	—	M. Arthus.
<i>Pharmacology</i> . . .	Kurata Morishima.	—	—
<i>Medicine</i> . . .	K. Nakanishi.	—	—
<i>Surgery</i> . . .	Shikanosuke Inoko.	—	C. Roux.
<i>Pathology</i> . . .	Akira Fujinami.	—	L. Bourget.
<i>Bacteriology</i> . . .	T. Matsushita.	A. Davison.	B. Galli-Valerio.
<i>Psychology</i> . . .	Matataro Matsumoto.	J. M. Mecklin.	—

UNIVERSITY.	LEEDS.	LEHIGH.	LEIPZIG.
<i>SITE</i> . . .	Leeds, England.	S. Bethlehem, Pa., U.S.A.	Leipzig, Ger.
<i>FOUNDED</i> . . .	1904.	1866.	1409.
<i>PRINCIPAL</i> . . .	M. E. Sadler (Vice-Ch.).	H. S. Drinker.	H. Bruns.
<i>REGISTRAR</i> . . .	(Vac.)	R. W. Walters.	J. B. Flade.
Senior Professors:			
<i>Chemistry</i> . . .	{ A. Smithells.	H. M. Ullmann.	A. Hantzsch.
	{ A. G. Green (Tinct.).	W. S. Franklin.	O. Wiener.
<i>Physics</i> . . .	{ J. B. Cohen (Org.).	C. L. Thornburg.	O. Hölder.
<i>Mathematics</i> . . .	W. H. Bragg.	—	H. Bruns.
<i>Astronomy</i> . . .	L. J. Rogers.	—	—
<i>Engineering</i> . . .	J. Goodman.	{ J. F. Klein (Mech.).	—
		{ W. Esty (Elec.).	—
		{ J. W. Richards (Metall.).	—
		{ H. Eckfeldt (Min.).	—
		{ F. P. McKibben	—
		{ (Civ.).	—
<i>Geology</i> . . .	P. F. Kendall.	B. L. Miller.	H. Stille.
<i>Mineralogy</i> . . .	—	—	F. Rinne.
<i>Geography</i> . . .	—	"	J. Partsch.
<i>Agriculture</i> . . .	R. S. Seton.	—	W. Kirchner.
<i>Botany</i> . . .	J. H. Priestley.	R. W. Hall.	W. Pfeffer.
<i>Zoology</i> . . .	W. Garstang.	"	K. Chun.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	J. K. Jamieson.	—	K. Rabl.
<i>Physiology</i> . . .	De B. Birch.	R. W. Hall.	E. Hering.
<i>Pharmacology</i> . . .	H. J. Campbell.	—	R. Boehm.
<i>Medicine</i> . . .	T. W. Griffith.	—	A. v. Strümpell.
<i>Surgery</i> . . .	R. L. Knaggs.	—	E. Payr.
<i>Pathology</i> . . .	A. S. Grünbaum.	—	F. Marchand.
<i>Bacteriology</i> . . .	"	R. W. Hall.	—
<i>Psychology</i> . . .	—	P. Hughes.	W. Wundt.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	LEMBERG.	LEMBERG TECH. HOCHSCH.	LEYDEN.
<i>SITE</i> . . .	Lemberg, Austria.	Lemberg, Austria.	Leyden, Holland.
<i>FOUNDED</i> . . .	1661.	1873.	1575.
<i>PRINCIPAL</i> . . .	A. Beck.	E. Hauswald.	—
<i>REGISTRAR</i> . . .	J. Jordan.	Rosinkiewicz.	G. Jelgersma.
Senior Professors:			
<i>Chemistry</i> . . .	S. Tolloczko.	{ Niementowski. { Pawlewski.	{ A. P. N. Franchimont { (Org.). { F. A. H. Schreine- makers.
<i>Physics</i> . . .	I. Zakrzewski.	{ Olearski. { Godlewski.	{ H. A. Lorentz. { H. Kamerlingh Onnes.
<i>Mathematics</i> . . .	J. Puzyna.	Dziwinski.	J. C. Kluyver.
<i>Astronomy</i> . . .	M. Ernst.	Grabowski.	W. de Sitter.
<i>Engineering</i> . . .	—	{ B. Maryniak. { K. Skibinski. Wisniowski.	—
<i>Geology</i> . . .	R. Zuber.	—	K. Martin.
<i>Mineralogy</i> . . .	E. Dunikowski.	—	—
<i>Geography</i> . . .	E. Romer.	—	—
<i>Agriculture</i> . . .	—	A. Karpinski.	—
<i>Botany</i> . . .	T. Ciesielski.	A. Maurizio.	J. M. Janse.
<i>Zoology</i> . . .	J. Nusbaum.	—	G. C. J. Vosmaer.
<i>Anthropology</i> . . .	H. Hadaczek.	—	—
<i>Anatomy</i> . . .	H. Kadyi.	—	J. Boeke.
<i>Physiology</i> . . .	A. Beck.	—	W. Einthoven.
<i>Pharmacology</i> . . .	L. Popielski.	—	E. C. van Leersum.
<i>Medicine</i> . . .	A. Gluzinski.	—	—
<i>Surgery</i> . . .	L. Rydygier.	—	J. A. Korteweg.
<i>Pathology</i> . . .	{ Z. Dmochowski. { J. Prus.	—	{ W. Nolen. { N. P. Tendeloo.
<i>Bacteriology</i> . . .	P. Kučera.	—	R. P. van Calcar.
<i>Psychology</i> . . .	K. Twardowski.	—	—

UNIVERSITY.	LIÈGE.	LILLE.	LILLE (Catholic).
<i>SITE</i> . . .	Liège, Belgium.	Lille, Fr.	Lyons, Fr.
<i>FOUNDED</i> . . .	1817.	—	1877.
<i>PRINCIPAL</i> . . .	A. Swaen.	G. Lyon.	A. Margerin.
<i>REGISTRAR</i> . . .	A. Lemaire (Sec.).	Peltier.	—
Senior Professors:			
<i>Chemistry</i> . . .	L. L. de Koninck.	{ A. Buisine. { P. Lemoult.	{ E. Lenoble. { Monnet.
<i>Physics</i> . . .	P. de Heen (Exper.).	{ B. Damien. { R. Swyngedauw.	{ A. Witz. { J. Delemer.
<i>Mathematics</i> . . .	{ C. le Paige. { J. Deruyts.	{ L. Demartres. { J. Clairin.	{ R. d'Adhémar. { de Salvart. E. Stoffaës.
<i>Astronomy</i> . . .	C. le Paige.	—	—
<i>Engineering</i> . . .	H. Dechamps.	—	—
<i>Geology</i> . . .	M. Lohest.	C. Barrois.	—
<i>Mineralogy</i> . . .	G. Cesaro.	—	Delépine.
<i>Geography</i> . . .	J. Halkin.	—	Guillaume.
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	A. Gravis.	C. E. Bertrand.	Carpentier.
<i>Zoology</i> . . .	D. Damas (Chargé).	A. Malaquin.	Van-Oye.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	A. Swaen.	C. Debierre.	Maurice.
<i>Physiology</i> . . .	L. Fredericq.	E. Wertheimer.	Baltus.
<i>Pharmacology</i> . . .	A. Gilkinet.	E. Gérard.	Willot.
<i>Medicine</i> . . .	F. Putzeys.	{ H. Fockeu. { J. Patoir.	A. Besson.
<i>Surgery</i> . . .	A. v. Winiwarter.	{ H. Gaudier. { Lambert.	—
<i>Pathology</i> . . .	F. Fraipont.	{ H. Surmont. { V. Carlier.	{ Rédier. { Lavrand.
<i>Bacteriology</i> . . .	X. Francotte.	A. Calmette.	Lemière.
<i>Psychology</i> . . .	E. Malvoz.	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	LISBON.	LIVERPOOL.	LONDON.
<i>SITE</i> . . .	Lisbon, Portugal.	Liverpool, Eng.	S. Kensington, London.
<i>FOUNDED</i> . . .	1911.	1903.	1836; Reorg. 1900.
<i>PRINCIPAL</i> . . .	J. Mattos.	Sir A. Dale.	Sir H. Miers.
<i>REGISTRAR</i> . . .	A. Pereira Machado.	P. Hebblethwaite.	P. J. Hartog.
Senior Professors:			{ J. M. Thomson.
<i>Chemistry</i> . . .	{ E. Burnay.	{ E. C. C. Baly (Inorg.)	{ J. Norman Collie (Org.).
	{ A. Machado.	{ B. Moore (Bio.).	{ H. Jackson (Org.).
<i>Physics</i> . . .	{ A. Lima.	L. Wilberforce.	{ C. H. Lees.
	{ A. de Pina Vidal.		{ F. T. Trouton.
<i>Mathematics</i> . . .	A. Lucas.	F. S. Carey.	{ M. J. M. Hill.
<i>Astronomy</i> . . .	P. Cunha.		{ S. A. F. White.
			{ L. N. G. Filon.
<i>Engineering</i> . . .	—	{ W. H. Watkinson.	{ J. A. Fleming (Elec.).
		{ E. W. Marchant (Elec.).	{ E. Wilson.
		{ S. W. Perrott (Civ.).	{ D. S. Capper.
		{ W. S. Abell (Nav. Arch.).	{ W. E. Dalby.
<i>Geology</i> . . .	A. Freire d'Andrade.	—	{ J. D. Cormack (Mech.).
<i>Mineralogy</i> . . .	F. Roquette.	—	E. J. Garwood.
<i>Geography</i> . . .	F. Silva Pelles.	—	F. V. Theobald.
<i>Botany</i> . . .	A. Pereira Coutinho.	R. J. Harvey Gibson.	H. J. Mackinder.
<i>Zoology</i> . . .	{ B. Osorio.	W. A. Herdman.	{ W. B. Bottomley.
	{ F. Mattozo.		{ F. W. Oliver.
<i>Anthropology</i> . . .	A. Costa Ferreira.	—	{ A. Dendy.
<i>Anatomy</i> . . .	Bello Moraes.	A. M. Paterson.	{ J. P. Hill.
<i>Physiology</i> . . .	M. Athias.	C. S. Sherrington.	{ K. Pearson.
<i>Pharmacology</i> . . .	Silvio Alves.	—	{ F. G. Parsons.
<i>Medicine</i> . . .	Azevedo Neves.	T. R. Glynn.	{ G. D. Thane.
<i>Surgery</i> . . .	M. Moreira, jr.	R. Parker.	{ D. Waterston.
<i>Pathology</i> . . .	Bettencourt Raposo.	E. E. Glynn.	{ W. D. Halliburton.
<i>Bacteriology</i> . . .	A. Bettencourt.	J. M. Beattie.	{ E. H. Starling.
<i>Psychology</i> . . .	J. de Mattos.	—	{ A. R. Cushny.
			{ Sir A. E. Wright.
			{ W. Bulloch.
			{ R. T. Hewlett.

UNIVERSITY.	LONDON.		
<i>SITE</i> . . .	Univ. Coll. and Hosp.	King's Coll. and Hosp.	CONSTITUENT MED. SCHS.
<i>FOUNDED</i> . . .	1862; 1828 (Hosp.).	1829; 1832 (Hosp.).	
<i>PRINCIPAL</i> . . .	{ T. G. Foster (Coll.).	{ R. M. Burrows (Coll.).	
	{ G. F. Blacker (Hosp.).	{ H. W. Lyle (Hosp.).	
<i>REGISTRAR</i> . . .	{ W. W. Seton (Coll.).	{ W. Smith (Coll.).	St. Bartholomew's.
Senior Professors:	{ L. R. Thomas (Hosp.).	{ C. Kelway (Hosp.).	Charing Cross.
<i>Chemistry</i> . . .	{ J. Norman Collie.	{ J. M. Thomson.	St. George's.
	{ F. G. Donnan.	{ H. Jackson (Org.).	Guy's.
<i>Physics</i> . . .	{ F. T. Trouton.	{ (Vac.)	King's College Hosp.
<i>Mathematics</i> . . .	{ M. J. M. Hill (Pure).	S. A. F. White.	London.
	{ L. N. G. Filon (App.).	J. B. Dale.	St. Mary's.
<i>Astronomy</i> . . .	L. N. G. Filon.	{ D. S. Capper (Mech.).	Middlesex.
<i>Engineering</i> . . .	{ J. A. Fleming (Elec.).	{ H. M. Waynforth (Civ.).	St. Thomas's.
	{ E. J. D. Cormack (Mech.).	T. F. Sibly.	Univ. College Hosp.
<i>Geology</i> . . .	E. J. Garwood.	—	Westminster.
<i>Geography</i> . . .	L. W. Lyde.	W. B. Bottomley.	London (Roy. Free
<i>Botany</i> . . .	F. W. Oliver.	A. Dendy.	Hosp.) Sch. Med. for
<i>Zoology</i> . . .	J. P. Hill.	D. Waterston.	Women.
<i>Anatomy</i> . . .	G. D. Thane.	W. D. Halliburton.	Lister Inst. of Prev.
<i>Physiology</i> . . .	E. H. Starling.	W. E. Dixon.	Med.
<i>Pharmacology</i> . . .	A. R. Cushny.	N. Tirard.	London Sch. Trop.
<i>Medicine</i> . . .	S. H. C. Martin.	Sir W. W. Cheyne, Bt.	Med.
<i>Surgery</i> . . .	A. E. J. Barker.	W. d'Este Emery.	Roy. Army Med. Coll.
<i>Pathology</i> . . .	C. Bolton.	R. T. Hewlett.	Roy. Naval Med.
<i>Bacteriology</i> . . .	F. H. Thiele.	—	School.
<i>Psychology</i> . . .	{ C. Spearman.	R. H. Steen.	Roy. Dental Hosp.
	{ B. Hart.		

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	LONDON.	LOUISIANA STATE.	LOUVAIN (Catholic).
<i>SITE</i> . . .	Imp. Coll. Sci. and Technol.	Baton Rouge, La., U.S.A.	Louvain, Belgium.
<i>FOUNDED</i> . . .	—	1860.	1426 ; 1797.
<i>PRINCIPAL</i> . . .	Sir A. Keogh.	T. D. Boyd.	P. Ladeuze.
<i>REGISTRAR</i> . . .	A. Gow.	J. L. Westbrook.	—
Senior Professors :			
<i>Chemistry</i> . . .	{ H. E. Armstrong. H. B. Baker.	C. E. Coates.	{ P. Henry. P. Bruylants.
<i>Physics</i> . . .	{ H. L. Callendar. Hon. R. J. Strutt.	T. W. Atkinson.	S. Demanet.
<i>Mathematics</i> . . .	{ A. R. Forsyth. J. Perry.	J. W. Nicholson.	J. C. de la Vallée Poussin.
<i>Astronomy</i> . . .	—	D. W. Guthrie.	Pasquier.
<i>Engineering</i> . . .	{ W. E. Dalby (Civ.). T. Mather (Elec.).	E. W. Kerr.	{ Ponthière. A. Dumont.
<i>Geology</i> . . .	W. W. Watts.	—	H. de Dorlodot.
<i>Mineralogy</i> . . .	—	—	F. Kaisin.
<i>Geography</i> . . .	—	—	J. van Battel.
<i>Agriculture</i> . . .	—	W. R. Dodson.	A. Theunis.
<i>Botany</i> . . .	J. B. Farmer.	A. T. Bell.	V. Grégoire.
<i>Zoology</i> . . .	A. Sedgwick.	W. H. Gates.	G. Gilson.
<i>Anthropology</i> . . .	Entom.	—	—
<i>Anatomy</i> . . .	H. M. Lefroy.	W. H. Dalrymple.	A. Salée.
<i>Physiology</i> . . .	Mining.	—	E. Masoin.
<i>Pharmacology</i> . . .	S. H. Cox.	—	F. Ranwez.
<i>Medicine</i> . . .	Metallurgy.	—	A. Lemaire.
<i>Surgery</i> . . .	W. A. Carlyle.	—	T. Debaisieux.
<i>Pathology</i> . . .	Fuels.	—	J. Denys.
<i>Bacteriology</i> . . .	W. A. Bone.	—	—
<i>Psychology</i> . . .	—	A. B. Coffey.	A. Thiery.

UNIVERSITY.	LUND.	LYONS.	LYONS (Catholic).
<i>SITE</i> . . .	Lund, Sweden.	Lyons, Fr.	Lyons.
<i>FOUNDED</i> . . .	1666.	1808.	1875.
<i>PRINCIPAL</i> . . .	A. Kock.	P. Joubin.	Mgr. F. Lavallée.
<i>REGISTRAR</i> . . .	O. Ernberg (Sec.).	E. Bayle.	L. Bernard.
Senior Professors :			
<i>Chemistry</i> . . .	J. M. Lovén.	{ L. Vignon. P. Barbier.	G. Lupercq.
<i>Physics</i> . . .	{ J. R. Rydberg. V. W. Ekman.	G. Gouy.	A. Chassy.
<i>Mathematics</i> . . .	T. Brodén.	{ Dulac. J. B. Flamme.	{ R. Alezais (Pure). C. Guillon.
<i>Astronomy</i> . . .	C. V. L. Charlier.	—	G. Onofrio.
<i>Engineering</i> . . .	—	—	M. de Sparre.
<i>Geology</i> . . .	J. C. Moberg.	C. Depéret.	C. Roux.
<i>Mineralogy</i> . . .	—	A. Offret.	A. Collet.
<i>Geography</i> . . .	H. H. v. Schwerin.	E. de Martonne.	C. Roux (Phys.).
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	{ S. S. Murbeck. B. Lidfors.	R. Gérard.	C. Roux.
<i>Zoology</i> . . .	H. T. S. Wallengren.	R. Koehler.	—
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	{ C. M. Fürst. I. Broman.	J. Renaut.	—
<i>Physiology</i> . . .	T. L. Thunberg.	{ P. Morat. R. Dubois.	—
<i>Pharmacology</i> . . .	C. E. Overton.	A. Florence.	—
<i>Medicine</i> . . .	{ K. A. Petré. C. H. Hildebrand.	A. Roque.	—
<i>Surgery</i> . . .	J. L. Borelius.	M. Jaboulay.	—
<i>Pathology</i> . . .	M. J. K. A. Forssman.	C. Lesieur.	—
<i>Bacteriology</i> . . .	H. Bendz.	—	—
<i>Psychology</i> . . .	P. A. S. Herrlin.	—	E. Blanc (Phil.).

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	MCGILL.		MADRAS.*
<i>SITE</i> . . .	Montreal, Canada.	Vancouver and Victoria, B.C., Can.	Madras, India.
<i>FOUNDED</i> . . .	1821.	1906.	1857.
<i>PRINCIPAL</i> . . .	W. Peterson.	Geo. E. Robinson.	—
<i>REGISTRAR</i> . . .	J. A. Nicholson.	Geo. R. Kendall.	F. Dewsbury.
Senior Professors:			
<i>Chemistry</i> . . .	R. F. Ruttan.	G. R. Kendall (Lect.).	{ Lt.-Col. van Geysel. W. E. Smith.
<i>Physics</i> . . .	H. T. Barnes.	J. G. Davidson.	R. L. Jones.
<i>Mathematics</i> . . .	J. Harkness.	{ G. E. Robinson. E. H. Russell (at Vict.).	R. Littlehales.
<i>Astronomy</i> . . .	—	—	—
<i>Engineering</i> . . .	{ H. M. MacKay (Civ.). L. A. Herdt (Elec.). J. B. Porter (Min.). R. J. Durley (Mech.).	{ H. K. Dutcher (Civ.). D. W. Munn (Mech.).	W. H. James.
<i>Geology</i> . . .	F. D. Adams.	—	—
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	F. C. Harrison.	—	—
<i>Botany</i> . . .	F. E. Lloyd.	—	P. F. Fyson.
<i>Zoology</i> . . .	A. Willey.	—	Capt. T. H. Symons (Biol.).
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	(Vac.)	—	Major W. J. Niblock.
<i>Physiology</i> . . .	N. H. Alcock.	—	Major C. Donovan.
<i>Pharmacology</i> . . .	A. D. Blackader.	—	Capt. E. W. Browne.
<i>Medicine</i> . . .	F. G. Finley.	—	Lt.-Col. R. Robertson.
<i>Surgery</i> . . .	G. E. Armstrong.	—	Major P. C. Gabbett.
<i>Pathology</i> . . .	J. G. Adami.	—	Major H. Kirkpatrick.
<i>Bacteriology</i> . . .	F. C. Harrison.	—	Capt. E. A. Roberts.
<i>Psychology</i> . . .	W. Caldwell.	J. Henderson.	—

* Examining Univ. Names given are of Presidency and Medical Colleges.

UNIVERSITY.	MADRID.	MAINE.	MALTA.
<i>SITE</i> . . .	Madrid, Spain.	Orono, Me., U.S.A.	Valetta, Malta.
<i>FOUNDED</i> . . .	1509-1836.	1865.	1769.
<i>PRINCIPAL</i> . . .	R. Conde y Luque.	R. J. Aley.	Hon. E. Magro.
<i>REGISTRAR</i> . . .	M. Carrasco é Hídalgo.	J. A. Gannett.	J. Reynolds.
Senior Professors:			
<i>Chemistry</i> . . .	{ E. Piñerua y Alvarez. J. Muñoz del Castillo.	R. H. McKee.	T. Zamonit.
<i>Physics</i> . . .	I. González y Marti.	J. S. Stevens.	T. Agius.
<i>Mathematics</i> . . .	{ L. O. de Toledo y Zulueta. C. Jimenez Rueda.	J. N. Hart.	W. F. Nixon.
<i>Astronomy</i> . . .	F. Iñiguez é Iñiguez.	—	—
<i>Engineering</i> . . .	—	{ H. S. Boardman (Civ.). W. E. Barrows (Elec.). A. C. Jewett (Mech.).	G. L. Gatt.
<i>Geology</i> . . .	E. Herández Pacheco.	L. H. Merrill.	F. Debono.
<i>Mineralogy</i> . . .	O de Buen y del Cos.	—	—
<i>Geography</i> . . .	F. Vidal y Careta.	—	—
<i>Agriculture</i> . . .	—	L. S. Merrill.	—
<i>Botany</i> . . .	O. de Buen y del Cos.	M. A. Chrysler.	F. Debono.
<i>Zoology</i> . . .	A. Segovia y Corrales.	—	—
<i>Anthropology</i> . . .	M. Anton y Ferrándiz.	—	—
<i>Anatomy</i> . . .	J. Calleja y Sánchez.	—	C. Samut.
<i>Physiology</i> . . .	J. Gómez Ocaña.	—	R. Samut.
<i>Pharmacology</i> . . .	—	W. F. Jackman.	I. Cassar.
<i>Medicine</i> . . .	I. Rodriguez y Fernández.	—	C. Mifsud.
<i>Surgery</i> . . .	J. Ribera y Sans.	—	S. Cassar.
<i>Pathology</i> . . .	A. G. Cabañas.	—	—
<i>Bacteriology</i> . . .	—	F. L. Russell.	C. Samut.
<i>Psychology</i> . . .	L. Simarro y Lacabra.	W. Craig.	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	MANCHESTER.	MANILA.	MANITOBA.
<i>SITE</i> . . .	Manchester, Eng.	Manila, Philippine Islands.	Winnipeg, Canada.
<i>FOUNDED</i> . . .	1880; 1903.	1611.	1877.
<i>PRINCIPAL</i> . . .	F. E. Weiss.	Rev. R. Velásquez.	J. A. Maclean.
<i>REGISTRAR</i> . . .	E. Fiddes.	B. C. Alcuz.	W. J. Spence.
Senior Professors:	{ H. B. Dixon (Inorg.).	{ M. Oirola.	M. A. Parker.
<i>Chemistry</i> . . .	{ A. Lapworth (Org.).	{ J. Garrido (Anal.).	F. Allen.
<i>Physics</i> . . .	{ E. Knecht (Tech.).	P. Rosa.	N. B. MacLean.
<i>Mathematics</i> . . .	E. Rutherford.	A. Alfageme.	—
<i>Astronomy</i> . . .	H. Lamb.	—	—
<i>Engineering</i> . . .	J. E. Petavel.	F. Reynolds.	{ E. E. Brydone-Jack (Civ.).
<i>Geology</i> . . .	Sir T. H. Holland.	F. Llanos.	{ E. P. Fetherstonhaugh (Elec.).
<i>Mineralogy</i> . . .	—	—	R. C. Wallace.
<i>Geography</i> . . .	J. McFarlane (Lect.).	—	—
<i>Agriculture</i> . . .	T. J. Young (Lect.).	—	—
<i>Botany</i> . . .	{ F. E. Weiss.	L. Guerrero.	A. H. R. Buller.
<i>Zoology</i> . . .	{ W. H. Lang (Cryptog.).	F. Llanos.	C. J. Triggerson.
<i>Anthropology</i> . . .	S. J. Hickson.	—	—
<i>Anatomy</i> . . .	—	M. Martin.	—
<i>Physiology</i> . . .	G. Elliot Smith.	F. Masip.	S. Vincent.
<i>Pharmacology</i> . . .	W. Stirling.	F. Osés.	—
<i>Medicine</i> . . .	R. B. Wild.	G. de Ocampo.	—
<i>Surgery</i> . . .	G. R. Murray (Syst.).	J. Miciano.	—
<i>Pathology</i> . . .	{ J. W. Smith (Syst.).	I. Ortigas.	G. Bell.
<i>Bacteriology</i> . . .	{ W. Thorburn (Clin.).	L. Guerrero.	—
<i>Psychology</i> . . .	A. E. Boycott.	—	—
	A. S. Delépine.		
	T. H. Pear (Lect.).		

UNIVERSITY.	MARBURG.	MASSACHUSETTS INST. TECHNOL.	MELBOURNE.
<i>SITE</i> . . .	Marburg, Ger.	Boston, Mass., U.S.A.	Melbourne, Australia.
<i>FOUNDED</i> . . .	1527.	1861.	1853.
<i>PRINCIPAL</i> . . .	W. Troeltsch.	R. C. Maclaurin (Pres.).	Sir J. Madden (Chanc.).
<i>REGISTRAR</i> . . .	—	W. Humphreys.	J. P. Bainbridge.
Senior Professors:			
<i>Chemistry</i> . . .	{ T. Zincke.	H. P. Talbot.	D. O. Masson.
<i>Physics</i> . . .	{ E. Schmidt.	C. R. Cross.	T. R. Lyle.
<i>Mathematics</i> . . .	F. Richarz.	H. W. Tyler.	E. J. Nanson.
<i>Astronomy</i> . . .	C. Hensel.	—	T. R. Lyle.
<i>Engineering</i> . . .	—	{ R. H. Richards (Min.).	H. Payne.
<i>Geology</i> . . .	E. Kayser.	{ D. C. Jackson (Elec.).	E. W. Skeats.
<i>Mineralogy</i> . . .	M. Bauer.	{ C. M. Spofford (Civ.).	—
<i>Geography</i> . . .	Schultze.	{ E. F. Miller (Mech.).	T. Cherry.
<i>Agriculture</i> . . .	—	W. Lundgren.	A. J. Ewart.
<i>Botany</i> . . .	A. Meyer.	C. H. Warren.	W. B. Spencer.
<i>Zoology</i> . . .	E. Korschelt.	—	R. J. A. Berry.
<i>Anthropology</i> . . .	—	<i>Biology.</i>	—
<i>Anatomy</i> . . .	E. Gasser.	W. T. Sedgwick.	W. A. Osborne.
<i>Physiology</i> . . .	F. Schenck.	—	A. C. H. Rothera (Lect.).
<i>Pharmacology</i> . . .	A. Gürber.	—	H. Maudsley (Lect.).
<i>Medicine</i> . . .	M. Matthes.	—	F. D. Bird (Lect.).
<i>Surgery</i> . . .	F. Koenig.	—	H. B. Allen.
<i>Pathology</i> . . .	M. Matthes.	—	R. J. Bull (Lect.).
<i>Bacteriology</i> . . .	E. v. Behring.	S. C. Prescott.	W. R. B. Gibson.
<i>Psychology</i> . . .	P. Natorp.	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	MESSINA.	MICHIGAN.	MILAN POLYTECH.
<i>SITE</i> . . .	Messina, Italy.	Ann Arbor, Mich., U.S.A.	Milan, Italy.
<i>FOUNDED</i> . . .	1548, 1838.	1837.	1863.
<i>PRINCIPAL</i> . . .	G. B. Rizzo.	H. B. Hutchins (Pres.).	—
<i>REGISTRAR</i> . . .	N. Mangano	A. G. Hall.	—
Senior Professors:		{ E. D. Campbell (Anal.)	{ G. Koerner.
<i>Chemistry</i> . . .	C. U. Zanetti.	{ M. Gomberg (Org.)	{ L. Gabba.
		{ S. L. Bigelow (Gen.)	{ R. Arno.
<i>Physics</i> . . .	O. M. Corbino.	{ J. O. Reed.	{ O. Murani.
		{ K. E. Guthe.	{ M. Abraham.
<i>Mathematics</i> . . .	V. Martinetti.	{ W. W. Beman.	{ M. Cisotti.
		{ A. Ziwet (App.)	—
<i>Astronomy</i> . . .	—	W. J. Hussey.	—
		{ M. E. Cooley (Mech.)	{ U. Ancona.
<i>Engineering</i> . . .	—	{ H. C. Sadler (Marine).	{ E. Paladini.
		{ G. W. Patterson (Elec.)	—
<i>Geology</i> . . .	—	{ H. E. Riggs (Civ.)	E. Mariani.
<i>Mineralogy</i> . . .	G. La Valle.	W. H. Hobbs.	E. Artini.
<i>Geography</i> . . .	G. Battista Rizzo.	E. H. Kraus.	—
<i>Agriculture</i> . . .	—	F. Roth (Forestry).	—
			{ V. Alpe.
<i>Botany</i> . . .	—	F. C. Newcombe.	{ A. Serpieri.
<i>Zoology</i> . . .	—	J. E. Reighard.	<i>Machine Constr.</i>
<i>Anthropology</i> . . .	—	—	F. Giordano.
<i>Anatomy</i> . . .	P. Ferraro.	G. L. Streeter.	G. Belluzzo.
<i>Physiology</i> . . .	—	W. P. Lombard.	<i>Ind. Mech.</i>
<i>Pharmacology</i> . . .	—	A. B. Stevens.	G. Colombo.
<i>Medicine</i> . . .	U. Gabbi.	W. B. Hinsdale.	M. Baroni.
<i>Surgery</i> . . .	—	C. B. G. de Nancrede.	—
<i>Pathology</i> . . .	G. Weiss.	A. S. Warthin.	—
<i>Bacteriology</i> . . .	—	F. G. Novy.	—
<i>Psychology</i> . . .	—	W. B. Pillsbury.	—

UNIVERSITY.	MINNESOTA.	MISSOURI.	MODENA.
<i>SITE</i> . . .	Minneapolis, U.S.A.	Columbia and Rolla, Mo., U.S.A.	Modena, Italy.
<i>FOUNDED</i> . . .	1868.	1839.	1683.
<i>PRINCIPAL</i> . . .	G. E. Vincent.	A. R. Hill.	G. Triani.
<i>REGISTRAR</i> . . .	E. B. Pierce.	I. Switzler.	M. Castellotto.
Senior Professors:			
<i>Chemistry</i> . . .	G. B. Frankforter.	{ S. Calvert.	G. Magnanini.
		{ W. G. Brown.	
<i>Physics</i> . . .	J. Zeleny.	{ A. L. McRae.	D. Mazotto (Exper.).
		{ O. M. Stewart.	
<i>Mathematics</i> . . .	J. F. Downey.	{ G. R. Dean.	{ E. Bortolotti.
		{ E. R. Hedrick.	{ U. Amaldi.
<i>Astronomy</i> . . .	F. P. Leavenworth.	R. H. Baker.	—
<i>Engineering</i> . . .	F. C. Shenhon.	{ E. G. Harris.	{ U. Amaldi.
		{ F. P. Spalding.	{ E. Bortolotti.
<i>Geology</i> . . .	W. H. Emmons.	E. B. Branson.	D. Pantanelli.
<i>Mineralogy</i> . . .	"	C. F. Marbut.	"
<i>Geography</i> . . .	"	"	—
<i>Agriculture</i> . . .	A. F. Woods.	{ F. B. Mumford.	—
		{ M. F. Miller.	—
<i>Botany</i> . . .	F. E. Clements.	G. M. Reid.	G. Battista De Toni.
<i>Zoology</i> . . .	H. F. Nachtrieb.	{ W. C. Curtis.	A. Coggi.
		{ G. Lefevre.	—
<i>Anthropology</i> . . .	S. G. Smith.	T. B. Veblen.	—
<i>Anatomy</i> . . .	T. G. Lee.	C. M. Jackson.	G. Sperino.
<i>Physiology</i> . . .	R. O. Beard.	C. W. Greene.	E. Cavazzani.
<i>Pharmacology</i> . . .	"	W. "	G. Cesari.
<i>Medicine</i> . . .	C. L. Greene.	—	G. Zagari.
<i>Surgery</i> . . .	J. E. Moore.	D. H. Dolley.	V. Remedi.
<i>Pathology</i> . . .	F. F. Wesbrook.	M. "	G. Tarozzi.
<i>Bacteriology</i> . . .	"	M. W. Meyer.	G. L. Valenti.
<i>Psychology</i> . . .	N. Wilde.		U. Pizzoli.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	MONTPELLIER.	MOSCOW.	MOUNT ALLISON.
<i>SITE</i> . . .	Montpellier, Fr.	Moscow, Russia.	Sackville, New Brunswick, Can.
<i>FOUNDED</i> . . .	1289.	1755.	1862.
<i>PRINCIPAL</i> . . .	A. Benoist.	M. K. Lubavsky.	Rev. B. C. Borden.
<i>REGISTRAR</i> . . .	Izard.	S. T. Preobrajensky.	W. M. Tweedie.
Senior Professors:			
<i>Chemistry</i> . . .	de Forerand.	T. A. Kablukow.	H. E. Bigelow.
<i>Physics</i> . . .	Meslin.	{ N. A. Umow. B. Stankewitch.	F. E. Whetlock.
<i>Mathematics</i> . . .	Fabry.	{ K. A. Andreev. A. P. Sokolow.	S. W. Hunton.
<i>Astronomy</i> . . .	Denjoy.	V. K. Zerassky.	—
<i>Engineering</i> . . .	Dautheville.	N. E. Zukowsky.	{ L. Killam. J. W. Crowell.
<i>Geology</i> . . .	Delage.	A. P. Pavlow.	—
<i>Mineralogy</i> . . .	Curic.	—	—
<i>Geography</i> . . .	—	E. J. Leist.	—
<i>Agriculture</i> . . .	—	A. N. Sabinin	—
<i>Botany</i> . . .	Flahault.	M. T. Golenkin.	—
<i>Zoology</i> . . .	Duboscq.	{ G. A. Kojevnikov. A. N. Sewerzow.	} To be appointed.
<i>Anthropology</i> . . .	Joubin (Archæol.).	D. N. Anutchin.	
<i>Anatomy</i> . . .	Gilis.	{ D. N. Zernow. P. I. Karusin.	—
<i>Physiology</i> . . .	Hédon.	{ P. G. Statkewitch. L. S. Morochowetz.	—
<i>Pharmacology</i> . . .	{ Ville. Hamelin.	S. T. Tchirwinsky.	—
<i>Medicine</i> . . .	Carrieu.	{ N. A. Saveliew. P. M. Popow.	—
<i>Surgery</i> . . .	Tédenat.	{ T. K. Spijarny. A. V. Martinow.	—
<i>Pathology</i> . . .	Grasset.	{ N. A. Mitropolsky. S. E. Beresowsky (Surg.)	—
<i>Bacteriology</i> . . .	Bosc.	V. T. Kedrowsky.	—
<i>Psychology</i> . . .	—	{ L. M. Lopatin. G. I. Tchelpanow.	C. A. S. Dwight.

UNIVERSITY.	MOUNT HOLYOKE COLL.	MÜNSTER.	MUNICH.
<i>SITE</i> . . .	S. Hadley, Mass., U.S.A.	Münster, i/W. Ger.	Munich, Bavaria.
<i>FOUNDED</i> . . .	1837.	1773.	1472.
<i>PRINCIPAL</i> . . .	Mary E. Woolley.	P. Krückmann.	K. Galreis.
<i>REGISTRAR</i> . . .	Caroline B. Greene.	L. Meyer.	E. Einhauser.
Senior Professors:			
<i>Chemistry</i> . . .	Mary E. Holmes.	H. Salkowski.	A. Ritter v. Baeyer.
<i>Physics</i> . . .	Elizabeth R. Laird.	G. Schmidt.	W. C. Röntgen.
<i>Mathematics</i> . . .	Sarah E. Smith.	W. Killing.	F. Lindemann.
<i>Astronomy</i> . . .	Anne S. Young.	P. Plassmann (Lect.).	H. Ritter v. Seeliger.
<i>Engineering</i> . . .	—	—	—
<i>Geology</i> . . .	Mignon Talbot.	K. Busz.	A. Rothpletz (Dean).
<i>Mineralogy</i> . . .	—	—	P. H. Ritter v. Groth.
<i>Geography</i> . . .	—	W. Meinardus.	E. v. Drygalski.
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	Alma G. Stokey.	K. Correns.	L. Radlkofer.
<i>Zoology</i> . . .	Cornelia M. Clapp.	W. Stempell.	R. Ritter v. Hertwig.
<i>Anthropology</i> . . .	—	—	J. Ranke.
<i>Anatomy</i> . . .	—	E. Ballowitz.	{ J. Rückert. S. Mollier.
<i>Physiology</i> . . .	Abby H. Turner.	R. Rosemann.	O. Frank.
<i>Pharmacology</i> . . .	—	—	H. v. Tappeiner.
<i>Medicine</i> . . .	—	—	F. Ritter v. Müller.
<i>Surgery</i> . . .	—	—	O. Ritter v. Angerer.
<i>Pathology</i> . . .	—	—	M. Borst.
<i>Bacteriology</i> . . .	—	—	M. Ritter v. Gruber.
<i>Psychology</i> . . .	E. B. Talbot.	Becker.	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	MUNICH TECH. SCH.	NANCY.	NAPLES.
<i>SITE</i> . . .	Munich, Bavaria.	Nancy, Fr.	Naples, Italy.
<i>FOUNDED</i> . . .	—	1573.	1226.
<i>PRINCIPAL</i> . . .	S. Günther.	C. Adam.	L. Bianchi.
<i>REGISTRAR</i> . . .	—	H. Olivier.	G. Tartufari.
Senior Professors:			
<i>Chemistry</i> . . .	{ G. Schultz (Tech.) K. Lintner. A. Lipp (Org.)	{ A. Guntz. P. T. Muller. J. Minguin.	A. Oglialoro-Todara.
<i>Physics</i> . . .	{ E. Voit. O. Knoblauch.	{ C. Gutton. E. Rothé.	M. Cantone.
<i>Mathematics</i> . . .	{ L. Burmester. W. v. Dyck.	{ H. Vogt. Husson.	{ G. Torelli. F. Contarino.
<i>Astronomy</i> . . .	—	—	—
<i>Engineering</i> . . .	{ K. Hager. F. Loewe. F. Kreuter. W. Dietz.	—	—
<i>Geology</i> . . .	K. Oebbek.	R. Nicklès.	F. Bassani.
<i>Mineralogy</i> . . .	—	J. Thoulet.	E. Scacchi.
<i>Geography</i> . . .	—	—	G. De Lorenzo (Phys.).
<i>Agriculture</i> . . .	{ F. v. Soxhlet (Chem.) K. Kraus.	B. Auerbach.	—
<i>Botany</i> . . .	—	—	F. Cavara.
<i>Zoology</i> . . .	—	L. Cuénot.	F. S. Monticelli.
<i>Anthropology</i> . . .	<i>Machinery.</i>	—	V. Giuffrida-Ruggeri.
<i>Anatomy</i> . . .	E. v. Hoyer.	P. Ancel.	G. Antonelli.
<i>Physiology</i> . . .	M. Schröter.	E. Meyer.	F. Bottazzi (Exper.).
<i>Pharmacology</i> . . .	A. Föppl.	—	P. Marfori.
<i>Medicine</i> . . .	W. Lynen.	P. Spillmann.	A. Cardarelli.
<i>Surgery</i> . . .	P. v. Lossow.	{ F. Gross. T. Weiss.	A. D'Antona.
<i>Pathology</i> . . .	K. Heinke.	A. Vautrin.	{ P. Castellino. D. Morisani.
<i>Bacteriology</i> . . .	J. Ossanna.	—	N. Pane.
<i>Psychology</i> . . .	R. Camerer.	—	C. Corlucci (Extraord.).
	R. Krell.	—	
	L. Kadrnocka.	—	

UNIVERSITY.	NAPLES POLYTECH.	NATAL UNIV. COLL.	NEBRASKA.
<i>SITE</i> . . .	Naples, Italy.	Pietermaritzburg, S. Africa.	Lincoln, Neb., U.S.A.
<i>FOUNDED</i> . . .	1863.	1910.	1869.
<i>PRINCIPAL</i> . . .	U. Masoni.	—	S. Avery.
<i>REGISTRAR</i> . . .	D. Cicotti.	D. Robb.	E. M. Rutledge.
Senior Professors:			
<i>Chemistry</i> . . .	O. Rebuffat.	R. B. Denison.	B. Dales.
<i>Physics</i> . . .	L. Lombardi.	P. Mesham.	C. A. Skinner.
<i>Mathematics</i> . . .	R. Nicodemi.	W. N. Roseveare.	E. W. Davis.
<i>Astronomy</i> . . .	—	—	G. D. L. Swezey.
<i>Engineering</i> . . .	{ U. Masoni. L. Ferrara.	—	{ O. V. P. Stout (Civ.) G. H. Morse (Elec.) C. R. Richards (Mech.).
<i>Geology</i> . . .	L. Dell'Erba.	J. W. Bewe.	E. H. Barbour.
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	—	—	G. E. Condra.
<i>Agriculture</i> . . .	—	—	E. A. Burnett.
<i>Botany</i> . . .	—	J. W. Bewe.	C. E. Bessey.
<i>Zoology</i> . . .	—	E. Warren.	R. H. Wolcott.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	—	—	C. W. McC. Poynter.
<i>Physiology</i> . . .	—	—	A. E. Guenther.
<i>Pharmacology</i> . . .	—	—	R. A. Lyman.
<i>Medicine</i> . . .	—	—	W. O. Bridges.
<i>Surgery</i> . . .	—	—	A. F. Jonas.
<i>Pathology</i> . . .	—	—	A. B. Somers.
<i>Bacteriology</i> . . .	—	—	H. H. Waite.
<i>Psychology</i> . . .	—	—	H. K. Wolfe.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	NEUCHÂTEL.	NEVADA.	NEW YORK.
SITE . . .	Neuchâtel, Switz.	Reno, Nevada, U.S.A.	New York, U.S.A.
FOUNDED . . .	1838, 1909.	1873, 1886.	1831.
PRINCIPAL . . .	A. Châtelain.	J. E. Stubbs.	E. E. Brown.
REGISTRAR . . .	A. Dubied.	Louise M. Sissa.	G. C. Sprague.
Senior Professors :			
Chemistry . . .	{ O. Billeter. H. Rivier.	M. Adams.	A. E. Hill.
Physics . . .	A. Jaquerod.	L. W. Hartman.	D. W. Hering.
Mathematics . . .	G. Du Pasquier.	C. Haseman.	T. W. Edmondson.
Astronomy . . .	E. Le Grand Roy.	—	"
Engineering . . .	—	H. P. Boardman.	C. W. Bliss.
Geology . . .	H. Schardt.	W. S. T. Smith.	J. E. Woodman.
Mineralogy . . .	—	"	"
Geography . . .	—	—	"
Agriculture . . .	—	G. H. True.	" <i>Biology.</i>
Botany . . .	H. Spinner.	P. B. Kennedy.	C. L. Bristol.
Zoology . . .	O. Fuhrmann.	P. Frandsen (Biol.).	—
Anthropology . . .	—	—	R. Binder.
Anatomy . . .	O. Fuhrmann.	—	H. D. Senior.
Physiology . . .	A. Châtelain.	<i>Mining and Metallurgy.</i>	H. C. Jackson.
Pharmacology . . .	—	G. J. Young.	G. B. Wallace.
Medicine . . .	—	—	E. Le Fevre.
Surgery . . .	—	—	J. D. Bryant.
Pathology . . .	—	—	E. K. Dunham.
Bacteriology . . .	E. Béranek.	W. B. Mack.	W. H. Park.
Psychology . . .	—	—	J. E. Lough.

UNIVERSITY.	NEW YORK STATE.	NEW ZEALAND.	
SITE . . .	Albany, N.Y.	Auckland, N.Z.	Canterbury Coll., Christchurch, N.Z.
FOUNDED . . .	1784.	—	1874.
PRINCIPAL . . .	St. Clair McKelway.	—	T. G. R. Blunt (Chair- man).
REGISTRAR . . .	O. V. Huffman (Sec., Bd. Examrs.).	C. M. Nelson.	G. H. Mason.
Senior Professors :			
Chemistry . . .		F. D. Brown.	W. P. Evans.
Physics . . .		"	C. C. Farr.
Mathematics . . .		H. W. Segar.	J. P. Gabbatt.
Astronomy . . .		—	—
Engineering . . .		—	R. J. Scott.
Geology . . .		A. W. P. Thomas.	R. Speight (Lect.).
Mineralogy . . .		—	—
Geography . . .	(Composed of all	—	—
Agriculture . . .	Univs. and Schs. in the	—	—
Botany . . .	State of N.Y.; regu-	A. W. P. Thomas (Biol.).	C. Chilton.
Zoology . . .	lates all secular pro-	"	"
Anthropology . . .	fessions.)	—	—
Anatomy . . .		—	—
Physiology . . .		—	—
Pharmacology . . .		—	—
Medicine . . .		—	—
Surgery . . .		T. C. Savage.	—
Pathology . . .		—	—
Bacteriology . . .		—	—
Psychology . . .		—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	NEW ZEALAND.		NORTH CAROLINA.
<i>SITE</i> . . .	Otago Univ., Dunedin.	Wellington, N.Z.	Chapel Hill, N.C., U.S.A.
<i>FOUNDED</i> . . .	1869.	1870.	1789.
<i>PRINCIPAL</i> . . .	J. Allen.	Sir R. Stout (Chanc.).	F. P. Venable.
<i>REGISTRAR</i> . . .	H. Chapman.	B. Hector.	T. J. Wilson, jr.
Senior Professors:			
<i>Chemistry</i> . . .	J. K. H. Inglis.	{ F. D. Brown. W. P. Evans.	C. H. Hertzy.
<i>Physics</i> . . .	J. Shand.	T. H. Laby. D. J. Richards.	A. H. Patterson.
<i>Mathematics</i> . . .	D. J. Richards.	{ H. W. Segar. D. K. Picken.	W. Cain.
<i>Astronomy</i> . . .	—	—	A. H. Patterson.
<i>Engineering</i> . . .	—	R. J. Scott.	M. H. Stacy.
<i>Geology</i> . . .	P. Marshall.	{ P. Marshall. A. P. W. Thomas.	C. Cobb.
<i>Mineralogy</i> . . .	—	P. Marshall.	"
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	—	{ W. B. Benham. C. Chilton. H. B. Kirk.	W. C. Coker.
<i>Zoology</i> . . .	W. B. Benham.	"	H. V. P. Wilson.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	J. H. Scott.	J. H. Scott.	C. S. Mangum.
<i>Physiology</i> . . .	J. Malcolm.	J. Malcolm.	I. H. Manning.
<i>Pharmacology</i> . . .	—	—	W. de B. MacNider.
<i>Medicine</i> . . .	D. Colquhoun.	D. Colquhoun.	—
<i>Surgery</i> . . .	L. E. Barnett.	L. E. Barnett.	—
<i>Pathology</i> . . .	W. S. Roberts.	W. S. Roberts.	W. H. Brown (Med.).
<i>Bacteriology</i> . . .	S. T. Champtaloup.	S. T. Champtaloup.	—
<i>Psychology</i> . . .	—	{ W. Salmond. T. A. Hunter.	H. W. Chase.

UNIVERSITY.	NORTH DAKOTA.	NORTH WESTERN.	NOTTINGHAM UNIV. COLL.
<i>SITE</i> . . .	Grand Forks, N. Dak., U.S.A.	Evanston, Ill., U.S.A.*	Nottingham, Eng.
<i>FOUNDED</i> . . .	1883.	—	1881.
<i>PRINCIPAL</i> . . .	F. L. McVey (Pres.).	A. W. Harris.	W. H. Heaton.
<i>REGISTRAR</i> . . .	J. D. Woods.	—	T. P. Black.
Senior Professors:			
<i>Chemistry</i> . . .	G. A. Abbott.	A. V. E. Young.	F. S. Kipping.
<i>Physics</i> . . .	A. H. Taylor.	H. Crew.	E. H. Barton.
<i>Mathematics</i> . . .	E. F. Chandler.	T. F. Holgate.	W. H. Heaton.
<i>Astronomy</i> . . .	"	P. Fox.	—
<i>Engineering</i> . . .	{ C. H. Crouch. E. J. Babcock.	J. F. Hayford.	{ C. H. Bulleid. W. Robinson. W. H. McMillan (Min.). H. H. Swinerton.
<i>Geology</i> . . .	A. G. Leonard.	U. S. Grant.	—
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	M. A. Brannon.	C. B. Atwell.	J. W. Carr.
<i>Zoology</i> . . .	R. T. Young.	W. O. Loey.	"
<i>Anthropology</i> . . .	J. M. Gillette.	—	—
<i>Anatomy</i> . . .	H. E. French.	S. W. Ransom.	—
<i>Physiology</i> . . .	G. H. Caldwell.	W. S. Hall.	—
<i>Pharmacology</i> . . .	"	H. McGurgan.	—
<i>Medicine</i> . . .	—	A. R. Edwards.	—
<i>Surgery</i> . . .	—	J. B. Murphy.	—
<i>Pathology</i> . . .	G. F. Ruediger (Med.).	F. R. Zeit.	—
<i>Bacteriology</i> . . .	"	I. R. Kendall.	—
<i>Psychology</i> . . .	J. Kennedy.	W. D. Scott.	—

* Medical School at Chicago.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	OBERLIN COLL.	OHIO STATE.	OHIO.
SITE . . .	Oberlin, O., U.S.A.	Columbus, O., U.S.A.	Athens, O., U.S.A.
FOUNDED . . .	1833.	1870.	1804.
PRINCIPAL . . .	H. C. King (Pres.).	W. O. Thompson.	A. Ellis.
REGISTRAR . . .	F. Isabel Wolcott.	Edith D. Cockins.	E. Dunkle.
Senior Professors:			
Chemistry . . .	F. F. Jewett.	W. McPherson.	W. B. Bentley.
Physics . . .	S. R. Williams.	A. D. Cole.	A. A. Atkinson.
Mathematics . . .	F. Anderegg.	R. D. Bohannan.	W. Hoover.
Astronomy . . .	E. J. Moore.	H. C. Lord.	"
Engineering . . .	—	{ H. C. Lord. F. C. Caldwell (Elec.). W. T. Magruder (Mech.). E. Orton, jr. (Ceram.). F. A. Ray (Min.). C. E. Sherman (Civ.).	{ J. L. Addicott. A. A. Atkinson.
Geology . . .	G. D. Hubbard.	C. S. Prosser.	W. F. Mercer.
Mineralogy . . .	—	E. E. Somermier.	—
Geography . . .	—	—	J. J. Richeson
Agriculture . . .	—	H. C. Price.	W. F. Copeland.
Botany . . .	F. O. Grover.	J. H. Schaffner.	W. M. Matheny.
Zoology . . .	M. M. Metcalf.	H. Osborn.	W. F. Mercer.
Anthropology . . .	A. B. Wolfe (Sociol.).	—	—
Anatomy . . .	F. E. Leonard.	A. M. Bleile.	—
Physiology . . .	"	G. B. Kauffman.	W. F. Mercer.
Pharmacology . . .	—	—	—
Medicine . . .	—	—	—
Surgery . . .	—	—	—
Pathology . . .	—	{ D. S. White. J. H. Snook.	—
Bacteriology . . .	—	C. B. Morrey.	—
Psychology . . .	R. H. Stetson.	D. R. Major.	O. Chrisman.

UNIVERSITY.	OHIO WESLEYAN.	OKLAHOMA.	OPORTO POLYTECH.
SITE . . .	Delaware, O., U.S.A.	Norman, Okla., U.S.A.	Oporto, Portugal.
FOUNDED . . .	1844.	1892.	1911.
PRINCIPAL . . .	H. W. Welch (Pres.).	S. D. Brooks.	F. G. Teixeira.
REGISTRAR . . .	W. E. Smyser.	E. Newby.	—
Senior Professors:			
Chemistry . . .	G. O. Higley.	E. De Barr.	{ A. J. Ferreira da Silva. J. D. Arroyo.
Physics . . .	W. G. Hormell.	W. P. Haseman.	{ A. A. de Souza Pinto. F. de Paula Azevedo.
Mathematics . . .	C. B. Austin.	S. W. Reaves.	{ F. G. Teixeira. L. I. Woodhouse.
Astronomy . . .	"	—	—
Engineering . . .	C. W. Edwards.	J. H. Felgar.	{ R. R. Mendes. M. Rodrigues de Miranda, jr.
Geology . . .	L. G. Westgate.	C. H. Taylor.	—
Mineralogy . . .	"	—	—
Geography . . .	"	—	—
Agriculture . . .	—	—	—
Botany . . .	E. L. Rice.	A. H. Van Vleet.	M. Amandio Gonçalves.
Zoology . . .	"	H. H. Lane.	A. Ferreira de Lacerda.
Anthropology . . .	—	—	—
Anatomy . . .	—	W. L. Capshaw.	{ L. de Freitas Viegas. J. A. Pires de Lima.
Physiology . . .	—	A. C. Hirshfield.	A. Placido da Costa.
Pharmacology . . .	—	—	J. A. Mendes de Magalhães.
Medicine . . .	—	R. F. Williams.	T. A. de Almeida.
Surgery . . .	—	W. J. Jolly.	R. B. do Rosario Frias.
Pathology . . .	—	{ L. A. Turley (Med.). M. Smith (Surg.).	A. Pereira Pinto d'Aguar.
Bacteriology . . .	—	L. A. Turley.	—
Psychology . . .	T. G. Duvall.	W. C. Erwin.	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	OREGON.	OVIEDO.	OXFORD.
<i>SITE</i> . . .	Eugene, Oregon, U.S.A.	Oviedo, Spain.	Oxford, Eng.
<i>FOUNDED</i> . . .	1872.	—	1167.
<i>PRINCIPAL</i> . . .	P. L. Campbell (Pres.).	F. Canella y Secades.	Earl Curzon (Chanc.).
<i>REGISTRAR</i> . . .	A. R. Tiffany.	F. Pedrosa y Solares.	C. Leudesdorf.
Senior Professors:			{ W. Odling.
<i>Chemistry</i> . . .	O. F. Stafford.	E. Urios y Gras.	{ A. E. H. Love (Nat. Phil.).
<i>Physics</i> . . .	W. P. Boynton.	D. Espurz Campodarbc.	{ W. H. Perkin (Org.).
<i>Mathematics</i> . . .	E. E. De Cou.	{ J. Rey Pastor.	J. S. E. Townsend.
<i>Astronomy</i> . . .	—	{ J. Mur y Ainsa.	E. B. Elliott.
<i>Engineering</i> . . .	E. H. McAlister (Dean).	—	H. H. Turner.
<i>Geology</i> . . .	A. J. Collier.	—	C. F. Jenkin.
<i>Mineralogy</i> . . .	—	—	(Vac.)
<i>Geography</i> . . .	F. L. Barker.	—	H. L. Bowman.
<i>Agriculture</i> . . .	—	—	A. J. Herbertson.
<i>Botany</i> . . .	A. R. Sweetser.	—	W. Somerville.
<i>Zoology</i> . . .	J. F. Bovard.	—	S. H. Vines.
<i>Anthropology</i> . . .	—	—	{ G. C. Bourne (Comp. Anat.).
<i>Anatomy</i> . . .	{ E. J. Labbe.	—	{ E. B. Poulton.
<i>Physiology</i> . . .	{ J. D. MacLaren.	—	Sir A. J. Evans.
<i>Pharmacology</i> . . .	{ G. B. Story.	—	A. Thomson.
<i>Medicine</i> . . .	—	—	F. Gotch.
<i>Surgery</i> . . .	J. F. Bell.	—	J. A. Gunn (Reader).
<i>Pathology</i> . . .	K. A. J. Mackenzie.	—	Sir W. Osler, Bt.
<i>Bacteriology</i> . . .	R. C. Yenney.	—	G. Dreyer.
<i>Psychology</i> . . .	E. L. Conklin.	—	—
			W. McDougall.

UNIVERSITY.	PADUA.	PALERMO.	PANJAB.
<i>SITE</i> . . .	Padua, Italy.	Palermo, Italy.	Lahore, India.
<i>FOUNDED</i> . . .	1221.	1779.	1882.
<i>PRINCIPAL</i> . . .	V. Rossi.	F. Raffaele.	—
<i>REGISTRAR</i> . . .	Carv. R. G. Sarpi.	C. Sassi.	—
Senior Professors:			
<i>Chemistry</i> . . .	G. Bruni.	G. Errera.	B. M. Jones.
<i>Physics</i> . . .	G. Vicentini.	D. Macaluso.	A. S. Hemmy.
<i>Mathematics</i> . . .	{ F. D'Arcais.	{ F. Caldarera.	B. Gopal Singh Chawla.
<i>Astronomy</i> . . .	{ T. Levi-Civita (App.).	{ G. Maisano.	—
<i>Engineering</i> . . .	G. Lorenzoni.	F. Angelitti.	—
<i>Geology</i> . . .	F. Lori (Elec.).	{ G. Salemi-Pace.	P. C. Lall.
<i>Mineralogy</i> . . .	G. Dal Piaz.	{ E. Ovazza.	—
<i>Geography</i> . . .	G. Dal Piaz.	G. Di Stefano.	—
<i>Agriculture</i> . . .	R. Panebianco.	F. Zambonini (Extraord. Prof.).	—
<i>Botany</i> . . .	L. De Marchi (Phys.).	G. B. Siragusa (Lect.).	—
<i>Zoology</i> . . .	—	—	—
<i>Anthropology</i> . . .	P. Saccardo.	A. Borzi.	J. Stephenson (Biol.).
<i>Anatomy</i> . . .	D. Carazzi.	F. Raffaele.	—
<i>Physiology</i> . . .	E. Tedeschi.	—	—
<i>Pharmacology</i> . . .	D. Bertelli.	{ R. Versari.	Capt. H. H. Broome.
<i>Medicine</i> . . .	A. Stefani.	{ A. Dionisi.	C. C. Caleb.
<i>Surgery</i> . . .	L. Sabbatani.	F. Spallitta.	Major H. G. Melville.
<i>Pathology</i> . . .	A. De Giovanni.	V. Cervello.	Major D. W. Sutherland.
<i>Bacteriology</i> . . .	E. Bassani.	V. Giuffrè.	Major E. V. Hugo.
<i>Psychology</i> . . .	I. Salvioli.	E. Tricomi.	Capt. W. C. H. Forster.
	A. Bonome.	A. Trambusti.	—
	E. Belmondo.	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	PARIS.		
<i>SITE</i> . . .	Paris, France.	École Supérieure de Pharmacie.	Nat. Hist. Mus., 57, Rue Cuvier, Paris.
<i>FOUNDED</i> . . .	1140.	1911.	—
<i>PRINCIPAL</i> . . .	L. Liard.	H. Gautier.	E. Perrier (Dircc.).
<i>REGISTRAR</i> . . .	—	E. Musson.	M. Fortemps.
Senior Professors:			
<i>Chemistry</i> . . .	{ H. Le Chatelier. { Urbain.	{ A. Villiers (Anal). { A. Béhal (Org.).	Arnaud.
<i>Physics</i> . . .	{ G. Lippmann. { E. M. L. Bouty. { E. Picard.	D. Berthelot.	{ J. Becquerel (App). { L. Maquenne.
<i>Mathematics</i> . . .	{ G. Darboux. { H. Andoyer.	—	—
<i>Astronomy</i> . . .	—	—	—
<i>Engineering</i> . . .	—	—	—
<i>Geology</i> . . .	E. Haug.	—	S. Meunier.
<i>Mineralogy</i> . . .	G. Boucharlat.	M. Delépine.	{ Lacroix. { M. Boule (Paleont.).
<i>Geography</i> . . .	P. Vidal de la Blache.	—	—
<i>Agriculture</i> . . .	—	—	J. Constantin.
<i>Botany</i> . . .	G. Bonnier.	E. Guignard.	{ L. Mangin. { P. H. Lecomte. { P. van Tieghem. { L. Trouessart. { L. Roule. { L. Joubin. { E. Bouvier.
<i>Zoology</i> . . .	Y. Delage.	H. Coutière.	Verneau.
<i>Anthropology</i> . . .	—	—	E. Perrier (Comp.).
<i>Anatomy</i> . . .	Nicolas.	—	L. Lapicque.
<i>Physiology</i> . . .	C. Richet.	—	—
<i>Pharmacology</i> . . .	Pouchet.	P. Lebeau.	—
<i>Medicine</i> . . .	Debove.	E. Perrot.	—
<i>Surgery</i> . . .	P. Segond.	<i>Biol. Chem.</i>	—
<i>Pathology</i> . . .	Achard.	L. Grimbert.	A. Chaveau (Comp.).
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	Delbos.	—	—

UNIVERSITY.	PARIS.	PARMA.	PAVIA.
<i>SITE</i> . . .	École Polytechnique, Rue Descartes.	Parma, Italy.	Pavia, Italy.
<i>FOUNDED</i> . . .	1795.	1025.	1361.
<i>PRINCIPAL</i> . . .	M. Carvallo.	L. Tartufari.	L. Berzolari.
<i>REGISTRAR</i> . . .	—	G. Bartolini.	C. Bernucci.
Senior Professors:			
<i>Chemistry</i> . . .	{ A. Colson. { G. Darzens.	G. Plancher.	G. Oddo.
<i>Physics</i> . . .	{ A. Pérot. { L. Lafay.	P. Cardani.	E. Salvioni (Exper.).
<i>Mathematics</i> . . .	M. d Ocagne.	{ M. Pieri. { B. Levi.	{ C. Formenti. { G. Formenti.
<i>Astronomy</i> . . .	Gen. R. Bourgeois.	—	—
<i>Engineering</i> . . .	—	—	{ C. Formenti. { A. Viterbi.
<i>Geology</i> . . .	<i>Analysis.</i>	P. Vinassa de Regny.	T. Taramelli.
<i>Mineralogy</i> . . .	G. Humbert.	C. Viola.	L. Brugnatelli.
<i>Geography</i> . . .	J. Hadamard.	—	M. Baratta (Extraord. Prof.).
<i>Agriculture</i> . . .	<i>Mechanics.</i>	—	—
<i>Botany</i> . . .	P. Painlevé.	C. Avetta.	G. Briosi.
<i>Zoology</i> . . .	L. Lecornu.	A. Andres.	G. Mazzarelli.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	—	G. Salvi.	{ L. Sala. { A. Monti.
<i>Physiology</i> . . .	—	A. Corona.	A. Marzacci.
<i>Pharmacology</i> . . .	—	G. Coronedi.	E. Rimini.
<i>Medicine</i> . . .	—	A. Riva.	C. Forlanini.
<i>Surgery</i> . . .	—	{ A. Ceccherelli. { A. Ferrari.	I. Tansini.
<i>Pathology</i> . . .	—	G. Rattone.	C. Golgi.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	PENNSYLVANIA.	PENNSYLVANIA STATE COLL.	PERUGIA.
<i>SITE</i> . . .	Philadelphia, Pa., U.S.A.	State College, Pa., U.S.A.	Perugia, Italy.
<i>FOUNDED</i> . . .	1740.	1855.	1266.
<i>PRINCIPAL</i> . . .	E. F. Smith.	E. E. Sparks.	O. Scalvanti.
<i>REGISTRAR</i> . . .	W. O. Miller.	A. H. Espenshade.	V. Marini.
Senior Professors:			
<i>Chemistry</i> . . .	E. F. Smith.	G. G. Pond.	G. Bellucci.
<i>Physics</i> . . .	{ A. W. Goodspeed. H. C. Richards.	W. R. Ham.	B. Dessau (Extraord. Prof.).
<i>Mathematics</i> . . .	{ E. S. Crawley. G. E. Fisher.	J. M. Willard.	—
<i>Astronomy</i> . . .	C. L. Doolittle.	—	—
<i>Engineering</i> . . .	{ H. M. Spangler. E. Marburg.	{ J. P. Jackson (Elec.). W. R. Crane (Mining). E. D. Walker (Hydraulic and San.). H. Diemer (Industr.). L. A. Harding (Mech.). E. S. Moore.	—
<i>Geology</i> . . .	A. P. Brown.	—	—
<i>Mineralogy</i> . . .	"	—	—
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	—	R. L. Watts.	—
<i>Botany</i> . . .	J. M. Macfarlane.	C. R. Orton.	—
<i>Zoology</i> . . .	T. H. Montgomery.	M. W. Eddy.	—
<i>Anthropology</i> . . .	G. B. Gordon.	—	—
<i>Anatomy</i> . . .	G. A. Piersol.	—	U. Rossi.
<i>Physiology</i> . . .	E. T. Reichert.	—	D. Axenfeld.
<i>Pharmacology</i> . . .	A. N. Richards.	—	C. Ruata.
<i>Medicine</i> . . .	D. L. Edsall.	—	R. Silvestrini.
<i>Surgery</i> . . .	E. Martin.	—	E. De Paoli.
<i>Pathology</i> . . .	R. M. Pearce.	—	G. Pisenti.
<i>Bacteriology</i> . . .	A. C. Abbott.	W. E. Tripp.	—
<i>Psychology</i> . . .	L. Witmer.	E. W. Runkle.	—

UNIVERSITY.	PISA.	PITTSBURG.	POITIERS.
<i>SITE</i> . . .	Pisa, Italy.	Pittsburg, Pa., U.S.A.	Poitiers, Fr.
<i>FOUNDED</i> . . .	1342.	1787.	1437.
<i>PRINCIPAL</i> . . .	D. Supino.	S. B. McCormick (Chanc.).	J. Cavalier.
<i>REGISTRAR</i> . . .	Cav. A. G. Rossetti.	A. E. Frost.	J. Valcgeas.
Senior Professors:			
<i>Chemistry</i> . . .	{ R. Nasini. R. Schiff.	F. C. Phillips.	L. Roux.
<i>Physics</i> . . .	A. Battelli.	F. L. Bishop.	A. Turpain.
<i>Mathematics</i> . . .	{ U. Dini. E. Bertini.	A. E. Frost.	P. Boutroux.
<i>Astronomy</i> . . .	—	F. Schlesinger.	M. Fréchet.
<i>Engineering</i> . . .	—	R. T. Stewart.	—
<i>Geology</i> . . .	M. Canavari.	M. E. Wadsworth.	J. Welsch.
<i>Mineralogy</i> . . .	G. D'Achiardi.	—	—
<i>Geography</i> . . .	C. Errera.	—	H. Carré.
<i>Agriculture</i> . . .	G. Caruso.	—	—
<i>Botany</i> . . .	G. Arcangeli.	J. C. Fettermann.	P. Maige.
<i>Zoology</i> . . .	E. Ficalbi.	"	A. Schneider.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	G. Romiti.	R. E. Sheldon.	M. Buffet-Delmas.
<i>Physiology</i> . . .	V. Adneco.	C. C. Guthrie.	H. Delaunay.
<i>Pharmacology</i> . . .	D. Baldi.	J. A. Koch.	J. Jouteau.
<i>Medicine</i> . . .	G. B. Qucirolo.	J. D. Heard.	Faivre.
<i>Surgery</i> . . .	A. Ceci.	J. J. Buchanan.	Chrétien.
<i>Pathology</i> . . .	G. Guarnieri.	O. Klotz.	Morichau-Beauchant.
<i>Bacteriology</i> . . .	—	—	M. Léger.
<i>Psychology</i> . . .	—	J. H. White.	Rivaud.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	PRAGUE.		
	GER. UNIV.	BOHEM. UNIV.	GER. TECH. SCH.
<i>SITE</i> . . .	Prague, Bohemia.	Prague, Bohemia.	Prague, Bohemia.
<i>FOUNDED</i> . . .	1348.	1348.	1807.
<i>PRINCIPAL</i> . . .	—	F. Vejdovský.	W. Rippl.
<i>REGISTRAR</i> . . .	—	J. Čech.	J. Gaudl.
Senior Professors :			
<i>Chemistry</i> . . .	L. Meyer.	B. Brauner.	{ L. Storch. { P. Rabe.
<i>Physics</i> . . .	{ R. Spitaler. { A. Lampa.	{ V. Strouhal. { F. Kolářek.	J. Tuma.
<i>Mathematics</i> . . .	G. Pick.	{ J. Sobotka. { K. Petr.	E. Janisch.
<i>Astronomy</i> . . .	L. Weinek.	G. Gruss.	—
<i>Engineering</i> . . .	—	—	{ W. Rippl. { R. Doerfel.
<i>Geology</i> . . .	F. Wähner.	F. Počta.	—
<i>Mineralogy</i> . . .	—	K. Vrba.	—
<i>Geography</i> . . .	A. Grund.	—	—
<i>Agriculture</i> . . .	—	—	J. Pichl.
<i>Botany</i> . . .	G. Ritter Beck v. Mannagetta.	{ J. Velenovský. { B. Nemeč.	F. Krasser.
<i>Zoology</i> . . .	(Vac.)	F. Vejdovsky.	—
<i>Anthropology</i> . . .	—	L. Niederle.	—
<i>Anatomy</i> . . .	—	J. Janošik.	—
<i>Physiology</i> . . .	A. v. Tschermak.	F. Mareš.	<i>Mech. Technol.</i>
<i>Pharmacology</i> . . .	W. Wiechowski.	K. Chodounsky.	K. Mikolaschek.
<i>Medicine</i> . . .	P. Dittrich.	{ E. Maixner. { F. Thomayer.	<i>Electrotech.</i>
<i>Surgery</i> . . .	H. Schloffer.	O. Kukula.	J. Puling.
<i>Pathology</i> . . .	R. Jaksch.	A. Spina.	<i>Bridge Bldg.</i>
<i>Bacteriology</i> . . .	—	J. Hlava.	J. Melan.
<i>Psychology</i> . . .	A. Pick.	F. Čáda.	<i>Ry. Construc.</i>
			A. Birk.

UNIVERSITY.	PRAGUE. BOHEM. TECH. SCH.	PRINCETON.	PURDUE.
<i>SITE</i> . . .	Prague, Bohemia.	Princeton, N.J., U.S.A.	Lafayette, Ind., U.S.A.
<i>FOUNDED</i> . . .		1747.	1869.
<i>PRINCIPAL</i> . . .		J. G. Hibben.	W. E. Stone.
<i>REGISTRAR</i> . . .		C. H. Jones.	E. H. Davis.
Senior Professors:			
<i>Chemistry</i> . . .		F. Neher.	P. N. Evans.
<i>Physics</i> . . .		W. F. Magie.	E. S. Ferry.
<i>Mathematics</i> . . .		H. B. Fine.	A. M. Kenyon.
<i>Astronomy</i> . . .	Details not to hand.	H. N. Russell.	W. K. Hatt.
<i>Engineering</i> . . .		C. McMillan.	{ C. H. Benjamin. { G. A. Young (Mech.). { C. F. Harding (Elec.). { W. K. Hatt (Civ.). { H. C. Peffer (Chem.).
<i>Geology</i> . . .		W. B. Scott.	S. Coulter.
<i>Mineralogy</i> . . .		A. H. Phillips.	—
<i>Geography</i> . . .		W. Libbey.	—
<i>Agriculture</i> . . .	<i>See Supplement.</i>	—	J. H. Skinner (Dean).
<i>Botany</i> . . .		W. M. Rankin.	S. Coulter.
<i>Zoology</i> . . .		E. G. Conklin.	"
<i>Anthropology</i> . . .		—	—
<i>Anatomy</i> . . .		E. G. Conklin.	S. Coulter.
<i>Physiology</i> . . .		"	—
<i>Pharmacology</i> . . .		—	C. B. Jordan.
<i>Medicine</i> . . .		—	—
<i>Surgery</i> . . .		—	—
<i>Pathology</i> . . .		—	—
<i>Bacteriology</i> . . .		—	S. Coulter.
<i>Psychology</i> . . .		N. K. Smith.	O. L. Roberts.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	QUEEN'S.	QUEENSLAND.	READING UNIV. COLL.
<i>SITE</i> . . .	Kingston, Ont., Canada.	Brisbane, Queensland, Australia.	Reading, Eng.
<i>FOUNDED</i> . . .	1841.	1910.	1892.
<i>PRINCIPAL</i> . . .	Very Rev. D. M. Gordon.	H. E. Sir W. MacGregor (Chanc.).	W. M. Childs.
<i>REGISTRAR</i> . . .	G. Y. Chown.	F. W. S. Cumbera-Stewart.	F. H. Wright.
Senior Professors:			
<i>Chemistry</i> . . .	W. L. Goodwin.	B. D. Steele.	H. Bassett.
<i>Physics</i> . . .	A. L. Clark.	H. J. Priestley.	W. G. Duffield.
<i>Mathematics</i> . . .	N. F. Dupuis (Dean).	"	A. L. Bowley.
<i>Astronomy</i> . . .	—	—	S. B. McLaren.
<i>Engineering</i> . . .	{ L. W. Gill (Elec.). J. C. Gwillim (Mining). A. MacPhail (Gen.). F. O. Willhofft (Mech.).	A. J. Gibson.	—
<i>Geology</i> . . .	M. B. Baker.	H. C. Richards (Lect.).	H. L. Hawkins.
<i>Mineralogy</i> . . .	W. Nicol.	—	—
<i>Geography</i> . . .	—	—	H. N. Dickson.
<i>Agriculture</i> . . .	—	—	R. V. O. Hart-Synnot.
<i>Botany</i> . . .	W. T. MacClement.	<i>Biology.</i>	F. Keeble.
<i>Zoology</i> . . .	A. P. Knight.	T. H. Johnston (Lect.).	F. J. Cole.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	E. Ryan.	—	—
<i>Physiology</i> . . .	A. P. Knight.	—	—
<i>Pharmacology</i> . . .	W. C. Barber (Assist.).	—	—
<i>Medicine</i> . . .	J. Third.	—	—
<i>Surgery</i> . . .	D. E. Mundell.	—	—
<i>Pathology</i> . . .	W. T. Connell.	—	—
<i>Bacteriology</i> . . .	"	—	—
<i>Psychology</i> . . .	—	G. E. Mayo.	—

UNIVERSITY.	RENNES.	RENSSELAER POLYTECH.	RIGA POLYTECH.
<i>SITE</i> . . .	Rennes, Fr.	Troy, N. Y., U. S. A.	Riga, Russia.
<i>FOUNDED</i> . . .	1807.	1824.	1862.
<i>PRINCIPAL</i> . . .	M. Gérard-Varet.	P. C. Ricketts.	W. v. Knieriem.
<i>REGISTRAR</i> . . .	M. Planchar.	M. J. Cunningham.	B. v. Wodzinski.
Senior Professors:			
<i>Chemistry</i> . . .	Bouzat.	{ W. P. Mason. E. Touceda (Metall.).	{ P. Walden. M. Glasenapp.
<i>Physics</i> . . .	Moreau.	W. L. Robb (and Elec. Engng.).	R. Meyer.
<i>Mathematics</i> . . .	Lacour.	C. W. Crockett.	{ P. Bohl. K. Kupffer.
<i>Astronomy</i> . . .	—	"	V. Ehrenfeuch (Adj. Prof.).
<i>Engineering</i> . . .	—	A. M. Green (Mech.).	{ B. Wodzinski. A. Jensch.
<i>Geology</i> . . .	Seunes.	J. M. Clarke.	B. Doss.
<i>Mineralogy</i> . . .	"	—	A. v. Hedenstroem.
<i>Geography</i> . . .	—	—	W. v. Knieriem.
<i>Agriculture</i> . . .	—	—	T. Bucholtz.
<i>Botany</i> . . .	{ Crié. Daniel.	—	G. Schneider (Adj.).
<i>Zoology</i> . . .	Guitel.	—	<i>Chem. Technol.</i>
<i>Anthropology</i> . . .	—	—	M. Wittlich.
<i>Anatomy</i> . . .	Lautier.	—	—
<i>Physiology</i> . . .	Lefeuve, jr.	—	—
<i>Pharmacology</i> . . .	Lenormand.	—	—
<i>Medicine</i> . . .	Millardet.	—	—
<i>Surgery</i> . . .	Dayot.	—	—
<i>Pathology</i> . . .	—	—	—
<i>Bacteriology</i> . . .	Bodin.	—	—
<i>Psychology</i> . . .	—	—	—

WHOS WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	ROCHESTER (Baptist).	ROME.	ROSTOCK.
<i>SITE</i> . . .	Rochester, N. Y., U.S.A.	Rome, Italy.	Rostock, Ger.
<i>FOUNDED</i> . . .	1851.	1304.	1419.
<i>PRINCIPAL</i> . . .	R. Rhees.	A. Tonelli.	O. Koerner.
<i>REGISTRAR</i> . . .	C. Hoeing.	E. Angeletti.	O. Schröder.
Senior Professors :			
<i>Chemistry</i> . . .	V. J. Chambers.	E. Paterno di Sessa.	A. Michaelis.
<i>Physics</i> . . .	H. E. Lawrence.	P. Blaserna.	A. Heydweiller.
<i>Mathematics</i> . . .	A. S. Gale.	A. Tonelli.	O. Staude.
<i>Astronomy</i> . . .	H. D. Minchin (Assist.).	A. Di Legge.	—
<i>Engineering</i> . . .	M. C. Ernsberger.	C. Ceradini.	—
<i>Geology</i> . . .	H. L. Fairchild.	A. Portis.	E. Geinitz.
<i>Mineralogy</i> . . .	—	G. Strüver.	”
<i>Geography</i> . . .	—	—	W. Ule.
<i>Agriculture</i> . . .	—	V. Volterra.	F. Honcamp.
<i>Botany</i> . . .	C. W. Dodge (Biol.).	R. Pirotta.	P. Falkenberg.
<i>Zoology</i> . . .	”	A. Carruccio.	H. Spemann.
<i>Anthropology</i> . . .	—	G. Sergi.	D. Barfurth.
<i>Anatomy</i> . . .	—	F. Todaro.	”
<i>Physiology</i> . . .	—	L. Luciani.	H. Winterstein.
<i>Pharmacology</i> . . .	—	G. Gaglio.	R. Kobert.
<i>Medicine</i> . . .	—	G. Baccolli.	F. Martius.
<i>Surgery</i> . . .	—	F. Durante.	W. Müller.
<i>Pathology</i> . . .	—	E. Rossoni.	E. Schwalbe.
		(R. Alessandri.	
<i>Bacteriology</i> . . .	—	A. Bignani.	L. Pfeiffer.
<i>Psychology</i> . . .	—	S. de Sanctis.	F. Erhardt.

UNIVERSITY.	RUTGERS COLL.	ST. ANDREWS.	
<i>SITE</i> . . .	New Brunswick, N.J., U.S.A.	St. Andrews, Scot.	Dundee, Scot.
<i>FOUNDED</i> . . .	1765.	1411.	1881.
<i>PRINCIPAL</i> . . .	W. H. S. Demarest.	Sir J. Donaldson.	J. Y. Mackay.
<i>REGISTRAR</i> . . .	I. S. Upson.	A. Bennett.	W. A. Watterston.
Senior Professors :			
<i>Chemistry</i> . . .	R. G. Wright.	J. C. Irvine.	H. Marshall.
<i>Physics</i> . . .	F. C. Van Dyck.	A. S. Butler.	W. Peddie.
<i>Mathematics</i> . . .	A. A. Tittsworth.	P. R. S. Lang.	J. E. A. Steggall.
	R. Morris.	—	(Vac.)
<i>Astronomy</i> . . .	R. W. Prentiss.	—	A. H. Gibson.
<i>Engineering</i> . . .	—	—	T. J. Jehu (Lect.).
<i>Geology</i> . . .	J. V. Lewis.	T. J. Jehu (Lect.).	(Vac.)
<i>Mineralogy</i> . . .	”	—	—
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	J. G. Lipman.	J. H. Wilson (Lect.).	(Vac.)
<i>Botany</i> . . .	B. D. Halsted.	R. A. Robertson (Lect.)	P. Geddes.
<i>Zoology</i> . . .	J. Nelson (Biol.).	W. C. McIntosh.	D. W. Thompson.
<i>Anthropology</i> . . .	—	J. Musgrave (Dean).	J. Y. Mackay.
<i>Anatomy</i> . . .	—	—	”
<i>Physiology</i> . . .	—	P. T. Herring.	E. W. Reid.
<i>Pharmacology</i> . . .	—	—	C. R. Marshall.
<i>Medicine</i> . . .	—	—	A. M. Stalker.
<i>Surgery</i> . . .	—	—	D. McEwan.
<i>Pathology</i> . . .	—	—	L. R. Sutherland.
<i>Bacteriology</i> . . .	—	—	”
<i>Psychology</i> . . .	—	G. F. Stout.	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	ST. LOUIS (Jesuit)	ST. PETERSBURG.	
		UNIV.	ACAD. OF SCI.
<i>SITE</i> . . .	St. Louis, Mo., U.S.A.	St. Petersburg, Russia.	St. Petersburg, Russia.
<i>FOUNDED</i> . . .	1818.	—	1725.
<i>PRINCIPAL</i> . . .	Very Rev. B. J. Otting.	D. Grimm.	K. Konstantinovič.
<i>REGISTRAR</i> . . .	L. Kenny.	—	S. T. Oldenburg.
Senior Professors:			
<i>Chemistry</i> . . .	J. P. Cooney.	{ A. E. Favorski. L. A. Čujajev. I. E. Borgmann. O. D. Chvolson.	P. I. Validen.
<i>Physics</i> . . .	J. I. Shannon.		{ M. A. Rikacev. B. B. Goličín. A. A. Markov. N. J. Sonin.
<i>Mathematics</i> . . .	H. de Laak.	V. A. Steklov.	{ A. M. Liapunov (App). A. V. Steklov. O. A. Backlund. A. A. Bielopolski.
<i>Astronomy</i> . . .	C. Borgmeyer.	S. P. v. Glasenapp.	{ A. P. Karpinski. Th. N. Černušev. V. I. Vernadski.
<i>Engineering</i> . . .	—	D. K. Bobylev (Meeh.).	—
<i>Geology</i> . . .	J. B. Macelwane.	A. A. Inostrancev.	{ A. S. Faminčín. I. P. Borodín. V. V. Zalenski. N. V. Nasonov.
<i>Mineralogy</i> . . .	J. Joliat.	P. A. Zemjačenski.	—
<i>Geography</i> . . .	—	A. I. Vojejkov (Phys.).	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	(Vac.)	V. I. Palladin.	—
<i>Zoology</i> . . .	A. M. Brown.	V. M. Simkevič.	—
<i>Anthropology</i> . . .	H. Gruender.	—	—
<i>Anatomy</i> . . .	A. C. Eycleshmyer.	A. S. Dogiel (Emer.).	I. P. Pavlov.
<i>Physiology</i> . . .	E. P. Lyon.	N. E. Vedenski.	—
<i>Pharmacology</i> . . .	L. S. Shackell.	—	—
<i>Medicine</i> . . .	C. H. Neilson.	—	—
<i>Surgery</i> . . .	J. Y. Brown.	—	—
<i>Pathology</i> . . .	{ R. L. Thompson (Med.). C. Smith (Surg.).	—	—
<i>Bacteriology</i> . . .	G. Ives.	—	—
<i>Psychology</i> . . .	M. McMenemy.	—	—

UNIVERSITY.	ST. PETERSBURG. TECH. INST.	SALAMANCA.	SANTIAGO.
<i>SITE</i> . . .	St. Petersburg, Rus-ia.	Salamanca, Spain.	Santiago, Spain.
<i>FOUNDED</i> . . .	1825.	1244.	1505.
<i>PRINCIPAL</i> . . .	G. Doepp (Direc.).	M. Unamuno y Jugo.	C. Troncoso y Pequeño.
<i>REGISTRAR</i> . . .	D. S. Zernoff.	—	—
Senior Professors:			
<i>Chemistry</i> . . .	A. A. Jakovkin.	{ M. González y Calzada. M. Sesé y Villanueva. E. No y Garcia.	R. Lobo y Gómez.
<i>Physics</i> . . .	N. A. Heschus.	{ G. C. Sáez y Muñoz. E. Román y Retuerto.	R. Gil y Villanueva.
<i>Mathematics</i> . . .	B. A. Kojalovič.	—	—
<i>Astronomy</i> . . .	—	—	—
<i>Engineering</i> . . .	{ D. S. Zernoff. N. A. Bikoff.	—	—
<i>Geology</i> . . .	—	—	—
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	Machine Constr.	—	A. Garcia y Varela.
<i>Agriculture</i> . . .	G. Doepp.	—	—
<i>Botany</i> . . .	A. M. Samus.	—	A. Garcia y Varela.
<i>Zoology</i> . . .	Electrotech.	—	—
<i>Anthropology</i> . . .	A. A. Woronov.	—	—
<i>Anatomy</i> . . .	Mech. Technol. A. D. Gatzuk.	{ I. de Segovia y Corrales. P. López y Martin.	{ F. Romero y Blanco. J. Barcia y Caballero.
<i>Physiology</i> . . .	Chem. Technol. A. A. Rusanov.	G. Hernández Sanz.	R. Varela y de la Iglesia. A. N. Campelo.
<i>Pharmacology</i> . . .	—	—	—
<i>Medicine</i> . . .	—	I. Barahona y Holgado.	—
<i>Surgery</i> . . .	—	—	—
<i>Pathology</i> . . .	—	V. Garcia Ferreiro.	{ F. Piñeiro y Pérez. M. Piñeiro y Hervá. M. Fernández é Iñiguez.
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	—	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	SARATOV.	SASKATCHEWAN.	SASSARI.
<i>SITE</i> . . .	Saratov, Russia.	Saskatoon, Saskatchewan, Can.	Sassari, Sardinia, Italy.
<i>FOUNDED</i> . . .	—	1907.	1558.
<i>PRINCIPAL</i> . . .	V. I. Razvmovsky.	W. C. Murray.	A. Roth.
<i>REGISTRAR</i> . . .	S. I. Kupcov.	A. R. Weir.	M. Pinnaferà.
Senior Professors:			
<i>Chemistry</i> . . .	A. V. W. Worms (Med.).	R. D. Maclaurin.	L. Valente.
<i>Physics</i> . . .	V. D. Zernov (Extraord. Prof.).	J. L. Hogg.	A. Pochettino.]
<i>Mathematics</i> . . .	—	G. H. Ling.	—
<i>Astronomy</i> . . .	—	—	—
<i>Engineering</i> . . .	—	A. R. Greig.	—
<i>Geology</i> . . .	—	—	—
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	—	W. J. Rutherford.	—
<i>Botany</i> . . .	A. J. Gordjagin.	T. N. Willing.	A. Terracciano.
<i>Zoology</i> . . .	B. J. Birukov (Extraord. Prof.).	—	R. Monti.
<i>Anthropology</i> . . .	—	A. G. Morice.	—
<i>Anatomy</i> . . .	A. G. Stadnickij.	—	A. Conti.
<i>Physiology</i> . . .	I. A. Čuevsky.	—	—
<i>Pharmacology</i> . . .	B. I. Slovcov.	—	—
<i>Medicine</i> . . .	—	—	R. Magnanini.
<i>Surgery</i> . . .	—	—	A. Roth.
<i>Pathology</i> . . .	A. A. Bogomolec (Extraord. Prof.).	—	L. Vincenzi.
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	—	I. A. Mackay.	—

UNIVERSITY.	SEVILLE.	SHEFFIELD.	SIENA.
<i>SITE</i> . . .	Seville, Spain.	Sheffield, Eng.	Siena, Italy.
<i>FOUNDED</i> . . .	1909.	1905.	XIIth Century.
<i>PRINCIPAL</i> . . .	—	Sir C. Eliot (Vice-Ch.).	P. Rossi.
<i>REGISTRAR</i> . . .	A. Paloma.	W. M. Gibbons.	G. Fornari
Senior Professors:			
<i>Chemistry</i> . . .	F. Relimpio.	{ W. P. Wynne.	P. Gucci.
<i>Physics</i> . . .	L. Abaurrea.	{ L. T. O'Shea (App.).	S. Lussana.
<i>Mathematics</i> . . .	M. Lopez y Dominguez.	W. M. Hicks.	—
<i>Astronomy</i> . . .	L. Abaurrea.	A. H. Leahy.	—
<i>Engineering</i> . . .	E. Ruiz y Diaz.	W. Ripper.	—
<i>Geology</i> . . .	—	W. G. Fearnside.	—
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	G. Latorre.	R. N. R. Brown.	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	F. Doblado.	—	B. Longo.
<i>Zoology</i> . . .	"	A. Denny.	V. Diamare.
<i>Anthropology</i> . . .	—	C. J. Patten.	—
<i>Anatomy</i> . . .	{ M. Medina.	"	S. Bianchi.
<i>Physiology</i> . . .	{ F. R. Porrúa.	J. S. Macdonald.	B. Bocci.
<i>Pharmacology</i> . . .	C. Torremaella.	"	C. Raimondi.
<i>Medicine</i> . . .	—	D. Burgess.	V. Patella.
<i>Surgery</i> . . .	J. Peset.	S. White.	D. Biondi.
	{ E. Tello.	H. R. Dean.	E. Centanni.
<i>Pathology</i> . . .	{ M. Bonafonte.	—	—
	{ E. Romero.	—	—
<i>Bacteriology</i> . . .	{ G. Lupiáñez.	—	—
<i>Psychology</i> . . .	M. Dominguez.	"	—
	J. de Castro.	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	SMITH COLL.	SOFIA.	SOUTH CALIFORNIA.
<i>SITE</i> . . .	Northampton, Mass., U.S.A.	Sofia, Bulgaria.	Los Angeles, Cal., U.S.A.
<i>FOUNDED</i> . . .	1871.	1888.	1880.
<i>PRINCIPAL</i> . . .	Marion LeR. Burton.	St. Jouriniteh.	G. F. Bovard.
<i>REGISTRAR</i> . . .	Mary Eastman.	B. B. Bijov.	R. E. Schulz.
Senior Professors:			
<i>Chemistry</i> . . .	J. T. Stoddard.	(P. N. Raikov. G. N. Kolouschki.	L. J. Stabler.
<i>Physics</i> . . .	F. A. Waterman.	A. Christov.	A. W. Nye.
<i>Mathematics</i> . . .	Eleanor Cushing.	A. V. Sourek.	—
<i>Astronomy</i> . . .	Harriet W. Bigelow.	M. Batchevarov.	—
<i>Engineering</i> . . .	—	—	—
<i>Geology</i> . . .	—	L. Vankov.	{ C. W. Lawrence (Civ.).
<i>Mineralogy</i> . . .	—	G. Bontchev.	{ A. W. Nye (Elec.).
<i>Geography</i> . . .	—	—	G. E. Bailey.
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	W. F. Ganong.	St. Petkov.	A. B. Ulrey.
<i>Zoology</i> . . .	H. W. Wilder.	St. Jouriniteh.	" —
<i>Anthropology</i> . . .	—	St. Gheorghiev.	—
<i>Anatomy</i> . . .	—	—	H. O. White.
<i>Physiology</i> . . .	—	—	L. B. Stookey.
<i>Pharmacology</i> . . .	—	—	—
<i>Medicine</i> . . .	—	—	T. B. Wright.
<i>Surgery</i> . . .	—	—	O. O. Witherbee.
<i>Pathology</i> . . .	—	—	—
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	H. N. Gardiner.	—	—

UNIVERSITY.	STANFORD.	STOCKHOLM.	STRASSBURG.
<i>SITE</i> . . .	Palo Alto, Cal., U.S.A.	Stockholm, Sweden.	Strassburg, Ger.
<i>FOUNDED</i> . . .	1891.	1878.	1570.
<i>PRINCIPAL</i> . . .	D. S. Jordan.	Prof. Bendixson.	Walthershausen.
<i>REGISTRAR</i> . . .	O. L. Elliott.	H. Heyman.	Hausmann.
Senior Professors:			
<i>Chemistry</i> . . .	J. M. Stillman.	H. v. Euler-Chelpin.	J. Thiele.
<i>Physics</i> . . .	F. Sanford.	C. A. F. Benedicks.	F. Braun.
<i>Mathematics</i> . . .	R. E. Allardie.	I. O. Bendixson.	{ H. Weber.
<i>Astronomy</i> . . .	S. D. Townley.	—	{ F. Schur.
<i>Engineering</i> . . .	{ C. D. Marx (Civ.). W. F. Durand (Mech.). H. J. Ryan (Elec.).	—	J. Bauschinger.
<i>Geology</i> . . .	J. C. Branner.	G. de Geer.	E. Holzapfel.
<i>Mineralogy</i> . . .	A. F. Rogers.	H. M. Bäckström.	H. Bücking.
<i>Geography</i> . . .	—	—	G. Gerland.
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	D. H. Campbell.	G. Lagerheim.	L. Jost.
<i>Zoology</i> . . .	C. H. Gilbert.	W. Leche.	A. Goette.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	A. W. Meyer.	—	G. A. Schwalbe.
<i>Physiology</i> . . .	O. P. Jenkins.	—	J. R. Ewald.
<i>Pharmacology</i> . . .	A. C. Crawford.	—	O. Schmiedeberg.
<i>Medicine</i> . . .	R. L. Wilbur.	—	F. Wenkebach.
<i>Surgery</i> . . .	S. Stillman.	—	O. W. Madelung.
<i>Pathology</i> . . .	W. Ophüls.	—	—
<i>Bacteriology</i> . . .	—	—	P. Uhlenhuth.
<i>Psychology</i> . . .	F. Angell.	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	STUTT GART TECH. SCH.	SYDNEY.	SYRACUSE.
<i>SITE</i> . . .	Stuttgart, Ger.	Sydney, N.S.W., Australia.	Syracuse, N.Y., U.S.A.
<i>FOUNDED</i> . .	1829.	1850.	1871.
<i>PRINCIPAL</i> .	A. Bantlin.	Sir N. MacLaurin (Chanc.)	J. R. Day (Chanc.)
<i>REGISTRAR</i> .	—	H. E. Barff.	C. C. Wilbor.
Senior Professors :			
<i>Chemistry</i> .	{ C. v. Hell. A. Gutbier.	C. E. Fawsitt.	E. N. Pattee.
<i>Physics</i> . .	{ K. R. Koch. R. Mehmke.	J. A. Pollock.	F. A. Saunders.
<i>Mathematics</i> .	{ W. Kutta. E. v. Hammer.	H. S. Carslaw.	W. H. Metzler.
<i>Astronomy</i> .	{ J. J. v. Weyrauch. K. Schwend.	W. E. Cooke.	H. A. Peck.
<i>Engineering</i> .	{ E. Mörike. H. Kübler.	W. H. Warren.	{ W. P. Graham (Dean). P. C. Nugent (Civ.)
<i>Geology</i> . .	A. Sauer.	T. W. E. David.	T. C. Hopkins.
<i>Mineralogy</i> .	"	"	C. H. Richardson.
<i>Geography</i> .	—	R. D. Watt.	—
<i>Agriculture</i> .	—	A. A. Lawson.	F. W. Howe.
<i>Botany</i> . .	M. Fünfstück.	W. A. Haswell.	W. L. Bray.
<i>Zoology</i> . .	E. Ziegler.	—	C. W. Hargitt.
<i>Anthropology</i> .	—	J. T. Wilson.	H. W. Stiles.
<i>Anatomy</i> . .	—	T. P. A. Stuart.	F. P. Knowlton.
<i>Physiology</i> .	<i>Machinery.</i>	—	—
<i>Pharmacology</i> .	C. v. Bach.	A. E. Mills (Lect.).	J. L. Heffron (Dean).
<i>Medicine</i> . .	A. Bantlin.	Sir A. MacCormick (Lect.).	D. M. Totman.
<i>Surgery</i> . .	R. Thomann. A. Widmaier.	D. A. Welsh.	H. S. Steensland.
<i>Pathology</i> .	H. Berg.	—	H. C. Ward.
<i>Bacteriology</i> .	<i>Elec. Engnrg.</i>	F. Anderson.	W. P. Coddington.
<i>Psychology</i> .	E. Veesenmeyer.		

UNIVERSITY.	SYRIAN PROTESTANT COLL.	TASMANIA.	TEXAS.
<i>SITE</i> . . .	Beirut, Syria.	Hobart, Tasmania.	Austin, Texas, U.S.A.
<i>FOUNDED</i> . .	1866.	1890.	1885.
<i>PRINCIPAL</i> .	H. S. Bliss.	T. Gant (Vice-Chanc.)	S. E. Mezes.
<i>REGISTRAR</i> .	—	J. H. R. Cruickshank.	E. J. Mathews.
Senior Professors :			
<i>Chemistry</i> .	J. A. Patch.	J. P. MacLeod (Lect.).	{ H. W. Harper. J. R. Bailey.
<i>Physics</i> . .	J. A. Brown.	J. L. Glasson (Lect.).	{ W. T. Mather. J. M. Kuehne.
<i>Mathematics</i> .	M. H. Jurdak.	A. Macaulay.	{ H. Y. Benedict. M. B. Porter.
<i>Astronomy</i> .	A. H. Joy.	—	{ H. Y. Benedict. T. U. Taylor.
<i>Engineering</i> .	—	J. H. Mackay.	{ E. C. H. Bantel. F. W. Simonds.
<i>Geology</i> . .	A. E. Day.	J. P. MacLeod (Lect.).	—
<i>Mineralogy</i> .	—	—	—
<i>Geography</i> .	—	—	—
<i>Agriculture</i> .	—	<i>Biology.</i>	—
<i>Botany</i> . .	A. E. Day.	T. T. Flynn.	F. D. Heald.
<i>Zoology</i> . .	"	—	{ J. T. Patterson. D. B. Casteel.
<i>Anthropology</i> .	—	—	—
<i>Anatomy</i> . .	C. A. Webster.	—	—
<i>Physiology</i> .	H. G. Dorman.	—	<i>Mining.</i>
<i>Pharmacology</i> .	T. C. Ladakis.	—	C. E. Rowe.
<i>Medicine</i> . .	H. Graham.	—	—
<i>Surgery</i> . .	E. St. J. Ward.	—	—
<i>Pathology</i> .	—	—	—
<i>Bacteriology</i> .	—	—	—
<i>Psychology</i> .	—	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	TOHOKU.	TOKYO.	TOMSK TECH. INST.
<i>SITE</i> . . .	Sendai, Japan.	Tokyo, Japan.	Tomsk, W. Siberia.
<i>FOUNDED</i> . . .	1907.	1886.	1838.
<i>PRINCIPAL</i> . . .	Tokiyuki Hojo.	Baron A. Hamao.	—
<i>REGISTRAR</i> . . .	Kenichiro Kuroda.	M. Nagoya.	—
Senior Professors :			
<i>Chemistry</i> . . .	Masataka Ogawa.	J. Sakurai.	{ N. M. Kižner.
<i>Physics</i> . . .	Keichi Aichi.	A. Tanakadate.	{ D. P. Turbaba.
<i>Mathematics</i> . . .	Tsuruichi Hayashi.	R. Fujisawa.	{ B. P. Weinberg.
<i>Astronomy</i> . . .	—	H. Terao.	{ V. L. Nekrasov.
<i>Engineering</i> . . .	—	W. Watanabe.	{ I. I. Bobarykov.
<i>Geology</i> . . .	Hisakatsu Yabe.	B. Koto.	{ N. I. Kartashev.
<i>Mineralogy</i> . . .	—	M. Yokovama.	—
<i>Geography</i> . . .	—	N. Yamazaki.	A. V. Lawrski.
<i>Agriculture</i> . . .	Shosuke Sato.	Y. Kozai.	—
<i>Botany</i> . . .	—	J. Matsumura.	—
<i>Zoology</i> . . .	—	I. Ijima.	—
<i>Anthropology</i> . . .	—	(Vac.)	—
<i>Anatomy</i> . . .	—	Y. Koganci.	—
<i>Physiology</i> . . .	—	K. Osawa.	—
<i>Pharmacology</i> . . .	—	J. Takahashi.	—
<i>Medicine</i> . . .	—	T. Aoyama.	—
<i>Surgery</i> . . .	—	S. Sato.	—
<i>Pathology</i> . . .	—	M. Miura.	—
<i>Bacteriology</i> . . .	—	K. Yamagiwa.	—
<i>Psychology</i> . . .	—	Y. Matora.	—

UNIVERSITY.	TORONTO.	TOULOUSE.	TRANSVAAL UNIV. COLL.
<i>SITE</i> . . .	Toronto, Canada.	Toulouse, France.	Pretoria, S. Africa.
<i>FOUNDED</i> . . .	1827.	1233.	1910.
<i>PRINCIPAL</i> . . .	R. A. Falconer.	Lapic.	—
<i>REGISTRAR</i> . . .	A. Primrose.	Lécirvain.	D. J. Hafner (Sec.).
Senior Professors :			
<i>Chemistry</i> . . .	W. R. Lang.	{ Giran.	de T. Malherbe.
<i>Physics</i> . . .	J. C. McLennan.	{ P. Sabatier.	
<i>Mathematics</i> . . .	W. J. Loudon (App.).	{ C. Fabre (Anal.)	P. G. Gundry.
<i>Astronomy</i> . . .	C. A. Chant.	{ H. Bouasse.	A. E. du Toit.
<i>Engineering</i> . . .	J. Galbraith.	{ Lamotte.	—
<i>Geology</i> . . .	A. P. Coleman.	{ J. Drach.	L. de Villiers.
<i>Mineralogy</i> . . .	—	{ A. Buhl.	—
<i>Geography</i> . . .	—	{ E. Cossrat.	—
<i>Agriculture</i> . . .	—	{ C. Camichel (Elcc.)	—
<i>Botany</i> . . .	J. H. Faull.	{ M. Lattès (Mech.)	—
<i>Zoology</i> . . .	R. R. Wright.	{ M. Jacob.	H. Wager.
<i>Anthropology</i> . . .	G. M. Wrong.	{ J. Caralp.	"
<i>Anatomy</i> . . .	J. P. McMurrich.	{ P. Dognon.	—
<i>Physiology</i> . . .	T. G. Brodie.	{ C. Fabre (Chem.)	—
<i>Pharmacology</i> . . .	V. E. Henderson.	{ M. Leclere du Sablon.	—
<i>Medicine</i> . . .	A. McPhedran.	{ G. Moquin-Tandon.	—
<i>Surgery</i> . . .	I. H. Cameron.	{ Soulié.	—
<i>Pathology</i> . . .	J. J. Mackenzie.	{ E. Abelous.	—
<i>Bacteriology</i> . . .	"	{ M. Ribaut.	—
<i>Psychology</i> . . .	—	{ A. Rémond.	—
		{ A. Mossé.	—
		{ F. Jeannel.	—
		{ E. Cestan.	—
		{ G. Herrmann.	—
		{ A. Rispal.	—
		{ E. Thouverez (Phil.)	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	TRONDHEIM TECH. SCH.	TÜBINGEN.	TUFTS COLL.
<i>SITE</i> . . .	Trondheim, Norway.	Tübingen, Ger.	Mass., U.S.A.
<i>FOUNDED</i> . . .	1910.	1477.	1852.
<i>PRINCIPAL</i> . . .	S. Sæland.	Koch.	W. L. Hooper.
<i>REGISTRAR</i> . . .	(Vac.)	Rienhardt.	C. W. Hyland.
Senior Professors :			
<i>Chemistry</i> . . .	{ P. Farup (Inorg.). C. N. Riiber (Org.).	W. Wislicenus.	F. W. Durkee.
<i>Physics</i> . . .	S. Sæland.	F. Paschen.	H. H. Marvin.
<i>Mathematics</i> . . .	R. Birkeland.	A. v. Brill.	F. G. Wren.
<i>Astronomy</i> . . .	—	(Vac.)	—
<i>Engineering</i> . . .	{ O. Bragstad (Electro- tech.). J. E. Gunstensen. K. Heje.	—	G. C. Anthony.
<i>Geology</i> . . .	J. H. L. Vogt.	Pompeckj.	A. C. Lane.
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	<i>Tech. Inorg. Chem.</i>	K. Uhlig.	" —
<i>Agriculture</i> . . .	B. F. Halvorsen.	—	—
<i>Botany</i> . . .	<i>Mech. Tech.</i>	H. v. Vöchting.	H. V. Neal.
<i>Zoology</i> . . .	A. Gjessing.	F. Blochmann.	—
<i>Anthropology</i> . . .	A. Watzinger.	—	—
<i>Anatomy</i> . . .	R. Lutz.	A. v. Froriep.	H. H. Germain.
<i>Physiology</i> . . .	—	P. v. Grützner.	G. V. N. Dearborn.
<i>Pharmacology</i> . . .	—	K. Jacobj.	—
<i>Medicine</i> . . .	—	O. Müller.	H. Williams.
<i>Surgery</i> . . .	—	G. Perthes.	F. M. Briggs.
<i>Pathology</i> . . .	—	P. v. Baumgarten.	T. Leary (Med.).
<i>Bacteriology</i> . . .	—	—	Olga Cushing-Leary.
<i>Psychology</i> . . .	—	Gaüpp.	K. Schmidt.

UNIVERSITY.	TULANE.	TURIN.	
		UNIV.	POLYTECH.
<i>SITE</i> . . .	New Orleans, La., U.S.A.	Turin, Italy.	Turin, Italy.
<i>FOUNDED</i> . . .	1834.	1404.	—
<i>PRINCIPAL</i> . . .	E. B. Craighead.	F. Ruffini.	P. Boselli.
<i>REGISTRAR</i> . . .	B. Crump.	A. G. Gorrini.	U. Martin-Wedard.
Senior Professors :			
<i>Chemistry</i> . . .	{ A. L. Metz. L. W. Washington (Ind.).	M. Fileti.	{ L. Balbiano. F. Garelli.
<i>Physics</i> . . .	S. J. Barnett.	{ A. Naccari. C. Somigliana.	G. Grassi.
<i>Mathematics</i> . . .	A. B. Diniwiddie.	{ E. D'Ovidio. C. Segre.	G. Fubini.
<i>Astronomy</i> . . .	—	G. Battista Boccardi.	—
<i>Engineering</i> . . .	{ W. H. Creighton (Mech.). D. S. Anderson (Elec.). W. B. Gregory (Exper.).	—	{ V. Baggi. C. Guidi.
<i>Geology</i> . . .	—	C. F. Parona.	F. Sacco.
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	—	C. Bertacchi.	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	R. S. Cocks.	O. Mattirolò.	<i>Mining.</i>
<i>Zoology</i> . . .	—	L. Camerano (Comp. Anat.).	A. Stella.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	I. Hardesty.	{ Pio Foà. R. Fusari.	—
<i>Physiology</i> . . .	G. Mann.	—	—
<i>Pharmacology</i> . . .	J. T. Halsey.	P. Giacosa.	—
<i>Medicine</i> . . .	J. B. Elliott, jr.	C. Bozzolo.	—
<i>Surgery</i> . . .	R. Matas.	A. Carle.	—
<i>Pathology</i> . . .	C. W. Duval.	B. Morpurgo.	—
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	—	F. Kiesow.	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	UNION.	UPSALA.	URBINO.
<i>SITE</i> . . .	Schenectady - Albany, N. Y., U.S.A.	Upsala, Sweden.	Urbino, Italy.
<i>FOUNDED</i> . . .	1796.	1477.	1670.
<i>PRINCIPAL</i> . . .	C. A. Richmond.	Schüek.	A. Vanni.
<i>REGISTRAR</i> . . .	F. C. Barnes.	v. Bahr.	C. Bardovagni.
Senior Professors:			
<i>Chemistry</i> . . .	E. Ellery.	O Widman.	A. Agrestini.
<i>Physics</i> . . .	H. Opdyke.	{ G. D. Granqvist. C. W. Oseen (Math.).	G. Crestani (Lect.).
<i>Mathematics</i> . . .	C. F. F. Garis.	A. Wiman.	—
<i>Astronomy</i> . . .	B. Boss.	C. Ö. E. Bergstrand.	—
<i>Engineering</i> . . .	O. H. Landreth.	—	—
<i>Geology</i> . . .	J. H. Stoller.	A. G. Högbom.	—
<i>Mineralogy</i> . . .	—	”	F. Mici.
<i>Geography</i> . . .	—	A. Hamberg.	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	A. B. Husteded.	H. O. Juel.	—
<i>Zoology</i> . . .	J. H. Stoller (Biol.).	A. Wirén.	—
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	J. D. Craig.	J. V. Hultkrantz.	—
<i>Physiology</i> . . .	H. C. Gordinier.	H. A. Ohrvall.	—
<i>Pharmacology</i> . . .	—	M. Elfstrand.	—
<i>Medicine</i> . . .	S. B. Ward.	S. G. Hedin.	—
<i>Surgery</i> . . .	S. R. Morrow.	J. G. Ekehorn.	—
<i>Pathology</i> . . .	T. Ordway.	J. U. T. Quensel.	—
<i>Bacteriology</i> . . .	”	A. E. Vestberg (Assist.).	—
<i>Psychology</i> . . .	—	—	—

UNIVERSITY.	UTRECHT.	VALENCIA.	VALLADOLID.
<i>SITE</i> . . .	Utrecht, Holland.	Valencia, Spain.	Valladolid, Spain.
<i>FOUNDED</i> . . .	1636.	15th Century.	1348.
<i>PRINCIPAL</i> . . .	A. A. Nijland.	J. M. Machi y Burguete.	N. de la Fuente Arrimadas.
<i>REGISTRAR</i> . . .	C. Eijkman.	P. M. Romualdo.	J. Peinador y Ramos.
Senior Professors:			
<i>Chemistry</i> . . .	P. van Romburgh.	{ L. Bermejo y Vida. F. Castell y Miralles.	R. Luna Nogueras.
<i>Physics</i> . . .	W. H. Julius.	C. Pastor y Mompié.	L. González Frades.
<i>Mathematics</i> . . .	W. Kapteyn.	J. Codoñer y Blat.	—
<i>Astronomy</i> . . .	A. A. Nijland.	—	—
<i>Engineering</i> . . .	—	—	—
<i>Geology</i> . . .	C. E. A. Wichmann.	—	—
<i>Mineralogy</i> . . .	”	E. Boscá y Casanoves.	E. Rodriguez y Risueño.
<i>Geography</i> . . .	K. Oestreich.	—	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	F. A. F. C. Went.	E. Boscá y Casanoves.	E. Rodriguez y Risueno.
<i>Zoology</i> . . .	{ A. W. Hubrecht. H. F. Nierstrasz.	”	”
<i>Anthropology</i> . . .	J. F. Niermeyer.	—	—
<i>Anatomy</i> . . .	A. J. P. van den Broek.	{ P. Casanova y Ciurana. J. Bartrina y Capella.	S. Sierra y Val.
<i>Physiology</i> . . .	C. A. Pekelharing.	A. Gil y Morte.	L. Clemente y Guerra.
<i>Pharmacology</i> . . .	R. Magnus.	—	—
<i>Medicine</i> . . .	A. S. Talma.	F. Orts y Orts.	—
<i>Surgery</i> . . .	H. J. Laméris.	—	—
<i>Pathology</i> . . .	C. H. H. Spronck.	E. Sloker y de la Pola.	L. Corral y Maestre.
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	P. H. Ritter.	—	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	VANDERBILT.	VASSAR COLL.	VERMONT.
<i>SITE</i> . . .	Nashville, Tenn., U.S.A.	Poughkeepsie, N.Y.	Burlington, Vt., U.S.A.
<i>FOUNDED</i> . . .	1873.	1861.	1791.
<i>PRINCIPAL</i> . . .	J. H. Kirkland.	J. M. Taylor.	G. P. Benton.
<i>REGISTRAR</i> . . .	W. R. Cole.	Ella McCaleb (Dean).	M. W. Andrews.
Senior Professors:			
<i>Chemistry</i> . . .	{ W. L. Dudley. J. T. McGill (Org.).	C. W. Moulton.	N. F. Merrill.
<i>Physics</i> . . .	J. Daniel.	C. W. Chamberlain.	A. W. Slocum.
<i>Mathematics</i> . . .	W. J. Vaughn.	H. S. White.	A. L. Daniels.
<i>Astronomy</i> . . .	" "	Caroline E. Furness.	" "
<i>Engineering</i> . . .	{ W. H. Schuerman (Civ.). C. S. Brown (Mech.).	—	J. W. Votey.
<i>Geology</i> . . .	L. C. Glenn.	G. W. Shattuck.	G. H. Perkins.
<i>Mineralogy</i> . . .	—	—	E. C. Jacobs.
<i>Agriculture</i> . . .	—	—	J. L. Hills.
<i>Botany</i> . . .	G. W. Martin.	A. L. Treadwell.	G. P. Burns.
<i>Zoology</i> . . .	" "	" "	H. F. Perkins.
<i>Anthropology</i> . . .	—	—	G. H. Perkins.
<i>Anatomy</i> . . .	{ S. S. Briggs. A. N. Hollabaugh.	Elizabeth B. Thelberg.	T. S. Brown.
<i>Physiology</i> . . .	B. F. Hambleton.	" "	F. K. Jackson.
<i>Pharmacology</i> . . .	W. H. Witt.	—	D. Marvin.
<i>Medicine</i> . . .	{ J. A. Witherspoon. McP. Glasgow.	—	C. H. Beecher.
<i>Surgery</i> . . .	{ D. Eve. R. A. Barr.	—	J. B. Wheeler.
<i>Pathology</i> . . .	W. Litterer, jr.	—	B. H. Stone.
<i>Bacteriology</i> . . .	" "	A. L. Treadwell.	A. R. Gifford.
<i>Psychology</i> . . .	H. C. Sanborn (Phil.).	Margaret F. Washburn.	

UNIVERSITY.	VIENNA.	VIENNA TECH. H. SCH.	VIRGINIA.
<i>SITE</i> . . .	Vienna, Austria.	Vienna, Austria.	Charlottesville, Va., U.S.A.
<i>FOUNDED</i> . . .	1365.	1815.	1819.
<i>PRINCIPAL</i> . . .	A. Weichselbaum.	—	E. A. Alderman.
<i>REGISTRAR</i> . . .	—	—	H. Winston.
Senior Professors:			
<i>Chemistry</i> . . .	{ R. Wegscheider. G. Goldschmiedt.	{ G. Vortmann. M. Bamberger.	{ F. P. Dunnington. R. M. Bird.
<i>Physics</i> . . .	{ E. Lecher. F. Exner.	{ G. Jäger. H. Mache.	L. G. Hoxton.
<i>Mathematics</i> . . .	{ G. Ritter v. Escherich. W. Wirtinger.	{ E. Czuber. E. Doležal.	W. H. Echols.
<i>Astronomy</i> . . .	J. v. Hepperger.	—	—
<i>Engineering</i> . . .	—	—	W. M. Thornton.
<i>Geology</i> . . .	C. Doelter.	F. Toula.	T. L. Watson.
<i>Mineralogy</i> . . .	{ F. Becke. F. Berwerth.	" "	J. S. Grasty.
<i>Geography</i> . . .	{ E. Oberhammer. E. Brückner (Phys.).	—	—
<i>Botany</i> . . .	{ R. Ritter v. Wettstein. H. Molisch.	F. R. v. Höhnel.	A. H. Tuttle.
<i>Zoology</i> . . .	K. Grobben.	<i>Electrotech.</i>	W. A. Kepner.
<i>Anthropology</i> . . .	R. Pöch (Priv.-Doz.).	K. Hochenegg.	—
<i>Anatomy</i> . . .	{ J. Tandler. F. Hochstetter.	<i>Chem. Technol.</i>	R. H. Whitehead.
<i>Physiology</i> . . .	{ S. Exner. A. Kreidl.	H. Fr. Jüptner v. Jonstorff.	T. Hough.
<i>Pharmacology</i> . . .	E. Ludwig.	—	J. A. Waddell.
<i>Medicine</i> . . .	—	—	J. S. Davis.
<i>Surgery</i> . . .	{ A. Frhr. v. Eiselsberg. J. Hochenegg.	—	S. H. Watts.
<i>Pathology</i> . . .	R. Paltauf.	—	H. T. Marshall.
<i>Bacteriology</i> . . .	A. Weichselbaum.	—	" "
<i>Psychology</i> . . .	H. Swoboda (Priv.-Doz.).	—	A. Lefevre.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	WALES.		
<i>SITE</i>	Aberystwyth.	Bangor, N. Wales.	Cardiff.
<i>FOUNDED</i>	1872.	1884.	1883.
<i>PRINCIPAL</i>	T. F. Roberts.	Sir H. R. Reichel.	E. H. Griffiths.
<i>REGISTRAR</i>	J. H. Davies.	J. E. Lloyd.	J. M. Angus.
Senior Professors:			
<i>Chemistry</i>	A. Findlay.	K. J. P. Orton.	C. M. Thompson.
<i>Physics</i>	D. M. Lewis.	E. T. Jones.	A. L. Selby.
<i>Mathematics</i>	{ R. W. Gencse. G. B. Schott.	G. H. Bryan.	R. H. Pinkerton.
<i>Astronomy</i>	—	—	—
<i>Engineering</i>	—	<i>Forestry.</i>	(Vac.)
<i>Geology</i>	O. T. Jones.	F. Story.	W. S. Boulton.
<i>Mineralogy</i>	—	—	—
<i>Geography</i>	H. J. Fleure.	—	—
<i>Agriculture</i>	C. B. Jones.	R. G. White.	—
<i>Botany</i>	R. H. Yapp.	R. W. Phillips.	A. H. Trow.
<i>Zoology</i>	H. J. Fleure.	P. J. White.	W. N. Parker.
<i>Anthropology</i>	—	—	—
<i>Anatomy</i>	—	—	D. Hepburn.
<i>Physiology</i>	—	—	J. B. Haycraft.
<i>Pharmacology</i>	—	—	—
<i>Medicine</i>	—	—	—
<i>Surgery</i>	—	—	—
<i>Pathology</i>	—	—	E. Emrys-Roberts.
<i>Bacteriology</i>	—	—	"
<i>Psychology</i>	W. J. Jones.	—	—

UNIVERSITY.	WASHINGTON.	WASHINGTON STATE.	
<i>SITE</i>	St. Louis, U.S.A.	Seattle, Wash., U.S.A.	Pullman, Wash., U.S.A.
<i>FOUNDED</i>	1853.	1861.	1890.
<i>PRINCIPAL</i>	D. F. Houston.	T. F. Kane.	E. A. Bryan.
<i>REGISTRAR</i>	—	E. N. Stone.	F. T. Barnard.
Senior Professors:			
<i>Chemistry</i>	{ Le R. McMaster. P. A. Shaffer (Bio-chem.)	H. G. Byers.	E. Pulmer.
<i>Physics</i>	F. E. Nipher.	F. A. Osborn.	B. L. Steele.
<i>Mathematics</i>	C. A. Waldo.	R. E. Moritz.	C. A. Isaac.
<i>Astronomy</i>	G. O. James.	S. L. Boothroyd.	—
<i>Engineering</i>	{ J. L. Van Ornum (Civ.). E. L. Ohle (Mech.). A. S. Langsdorf (Elec.).	{ A. H. Fuller (Civ.). E. O. Eastwood (Mech.).	{ O. L. Waller (Civ.). H. V. Carpenter (Elec. and Mech.). F. A. Thomson (Min.).
<i>Geology</i>	W. E. McCourt.	H. Landes.	S. Shedd.
<i>Mineralogy</i>	"	"	—
<i>Geography</i>	"	—	—
<i>Agriculture</i>	—	—	R. W. Thatcher.
<i>Botany</i>	G. T. Moore.	T. C. Frye.	A. K. Beattie.
<i>Zoology</i>	J. F. Abbott.	T. Kincaid.	A. L. Melander.
<i>Anthropology</i>	—	"	—
<i>Anatomy</i>	R. J. Terry.	"	O. Menig.
<i>Physiology</i>	J. Erlanger.	"	W. E. Ralston.
<i>Pharmacology</i>	D. E. Jackson.	C. W. Johnson.	G. W. Watt.
<i>Medicine</i>	G. Dock.	—	—
<i>Surgery</i>	F. T. Murphy.	—	E. E. Wegener.
<i>Pathology</i>	E. L. Opie.	—	J. W. Kalkus.
<i>Bacteriology</i>	E. F. Tiedemann.	J. Weinzirl.	H. B. Humphrey.
<i>Psychology</i>	E. J. Swift.	W. Savery.	A. A. Cleveland.

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	WELLESLEY COLL.	WESLEYAN.	WESTERN AUSTRALIA.
<i>SITE</i> . . .	Wellesley, Mass., U.S.A.	Middletown, Conn., U.S.A.	Perth, W. Australia.
<i>FOUNDED</i> . . .	1875.	1831.	1912.
<i>PRINCIPAL</i> . . .	Ellen F. Pendleton.	W. A. Shanklin.	Sir J. W. Hackett.
<i>REGISTRAR</i> . . .	Edith S. Tufts.	F. W. Nicolson (Sec.).	H. Gunn.
Senior Professors:			
<i>Chemistry</i> . . .	Charlotte F. Roberts.	W. P. Bradley.	N. T. M. Wilmore.
<i>Physics</i> . . .	Sarah F. Whiting.	M. B. Crawford.	A. D. Ross.
<i>Mathematics</i> . . .	{ Ellen L. Burrell (Pure). { Ellen Hayes (App.).	L. A. Howland (Assoc.).	"
<i>Astronomy</i> . . .	Sarah F. Whiting.	B. H. Camp (Assoc.).	H. E. Whitfield.
<i>Engineering</i> . . .	—	—	W. G. Woolnough.
<i>Geology</i> . . .	Elizabeth F. Fisher.	W. N. Rice.	—
<i>Mineralogy</i> . . .	—	—	—
<i>Geography</i> . . .	Elizabeth F. Fisher.	—	J. W. Paterson.
<i>Agriculture</i> . . .	—	—	W. J. Dakin,
<i>Botany</i> . . .	Margaret C. Ferguson.	H. W. Conn.	"
<i>Zoology</i> . . .	Alice Robertson.	D. D. Whitney (Assoc.).	—
<i>Anthropology</i> . . .	—	—	<i>Biology.</i>
<i>Anatomy</i> . . .	—	—	A. Willey.
<i>Physiology</i> . . .	—	—	—
<i>Pharmacology</i> . . .	—	—	—
<i>Medicine</i> . . .	—	—	—
<i>Surgery</i> . . .	—	—	—
<i>Pathology</i> . . .	—	—	—
<i>Bacteriology</i> . . .	—	—	—
<i>Psychology</i> . . .	Mary W. Calkins.	R. Dodge.	—

UNIVERSITY.	WESTERN RESERVE.	WILLIAMS COLL.	WISCONSIN.
<i>SITE</i> . . .	Cleveland, O., U.S.A.	Williamstown, Mass., U.S.A.	Madison, Wis., U.S.A.
<i>FOUNDED</i> . . .	—	1793.	1848.
<i>PRINCIPAL</i> . . .	C. F. Thwing.	H. A. Garfield.	C. R. Van Hise.
<i>REGISTRAR</i> . . .	J. Dickerman.	E. A. Green (Sec.)	W. D. Hiestand.
Senior Professors:			
<i>Chemistry</i> . . .	{ O. F. Tower. { H. Gruener.	L. Mears.	L. Kahlenberg.
<i>Physics</i> . . .	F. P. Whitman.	W. E. McElfresh.	B. W. Snow.
<i>Mathematics</i> . . .	{ C. J. Smith. { A. H. Palmié.	F. C. Ferry.	{ E. B. Van Vleck. { C. S. Slichter (App.).
<i>Astronomy</i> . . .	F. P. Whitman.	W. I. Milham.	G. C. Comstock.
<i>Engineering</i> . . .	—	—	{ F. E. Turneure. { C. F. Burgess (Chem.). { D. W. Mead (Civ.). { M. C. Beebe (Elec.).
<i>Geology</i> . . .	H. P. Cushing.	H. F. Cleland.	C. K. Leith.
<i>Mineralogy</i> . . .	—	—	A. N. Winchell.
<i>Geography</i> . . .	—	—	—
<i>Agriculture</i> . . .	—	—	—
<i>Botany</i> . . .	<i>Biology.</i> F. H. Herrick.	—	{ C. E. Allen. { J. B. Overton.
<i>Zoology</i> . . .	—	S. F. Clarke.	M. F. Guyer.
<i>Anthropology</i> . . .	—	—	—
<i>Anatomy</i> . . .	{ R. W. Elliott. { C. A. Hamann.	—	C. R. Bardeen.
<i>Physiology</i> . . .	{ J. J. R. Macleod. { W. H. Weir.	F. H. Howard.	J. A. E. Eyster.
<i>Pharmacology</i> . . .	T. Sollmann.	—	A. S. Loevenhart.
<i>Medicine</i> . . .	{ C. F. Hoover. { J. H. Lowman.	—	—
<i>Surgery</i> . . .	{ D. P. Allen. { G. W. Crile.	—	—
<i>Pathology</i> . . .	W. T. Howard.	—	C. H. Bunting.
<i>Bacteriology</i> . . .	"	—	M. P. Ravenel.
<i>Psychology</i> . . .	—	J. E. Russell.	—

WHO'S WHO IN SCIENCE—WORLD'S UNIVERSITIES SECTION.

UNIVERSITY.	WORCESTER POLYTECH. INST.	WÜRZBURG.	WYOMING.
<i>SITE</i> . . .	Worcester, Mass., U.S.A.	Würzburg, Ger.	Laramie, Wyom., U.S.A.
<i>FOUNDED</i> . . .	1865.	1852.	1886.
<i>PRINCIPAL</i> . . .	—	J. Hehn.	C. O. Merica.
<i>REGISTRAR</i> . . .	Z. W. Coombs.	L. Breunig.	E. D. Hunton.
Senior Professors:			
<i>Chemistry</i> . . .	W. L. Jennings.	E. Buchner.	F. W. Heyl.
<i>Physics</i> . . .	{ A. W. Duff. A. W. Ewell.	W. Wien.	A. E. Bellis.
<i>Mathematics</i> . . .	A. D. Butterfield.	{ G. Rost. E. v. Weber.	C. B. Ridgaway.
<i>Astronomy</i> . . .	—	G. Rost.	—
<i>Engineering</i> . . .	{ A. W. French (Civ.). C. M. Allen (Hydraul.).	—	{ A. C. Boyle, jr. (Min.). J. C. Fittlerer (Civ.). E. G. Hoefir (Mech.). A. C. Boyle.
<i>Geology</i> . . .	—	J. Beckenkamp.	—
<i>Mineralogy</i> . . .	—	F. Regel.	—
<i>Geography</i> . . .	—	—	H. G. Knight.
<i>Agriculture</i> . . .	—	G. Kraus.	A. Nelson.
<i>Botany</i> . . .	—	T. Boveri.	B. H. Grave.
<i>Zoology</i> . . .	—	—	—
<i>Anthropology</i> . . .	—	O. Schultze.	—
<i>Anatomy</i> . . .	—	M. v. Frey.	—
<i>Physiology</i> . . .	—	E. S. Faust.	A. Nelson.
<i>Pharmacology</i> . . .	—	D. Gerhardt.	—
<i>Medicine</i> . . .	—	E. Enderlen.	—
<i>Surgery</i> . . .	—	M. B. Schmidt.	O. L. Prien.
<i>Pathology</i> . . .	—	K. N. Lehmann.	—
<i>Bacteriology</i> . . .	—	K. Marbe.	—
<i>Psychology</i> . . .	—	—	—

UNIVERSITY.	YALE.	ZÜRICH.	ZÜRICH FEDERAL TECH. SCH.
<i>SITE</i> . . .	New Haven, Conn., U.S.A.	Zürich, Switz.	Zürich.
<i>FOUNDED</i> . . .	1701.	1834.	—
<i>PRINCIPAL</i> . . .	A. T. Hadley.	A. Egger.	Th. Vetter.
<i>REGISTRAR</i> . . .	A. P. Stokes.	—	E. O. Müller
Senior Professors:			
<i>Chemistry</i> . . .	{ F. A. Gooch. B. B. Boltwood (Radio).	{ A. Werner. H. Abeljanz.	{ M. Cerésolle (Org.). E. Bosshard (Tech.). E. Baur (Phys.). A. Einstein. P. Weiss.
<i>Physics</i> . . .	H. A. Bumstead.	A. Kleiner.	J. Francl.
<i>Mathematics</i> . . .	E. W. Brown.	E. Zermelo.	A. Wolfer.
<i>Astronomy</i> . . .	—	A. Wolfer.	{ F. Prásil (Hydraul.). B. Recordon (Civil). W. Wyssling (Elec.).
<i>Engineering</i> . . .	{ L. P. Breckenridge (Mech.). A. J. Du Bois (Civ.). C. Schuchert.	—	—
<i>Geology</i> . . .	H. E. Gregory.	H. Schardt.	H. Schardt.
<i>Mineralogy</i> . . .	—	U. Grubenmann.	U. Grubenmann.
<i>Geography</i> . . .	I. Bowman.	H. Wehrli.	F. Becker.
<i>Agriculture</i> . . .	—	—	H. C. Schellenberg.
<i>Botany</i> . . .	A. W. Evans.	{ H. Schinz. A. Ernst.	P. Jaccard.
<i>Zoology</i> . . .	A. E. Verrill.	A. Lang.	C. Keller.
<i>Anthropology</i> . . .	A. G. Keller.	O. Schlaginhaufin.	—
<i>Anatomy</i> . . .	{ H. B. Ferris. R. G. Harrison (Comp.)	G. Ruge.	A. Lang (Comp.).
<i>Physiology</i> . . .	R. H. Chittenden.	J. Gaule.	—
<i>Pharmacology</i> . . .	O. T. Osborne.	M. Cloetta.	C. Hartwich.
<i>Medicine</i> . . .	G. Blumer (Dean).	H. Eichhorst.	O. Roth (Hyg.).
<i>Surgery</i> . . .	J. M. Flint.	(Vac.)	—
<i>Pathology</i> . . .	C. J. Bartlett.	O. Busse.	Anal. Chem.
<i>Bacteriology</i> . . .	L. F. Rettger.	W. Silberschmidt.	F. P. Treadwell.
<i>Psychology</i> . . .	R. P. Angier.	G. Lipps.	—

THE WORLD'S SOCIETIES.

Abbreviations—A = Annually.

2A = Biennially.

A/2 = Twice Annually.

Q = Quarterly.

M = Monthly.

Occas. = Occasionally.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
NATIONAL ACADEMIES.							
<i>Argentina.</i>							
Acad. Argentina	Buenos Aires ..	V. G. Quesada ..	C. Oyuela ..				
<i>Austria-Hungary.</i>							
Vienna Acad. of Sci. ..	Universitätsplatz 2, Vienna.	E. v. Böhm-Bawirk (Ph.-hist. cl.) V. v. Lang (V.-P.) (Math.-nat. cl.).	F. Becke ..	1847	60 80 corresp. 80 for. corresp.	—	<i>Denkschr.; Sitzungs- ber. (A/10); Mon- atsh. f. Chem.; Mitt. d. Erdbeben- Komm. (occas.); Anzeiger (A/27).</i>
<i>Hungarian Acad. Sci.</i>							
S. Slav. Acad. Sci. and Art	Budapest ..	A. Berzevicy ..	G. Heinrich ..	1825			
Cracow Imper. Acad. Sci.	Agram ..	T. Smičkikas ..	A. Musié ..	1866			
Roy. Bohem. Soc. of Sci. . .	Cracow ..	Count S. Tarnowski	B. Ulanowski..	1873	168	—	<i>Bull. Internat. (M).</i>
	Prague ..	C. Vrba ..	J. Zubaty ..	1784	250	—	<i>Sitz.-ber. (2 classes); Jahresber.</i>
Bohem. Kaiser Franz-Joseph Acad.	Prague ..	A. Chev. Randa..	C. Vrba ..	1890	238	—	<i>Rozprawy; Bull. In- ternat.; Sběrka prámenů, etc.</i>
<i>Belgium.</i>							
Acad. Roy. de Belg. ..	Brussels ..	C. Francotte ..	E. Marchal ..	1772			
<i>Bulgaria.</i>							
Acad. of Bulg.	Sophia ..	I. E. Guéscow ..	I. Péev ..	1869	—	None.	<i>Lietovpis (A); Sbornik.</i>
<i>Chili.</i>							
Acad. Chilena	Santiago ..	—	Z. Rodriguez Roses.				

Subscriptions refer to Ordinary Members.

THE WORLD'S SOCIETIES—continued.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Mem- bers.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
NATIONAL ACADEMIES—Contd.							
Colombia.							
Acad. Colombiana	Santa Fé de Bogota	R. M. Carrasquilla	D. R. de Guzmán.				
Denmark.							
Roy. Dan. Soc. Sci.	Copenhagen ..	V. Thomsen ..	H. G. Zeuthen ..	1742	171	—	<i>Bull. (A); Skrifter</i> (2 sections, A/1-2).
Ecuador.							
Acad. Ecuatoriana	Quito	C. R. Tobar ..	R. Espinosa ..			—	<i>Bull.; Mem.</i>
Egypt.							
Inst. Egyptien	Cairo	S. E. Yacoub Artin Pascha.	Dr. Bay ..	1859	c. 50 hon. c. 50 ord.	—	
Finland.							
Finn. Soc. of Sci.	Helsingfors ..	—	A. S. Donner ..	1838		—	
France.							
Acad. des Sci. (Inst. de Fr.) ..	Paris	P. Appell ..	G. Darboux .. P. Van Tieghem	1660	84	—	<i>Comptes Rendus;</i> <i>Mém.; etc.</i>
Germany.							
Kais. Akad. d. Wiss.	Berlin	—	A. Auwers .. W. Waldeyer.	1700		—	
Kais. Bayer. Akad. Wiss. ..	Munich	K. T. Ritter v. Heigel.	K. Mayr ..	1759	290	—	<i>Abhandl., Sitzungsber.</i>
Roy. Sachs. Ges. d. Wiss. ..	Leipzig	—	—	1846		—	<i>Novae Acta (A/1-2);</i>
Leopold-Carol. Akad.	Halle	A. Wangerin ..	—	1652	700	—	<i>Leopoldina (A).</i>

THE WORLD'S SOCIETIES—continued.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Foundation.	No. of Members.	Annual Subscription.	PERIODICAL PUBLICATIONS.
NATIONAL ACADEMIES—Contd.							
Great Britain and Empire.							
Royal Society of London ..	Burlington House, Piccadilly, London, W.	Sir A. Geikie ..	J. R. Bradford A. Schuster D. H. Scott (For. Sec.) C. G. Knott ..	1661	c. 450	—	<i>Phil. Trans.</i> ; <i>Proc.</i>
Royal Society of Edinburgh ..	22-24, George Street, Edinburgh	—	J. A. McClelland	1783	630	Res. £3 3s ⁹	<i>Trans. Proc.</i> (A1-2); <i>Proc.</i>
Royal Irish Acad. ..	Dublin, 19, Dawson Street.	Rev. J. P. Mahaffy	R. J. Moss ..	1786	302	£2 2s.	<i>Sci. Proc.</i> (occas.); <i>Econ. Proc.</i> (occas.); <i>Proc. and Trans.</i> (A). <i>J.</i> , vol. XLV., 1911 (A and A13-4). <i>Proc.</i> ; <i>Monthly Notices.</i>
Royal Dublin Soc. ..	Leinster House, Kildare Street, Dublin	Lord Ardilaun ..	D. C. Scott .. J. H. Maiden .. J. A. Pollock.	1731	3,445	£2 2s.	<i>Sci. Proc.</i> (occas.); <i>Econ. Proc.</i> (occas.); <i>Proc. and Trans.</i> (A). <i>J.</i> , vol. XLV., 1911 (A and A13-4). <i>Proc.</i> ; <i>Monthly Notices.</i>
Royal Soc. of Canada ..	Ottawa ..	F. D. Adams ..	F. Bennett ..	1882	131	—	<i>Sci. Proc.</i> (occas.); <i>Econ. Proc.</i> (occas.); <i>Proc. and Trans.</i> (A). <i>J.</i> , vol. XLV., 1911 (A and A13-4). <i>Proc.</i> ; <i>Monthly Notices.</i>
Royal Soc. of New South Wales ..	5, Elizabeth Street, Sydney.	R. H. Cambago ..	J. C. Beattie .. W. Rutt ..	1821	360	£2 2s.	<i>Sci. Proc.</i> (occas.); <i>Econ. Proc.</i> (occas.); <i>Proc. and Trans.</i> (A). <i>J.</i> , vol. XLV., 1911 (A and A13-4). <i>Proc.</i> ; <i>Monthly Notices.</i>
Royal Soc. of Queensland ..	Brisbane ..	P. L. Weston ..	E. L. Piesse ..	—	109	—	<i>Sci. Proc.</i> (occas.); <i>Econ. Proc.</i> (occas.); <i>Proc. and Trans.</i> (A). <i>J.</i> , vol. XLV., 1911 (A and A13-4). <i>Proc.</i> ; <i>Monthly Notices.</i>
Royal Soc. of S. Africa ..	Cape Town ..	L. Péringuey ..	T. S. Hall ..	1908	240	£2	<i>Sci. Proc.</i> (occas.); <i>Econ. Proc.</i> (occas.); <i>Proc. and Trans.</i> (A). <i>J.</i> , vol. XLV., 1911 (A and A13-4). <i>Proc.</i> ; <i>Monthly Notices.</i>
Royal Soc. of S. Australia ..	Adelaide ..	J. C. Verco ..		1853	c. 100	£11s.	<i>Sci. Proc.</i> (occas.); <i>Econ. Proc.</i> (occas.); <i>Proc. and Trans.</i> (A). <i>J.</i> , vol. XLV., 1911 (A and A13-4). <i>Proc.</i> ; <i>Monthly Notices.</i>
Royal Soc. of Tasmania ..	Hobart ..	H. E. Gov. of Tasmania.		1843	166	£1	<i>Sci. Proc.</i> (occas.); <i>Econ. Proc.</i> (occas.); <i>Proc. and Trans.</i> (A). <i>J.</i> , vol. XLV., 1911 (A and A13-4). <i>Proc.</i> ; <i>Monthly Notices.</i>
Royal Soc. of Victoria ..	Victoria Street, Melbourne.	J. Shephard ..		1854	—	£2 2s.	<i>Sci. Proc.</i> (occas.); <i>Econ. Proc.</i> (occas.); <i>Proc. and Trans.</i> (A). <i>J.</i> , vol. XLV., 1911 (A and A13-4). <i>Proc.</i> ; <i>Monthly Notices.</i>
Guatemala.							
Acad. Guatemalteca ..	Guatemala ..	A. Batres Jauregui.					
Holland.							
Koninkl. Acad. van Wetenschapen.	Trippenhuis, Amsterdam.	H. A. Lorentz ..	P. Zeeman ..	1851	50 Sci.	None.	<i>Verhandeling Afh. Naturk.</i> (1st Sect., Math.-Phys.; 2nd, Biol.); <i>Verelag.</i>

THE WORLD'S SOCIETIES—continued.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Mem- bers.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
NATIONAL ACADEMIES—Contd.							
Honduras.							
Acad. Cient. Lit.	—	A. A. R. Fernandez Ponchea.	R. Alvarado Guerrero.		210 Sci. 40 M. 40 Assoc.	— None.	<i>Rendiconti; Mem. Atti (M); Memori (A).</i>
International.							
Internat. Assoc. of Academics ..	St. Petersburg ..						
Italy.							
R. Accad. dei Lincei ..	Rome ..	P. Blaserna ..	E. Millosevich ..	1603			
R. Ist. Veneto di Sci., Lett., e Arte ..	Venice ..	Nic. Papadopoli ..	Gugl. di Berchet ..	1840			
Mexico.							
Acad. Mexicana de Ciencias ..	Mexico City ..	J. D. Casasús ..	E. Fernandez Granadoz.	1894	—	—	<i>Anales.</i>
Norway.							
Kgl. Norske Vidensk. Selskab ..	Trondheim ..	B. Lysholm ..	T. Richter ..	1760	250	—	<i>Skr. (A).</i>
Videnskabs Selskabet ..	Christiania ..	E. C. H. Hertzberg ..	A. Johannessen.	1857	c. 200 Sci.	—	<i>Forchandl.; Skr.</i>
Peru.							
Acad. Peruana ..	Lima ..						
Portugal.							
Acad. das Sci. de Lisboa ..	Lisbon ..	Silva Amado ..	A. A. de Pina Vidal.	1779			
Inst. de Coimbra ..	Coimbra ..	Philomeno da Ca- mara.	J. A. Reiss .. L. S. Viégas.	1852	—	400 Reís	<i>O. Instituto.</i>

THE WORLD'S SOCIETIES—continued.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Mem- bers.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
NATIONAL ACADEMIES—Contd.							
Roumania.							
Acad. Română	Bucharest	J. C. Negruzzi ..	D. Sturdza ..	1866	81	—	Analele and various.
Russia.							
Imper. Akad. Nauk	St. Petersburg ..	H. I. H. Grand-Duke Konstantin.	S. d'Oldenburg	1725	38	—	Bulletin, A 18; Mém. Phys.-Math. Cl.; "Zool. Ann."
S. Salvador.							
Acad. Salvadoreña	S. Salvador	J. J. Cañas ..					
Servia.							
Srpska Krajevska Akad. . . .	Belgrade	S. Novaković ..	L. Kovačević ..	1886	83	—	Glas.; Spomenik; Srpski; Etnog. Zbornic, etc.
Spain.							
R. Acad. Española	Madrid	A. Pidal y Mon ..	M. Catalina ..	1713	36 Ord. 24		
R. Acad. de Ciencias Exactas ..	Madrid, Valverde 26	J. Echegaray ..	F. de P. Arrilaga.	1847	Corresp. c. 100.		
Sweden.							
Svenska Vetenskapsakad. . . .	Stockholm	T. Nordström ..	C. Aurivillius ..	1739	100 Swed. 100 For.	—	K. Svenska Vetenskapsakad. Handl.; Archiv f. Mat., Astron. a. Phys.; Archiv f. Kemt., Miner. a. Geol.; etc.
U.S.A.							
Nat. Acad. of Sci.	Washington ..	Wm. H. Welch (1913-1919).	G. E. Hale (For. Sec.)	1863	132	\$5	Mem.; Repts. (A); Biog. Memoirs.
Venezuela.							
Acad. Venezolana	Caracas	—	J. Calcaño ..				

THE WORLD'S SOCIETIES—continued.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
GENERAL.							
Africa.							
Cairo Sci. Soc.	Giza, Egypt	Prof. W. H. Wilson	H. E. Hurst	—	c. 120	5s.	<i>Repts. and Proc. in Cairo Sci. J. (M). Annual Repts. Catalogue.</i>
Natal Soc.	Pietermaritzburg	L. Line	F. H. Birdsey	1846	650	£1 ls.	<i>Les Arch. Marocaines; Rev. du Monde Musulman.</i>
Tangiers Mission Sci. Fr.	Tangiers, Morocco	A. Le Chatelier	—	1903	—	—	<i>Anales.</i>
America, S. and Central.							
Argentina, Soc. Sci.	Buenos Ayres	V. Castro	A. Sánchez Diaz	1872	e. 640	—	<i>Timehri J.</i>
Antonio Alzate	Mexico	J. J. Numan	J. Cunningham	1844	504	\$10	<i>Revista.</i>
British Guiana, Roy. Agric. and Commerc. Soc.	Georgetown, Brit. Guiana	—	—	1901	c. 400	—	<i>Revista.</i>
Campinas, Centro de Sci. de Ceara, Acad.	Campinas, Brazil	T. Pompeu de Sousa	Barao de Studart	1894	c. 55	\$4	<i>La Revista, Ateneo.</i>
Guatemala, Acad.	Guatemala	A. Batres Jáuregui	V. Rodriguez	1888	18	24 piás.	<i>Anales (M).</i>
Guatemala, Ateneo de	Guatemala	F. Contreras	—	1903	c. 328	—	<i>Memorias; Revista.</i>
Habana, Acad. de Ciencias	Cuba 84a, Havana, Cuba	J. Santos Fernan- dez	J. Le-Roy y Cassi	1861	50	\$12	1913. <i>Miner. Resources of J. Revista.</i>
Habana, Soc. Econ. de Amicos de' Pais	Havana, Cuba	R. Cabrera	M. Valdés Rod- riguez	1792	—	—	
Jamaica, Inst. of	Kingston, Jamaica	Archdeacon Simms	F. Cundall	1879	903	5s.	
Paraguay, Inst.	Asuncion, Paraguay	—	—	1895	—	—	
Toluca, Inst. Porfirio Diaz	Toluca, Mexico	—	—	—	—	—	
Australasia.							
Austral. Assoc. Adv. Sci.	5, Elizabeth Street, Sydney, N.S.W.	T. W. Edgeworth- David	J. H. Meiden	1887	800	£1 per meeting.	<i>Rept. (2A).</i>
New Zealand Inst.	Box 40, Wellington, N.Z.	C. Chilton	B. C. Aston	1867	1,500	£1 ls.	<i>Trans. (A); Proc. (A/3); Bull. (occas.).</i>

THE WORLD'S SOCIETIES—continued.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Mem- bers.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
GENERAL—Contd.							
Austria-Hungary.							
Roy. Hung. Soc. Sci.	Budapest	Béla v. Langyel	L. v. Ilosvay ..	1841	9,780	8 kr. 10 kr.	<i>Termeszetudományi Közlelőny; Pofjűzetek</i> ; and various.
Prague, Ges. z. Förd. deut. Wiss. in Böhmen.	Hugasse 29, Prague	G. C. Laube ..	G. Peters ..	1891	469	6 kr.	<i>Lotos Naturwissenschaften</i> .
Prague, Deut. Naturwiss.-med. Vet.	"Lotos," Prague ..	R. Spitaler ..	J. v. Sterneek..	1849	300	5 k.	<i>Sbornik (A).</i>
Prague, Klub Prirodovědecký ..	Karlovo nám. 21, Prague.	J. Wilhelm ..	Boh. Yežek ..	1870	1,211	200 c.	<i>Archivum naukowe, I. & II.; Zabytki piemiennictwa polskiego; Studya nad historya prawa polskiego, etc.</i>
Polish Assoc. Adv. Sci.	Lemberg	A. Malecki ..	P. Dabkowski..	1900	405	24 c.	<i>Kosmos (M — in Polish, also contains abstracts in Ger., Fr., Eng., etc.); Priroda (Q).</i>
Polish Assoc. Kopernikus	Dlugosza 6, Lemberg	St. Toloczko ..	St. Opolski ..	1874	242	12 kr.	<i>Glasnik (Q); Priroda (Q).</i>
Kroat. Nat. Sci. Soc.	Agram	Lazar Car ..	Ivan Krmptotic	1885	c. 244	15 fr.	<i>Rev.; Tableaux, etc.</i>
Agiate, I.R. Accad. di Sci... ..	Rovereto, Tyrol ..	G. de Probizer ..	C. T. Postinger	1750	50	15 fr.	<i>Mém. et Publ.; Catalogue.</i>
Belgium.							
Bruxelles, Soc. Sci. de	Brussels	E. van der Smissen	P. Mansion ..	1875	20 ord.	—	<i>Mém. et Publ.; Catalogue.</i>
Hainaut, Soc. des Sci.	Mons	A. Houzeau de Lehaie.	E. Hublard ..	1833	—	—	<i>Mém. et Publ.; Catalogue.</i>
Liège, Soc. Roy. des Sci.	Liège	J. Beaupain ..	C. le Paige ..	1810	—	—	<i>Mém.</i>

THE WORLD'S SOCIETIES—continued.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
GENERAL—Contd.							
Canada.							
Canadian Inst.	Toronto	J. R. Tyrrell	Patterson	1849	250	\$5	<i>Trans. and Proc. J. and Proc. Proc. and Trans. (A).</i>
Hamilton Assoc.	Hamilton	W. H. Child	J. Gadsby	1854	c. 250	—	
Nova Scotian Inst. of Sci.	Halifax	D. M. Fergusson	H. Piers	1862	98	\$2	
Denmark.							
Copenhagen, Soc. Icelandic Sci. in France.	153, Amagerbrogade	B. T. Melsted	S. Blöndal	1912	12	—	<i>Mém.; Bull.</i>
Abbeville, Soc. d'Émulation Agen, Soc. des Sci. et Arts	Abbeville Agen	— —	— P. Lanzun	1831 1776	25 Ord. 36 Res. 50 Corresp.	25 fr. 12 fr.	<i>Mém.; Bull.</i>
Aix-en-Provence, Acad. d'Aix Amiens, Acad.	Aix Amiens	E. Aude Garot (Direc.)	Guillibert Lenel	1777 1750	125 36 Tit.	10 fr. 40 fr.	<i>Séances; Mém.</i>
Angers, Soc. Études Sci. Angers, Soc. d'Agric., Sci. et Arts	Angers Angers	Préaubert Bodhier	Humbert C. Urseau	1871 1799	160 80 Tit.	10 fr. 15 fr.	<i>Mém. (A).</i>
Anneey, Soc. Florimontane Anneey, Acad. Salésienne	Anneey Anneey	— J. M. Layrol	M. Le Roux Despois	1851 1878	120 175	12 fr. 6 fr.	<i>Rev. (A).</i>
Arras, Acad.	Arras	G. Actemant	A. Cavois de Saternault	1737	100	—	<i>Mém. (A).</i>
Autun, Soc. Édienne	Autun	A. de Charmasse	Beoll; Gillot	1836	350	15 fr.	<i>Mém. (A).</i>
Bar-le-Duc, Soc. des Lettres, Sci. Bastia, Soc. des Sci. hist. et nat.	Bar-le-Duc Bastia, Corsica	— L. Letteron	Dannreuther A. Ambrosi	1870 1880	265 191	20 fr. 10 fr.	<i>Bull. (M); Mém. Bull.</i>
Bayeux, Soc. des Sci., Arts Bayonne, Soc. des Sci. et Arts	Bayeux Bayonne	Joret-Desclosières —	C. Garnier —	1841 1874	124 —	5 fr. —	<i>Mém. Bull.</i>
Belfort, Soc. d'Émulation Besançon, Acad.	Belfort Besançon	P. Berger L. Pingaud	F. Scheurer A. de Truchis de Varennes	1872 1752	352 40	5 fr. 20 fr.	<i>Bull. (A).</i>
Blois, Soc. des Sci. et Let. Borda, Soc. de	Blois Dax	— F. Abbadie	— C. Lahargou	— 1876	— c. 180	— 12 fr.	<i>Mém. Bull.</i>

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NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
GENERAL—Contd.							
France—Contd.							
Bordeaux, Acad. Nat.	Athénée, Rue Poste Déjeaux 53, Bor- deaux.	P. Courteault ..	L. de Bordès de Fortage.	1712	40	—	<i>Actes</i> (A).
Bordeaux, Soc. Philomathique ..	Bordeaux ..	—	S. Maxwell ..	1808	696	40 fr.	<i>Rev.</i>
Boulogne, Soc. acad.	Boulogne ..	E. Dutoitre ..	E. Sauvage ..	1864	70	25 fr.	<i>Mém.</i> ; <i>Bull.</i>
Bourg, Soc. d'Emulation ..	Bourg ..	Passerat ..	F. Sommier ..	1755	176	5 fr.	<i>J.</i> ; <i>Annales.</i>
Brest, Soc. acad.	Brest ..	Hébert ..	L. Delourmel ..	1858	150	12 fr.	<i>Bull.</i>
Caen, Acad.	Caen ..	P. de Longuemare ..	Prentout ..	1652	45	20 fr.	<i>Mém.</i> ; <i>Tables.</i>
Caen, Assoc. Normande ..	Caen ..	" ..	Pochon ..	1832	1,100	5 fr.	<i>Annuaire.</i>
Cahors, Soc. Études lit., Sci. . .	Cahors ..	Bergounieux ..	A. Crudy ..	1872	180	12 fr.	<i>Bull.</i> (Q).
Cambrai, Soc. d'Emulation ..	Cambrai ..	L. Morand ..	G. Daillez ..	1804	42	15 fr.	<i>Séances et Mém.</i>
Carcassonne, Soc. Études sci. de l'Aude.	Carcassonne ..	J. Sempé ..	L. Gavoy ..	1889	235	6 fr.	<i>Bull.</i> (A).
Carcassonne, Soc. des Arts et Sci. .	Carcassonne ..	—	L. Corbière ..	1836	30	24 fr.	<i>Mém.</i>
Cherbourg, Soc. nat. des Sci. nat. et math.	Cherbourg ..	Capt. Le Cannellier ..	—	1851	60	16 fr.	<i>Mém.</i> —38 vols.
Corrèze, Soc. Sci. Hist. and Archéol.	Brive ..	P. Lalande ..	E. Gaillot ..	1879	120	15 fr.	<i>Bull.</i> (Q).
Corsica, Soc. des Sci. hist. et nat.	18, Boulevard de Cardo, Bastia.	M. l'Abbé Letteron ..	M. A. Ambrosi ..	1881	198	10 fr.	<i>Bull.</i>
Creuse, Soc. des Sci. nat. et Archéol. de la.	Guéret ..	M. Delannoy ..	M. Laroche ..	1832	97	10 fr.	<i>Mem.</i> (A).
Dijon, Acad. de	Dijon, Hotel de Ville Douai ..	Collot ..	E. Picard ..	1740	36	—	<i>Mém.</i>
Douai, Soc. d'Agric., Sci. et Arts du Nord.	Douai ..	Baron de Waren- ghen.	J. Toussaint ..	1799	60	36 fr.	<i>Mém.</i>
Doubs, Soc. d'Emul.	Besançon ..	F. Gougeon ..	G. Gazier ..	1840	210	10 fr.	<i>Mém.</i>
Dunkerque, Soc. des Sci., etc. . .	Dunkerque ..	—	L. Simon ..	1851	350	24 fr.	<i>Bull.</i> ; <i>Mém.</i>
Eure, Soc. d'Agric., Sci., etc., de l'.	Evreux ..	—	—	1798	200	10 fr.	<i>Bull.</i> ; <i>J.</i> ; <i>Recueil.</i>
Foix, Soc. Ariégeoise des Sci. . .	Foix ..	Dresch ..	Pasquier ..	1882	155	10 fr.	<i>Bull.</i>
Grenoble, Acad. Delphinale ..	Grenoble ..	G. Duménil ..	A. Prudhomme ..	1772	260	20 fr.	<i>Bull.</i>

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GENERAL—Contd.							
France—Contd.							
Iaère, Soc. de Statistique des Sci. nat. de l.	Grenoble	H. Ferrand ..	J. Ofner ..	1838	94	10 fr.	<i>Bull.</i> (37 vols.).
Laon, Soc. acad.	Laon	L. Broche ..	C. Westercamp ..	1850	e. 150	12 fr.	<i>Bull.</i>
La Roche, Soc. d'Emul.	La Roche-sur-Yon ..	Mignen ..	P. Lanco ..	1854	150	5 fr.	<i>Annuaire.</i>
Le Havre, Soc. Havr. d'Études ..	Le Havre ..	—	—	1833	136	20 fr.	<i>Recueil; etc.</i>
Le Mans, Soc. d'Agric., Sci., et Art	Le Mans ..	—	—	1761	116	10 fr.	<i>Bull.; etc.</i>
Lille, Soc. des Sci., Agric.	Lille ..	—	—	1817	80	10 fr.	<i>Travaux; Mém.</i>
Lons, Soc. d'Emul.	Lons-le-Saunier ..	L. Guillemant ..	Jeauton ..	1911	200	—	<i>Comptes Rendus; Mém.</i>
Louhans, Soc. des Amis des Arts et Sol.	Louhans ..	—	—	1724	52	—	<i>Annales (Q).</i>
Lyon, Acad. de	Lyons ..	Cote ..	Vanderpol ..	1761	300	10 fr.	<i>Comptes Rendus; Annales.</i>
Lyon, Soc. d'Agric., Sci. et Ind. . .	30, Quai St. Antoine, Lyons.	Baron du Zeil ..	A. Duréault ..	1805	e. 400	25 fr.	<i>Comptes Rendus; Annales.</i>
Mâcon, Acad.	Mâcon ..	A. Guillemot ..	J. Berland ..	1750	—	10 fr.	<i>Comptes Rendus; Mém.; Tables.</i>
Marne, Soc. d'Agric., Sci., etc. . . .	Chalons-sur-Marne ..	—	—	1726	40	—	<i>Recueil; Mém.; etc.</i>
Marseille, Acad. de	Marseilles ..	—	—	1730	40	20 fr.	<i>Recueil; Séances.</i>
Montauban, Acad. des Sci.	Montauban ..	M. Planchon ..	M. Charmont ..	1706	90	—	<i>Mém.—3 series (M); Bull. (M).</i>
Montpellier, Acad. des Sci. de .. .	Montpellier ..	G. Pariset ..	G. Thomas ..	1750	30 Ord.	—	<i>Mém.</i>
Nancy, Acad. de Stanislas	Nancy ..	L. Fortineau ..	P. Grélot ..	1828	113	20 fr.	<i>Mém.; Bull.</i>
Nancy, Soc. des Sci.	Nancy ..	M. Combet ..	Baron G. de Wismes.	1798	134	25 fr.	<i>Annales.</i>
Nantes, Soc. acad.	Nantes, Rue Suffren, 1.	—	H. Moris ..	1862	110	20 fr.	<i>Annales.</i>
Nice, Soc. des Lett., Sci.	Nice, 15, Avenue de la Gare.	L. Nicolle ..	A. Wallon ..	1682	60 Ord.	30 fr. (Res.)	<i>Notices et Mém; Bull.</i>
Nîmes, Acad.	Nîmes ..	—	—	1873	600	50 fr.	<i>Bull. (M).</i>
Nord, Soc. Indust. du	116, Rue de l'Hôpital Militaire, Lille.	—	—	—	—	—	—

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GENERAL—Contd.							
France—Contd.							
Oise, Soc. acad. de l'	Beauvais	Leblond	C. Pihan	1847	230	10 fr.	<i>Comptes Rendus, Mém.</i>
Orléans, Soc. d'Agric., Sci., etc. ..	5, Rue Antoine-Petit, Orléans.	Dr. Rocher	Dr. Fauchon	1809	60	25 fr.	<i>Mém. (A).</i>
Paris, Alliance Sci. Universelle ..	28, Rue Serpente ..	Calmette	M. Desgrez	1872	3,000	20 fr.	<i>Compte-rendus (A).</i>
Paris, Assoc. fr. Av. Sci. ..	Avenue Victor Hugo, Paris	C. Richet	Carvallo	1898	37	20 fr.	<i>Travaux (3A).</i>
Paris, Assoc. de l'Inst. Marey ..	Parc des Princes, Boulogne.	—	—	—	—	—	—
Pau, Soc. des Sci., Lett.	Pau	—	—	1841	150	10 fr.	<i>Bull.</i>
Perpignan, Soc. Agric., Sci., ..	Perpignan	A. Donnezan	L. Campanaud	1833	340	10 fr.	—
Poitiers, Soc. acad. d'Agric., Sci., etc. ..	Poitiers	A. de la Ménar- dière.	V. Beau	1789	188	10 fr.	<i>Bull.</i>
Reims, Acad. de	Reims, Rue Ceres, 30	E. Kalas	H. Jadart	1841	45 Tit.	65 fr.	<i>Travaux.</i>
Rouen, Acad. des Sci., etc. ..	Rouen	E. Montier	A. Gascard	1744	50 (Res.)	50 fr.	<i>Précis anal.</i>
Saint-Brieux, Assoc. Bretonne ..	St. Brieux	Comte Laujuinais ..	F. Le Bilhan	1843	250	15 fr.	<i>Bull. archéol.</i>
Saint-Dizier, Soc. des Lettres, Sci., etc. ..	Saint-Dizier	E. Humblot	O. Jacob	1880	86	10 fr.	<i>Mém.</i>
Saint-Etienne, Soc. d'Agric., etc. ..	Saint-Etienne	—	—	1822	300	12 fr.	<i>Annales.</i>
Saint-Lô, Soc. d'Agric., Archæol., etc. ..	Saint-Lô	Guillot	Gambillon	1833	103	10 fr.	<i>Notices, Mém.; Documents.</i>
Saint-Quentin, Soc. acad. des Sci., etc. ..	Saint-Quentin	Robert	T. Eck	1825	130	40 fr.	<i>Mém.; Publ. agric.</i>
Savoie, Acad. de	Chambéry	—	—	1819	c. 200	—	<i>Mém.; Rev.; etc.</i>
Seine-et-Oise, Soc. des Sci. Nat. et Med. ..	Versailles	M. de Larroche	Duhaut	1831	50	10 fr.	<i>Mém.</i>
Tarbes, Soc. acad.	Tarbes	Comte de Roquette- Eriusson.	P. Labrousche	1853	c. 150	6 fr.	<i>Bull.; Folklore.</i>
Tarn, Soc. des Sci.	Albi	Col. Teyssier	J. Jolibois	1877	115	10 fr.	<i>Rev. hist.; Arch.; Bibl. tarnaise.</i>
Thonon, Acad. Chablais	Thonon	A. Duplan	L. Quiblier	1886	92	10 fr.	<i>Mém.</i>
Toulouse, Acad. des Sci.	Toulouse	—	H. Duméril	1640	50 Ord.	20 fr.	<i>Rec. Mém.; Bull.; Ann.</i>
Toulouse, Acad. des Jeux-Floraux	Toulouse	—	M. de Softren	1323	40	None.	<i>Recueil.</i>

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GENERAL—Contd.							
France—Contd.							
Tournus, Soc. des Amis des Art et des Sci.	Tournus	Chanay	Bernard	1876	100	40 fr.	<i>J.</i> ; <i>Mém.</i> ; <i>Annuaire</i> , <i>Bull.</i>
Troyes, Soc. acad. d'Agri., Sci., etc.	Troyes	H. Renaud-Lutel.	C. Nioré	1798	36 (Res.)	—	<i>Procès</i> ; <i>Bull.</i>
Tulle, Soc. des Lett., Sci., ..	Tulle	—	—	1826	c. 126	20 fr.	<i>Mém.</i> ; <i>Documents</i> ;
Vannes, Soc. polymat. du Morbihan	Vannes	A. Mouzin	J. Girard	1801	c. 324	12 fr.	<i>Bibliog. Vauctus</i> (A).
Vaucluse, Acad. de	Avignon	—	—	—	—	—	<i>Mém.</i>
Vitry-le-François, Soc. des Sci. et Arts.	Vitry	E. Jovy	A. Vast	1861	110	15 fr.	<i>Bull.</i>
Vosges, Soc. Philomath	Saint-Dié	—	—	1875	380	5 fr.	<i>Bull.</i>
Yonne, Soc. des Sci. hist. et nat. de l'.	Musée Départemental, Auxerre.	G. Lemoine	O. Derouges	1847	320	—	<i>Bull.</i> (A/2).
Germany.							
Berlin, Kais. Willh. Ges. z. Förderung d. Wiss.	Kgl. Bibliothek, N.W. 7.	A. Harnack	F. Trendelenburg.	1911	197	—	<i>Sitzungsber.</i> , A10; <i>Arch.</i> , <i>f. Biol.</i> , (occas.), <i>Monatsschrift.</i>
Berlin, Naturforsch. Freunde	Invalidenstr. 43	P. Mateschic	K. Grünberg	1773	250	—	<i>Verhandl.</i>
Berlin, Comenius Ges.	Berlinerstr. 22, Charlottenburg.	L. Keller	E. Joël	1892	1,100	10 M.	<i>Mitteil.</i>
Berlin, Ges. f. Geschichte d. Naturwiss. u. Med.	Leibnizstr. 104, Charlottenburg.	K. v. Buchka	I. Bloch	1906	c. 150	3 M.	—
Altenburg, Naturf. Ges.	—	J. Page, Kruschwitz	F. Beuter	1817	90	8 M.	—
—	—	F. Köhler.	—	—	200	4 M.	—
Ansbach, Naturwiss. Ver.	—	L. Gerstlaner	Wiedemann	1846	350	5 M.	—
Augsburg, Naturwiss. Ver. f. Schwaben u. Neuburg.	—	E. Hartwig	J. Schneider	1834	105	4 M.	<i>Ber.</i>
Bamberg, Naturforsch.-Ges.	—	Messner	A. Hiendlmayr.	1889	200	4 M.	<i>Ber.</i> (A/2).
Bayreuth, Naturwiss. Ges.	—	Zickgraf	Naus	1908	c. 400	3 M.	<i>Jahresber.</i>
Bielefeld, Naturwiss. Ver.	—	O. Rieck	G. Minde-Pouet.	1902	1,100	8 M.	<i>Jahresber.</i> ; <i>Gesam-</i>
Bromberg, Deut. Ges. f. Kunst u. Wiss.	—	—	—	—	—	—	<i>mitte Vertr.</i> ; <i>etc.</i>

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GENERAL—Contd. Germany—Contd.							
Dessau, Ver. f. Landesk. u. Naturwiss.	Herzogl. Hofbiblio- thek.	E. Weyhe	G. Partheis ..	1890	75	—	<i>Flora v. Anhalt.</i>
Erfurt, Akad. gemeinnütz. Wiss.	—	H. R. H. Prince Friedr. Wilh. of Prussia.	E. Stange ..	—	c. 220	—	<i>Acta; Abhandl.; Jahrb.</i>
Freiburg, Wiss. Ges. ..	Freiburg i. Br. ..	—	E. Ehlers ..	1911	—	—	<i>Abhandl.; Nachr.; Göt. Gelehrte Anz.</i>
Göttingen, Kgl. Ges. d. Wiss. ..	—	—	W. Windelband, L. Koenigsberger	1751	—	—	<i>Sitz.-ber.; Abh.</i>
Heidelberg, Akad. d. Wiss. ..	—	H. Lipsius ..	K. Bücher ..	1909	70	—	
Leipzig, Fürstl. Jablon. Ges. d. Wiss.	—	E. Fraas (Stutt- gart).	B. Raasow ..	1768	3,000	11 M.	<i>Tagebl.; Verhandl.; Ber. d. Vorstandb.</i>
Leipzig, Ges. Deutscher Naturf. u. Ärzte.	Stephanstr. 8 ..	E. Korscholt ..	Fr. Kutscher ..	1822	30 Ord. 120 others.	—	<i>Sitz.-ber.; Schriften.</i>
Marburg, Ges. z. Beförd. d. gesamt. Naturwiss.	Marburg	T. Schlumberger.	A. Webrlin ..	1816	825	50 fr.	<i>Bull (M).</i>
Mülhausen, Soc. Indus. de Nédrerrhein, Hist. of Nat. Sci. and Med.	Rue de la Bourse 8 Bonn	O. Vogel (Düssel- dorf).	P. Diegart ..	1826 1912	100	—	<i>Verhandl. in Mitt. Med. Naturw.</i>
Oberlausitz, Ges. d. Wiss. ..	Görlitz, Neissestr. 30	v. Wiedebach ..	R. Jecht ..	1779	280	10 M.	<i>Neues Lausitz. Mag.; etc.</i>
Posen, Deut. Ges. f. Kunst u. Wiss. (Sci. Sect.)	—	Könnemann ..	Wollmann ..	1837	310	10 M.	
Rhein. Ges. f. Wiss. Forsch. ..	Rüssallee, 2, Bonn.	Steinmann ..	A. Pfinger ..	1911	180	20 M.	<i>Ber</i>
Strassburg, Wiss. Ges.	—	Bresslau ..	—	1906	c. 108	—	<i>Schriften.</i>
Strassburg, Med.-Naturwiss. Ver.	Zool. Inst. Univ. Strassburg.	Wollenberg ..	W. v. Seidlitz.	1873	157	3 M.	
Stuttgart, Ver. f. Väterl. Naturk. in Württemberg.	—	E. Fraas ..	F. Eirhler ..	1844	860	5 M.	<i>Jahreshefte (A—67 vols. since 1845).</i>
Thorn, Copernicus Ver. ..	—	K. Boethke ..	A. Semran ..	1854	100	10 M.	<i>Mittelt.</i>
Trier, Ges. f. nütz. Forsch. ..	Trier	—	E. Krüger ..	1801	c. 524	3 M.	<i>Jahresber.</i>
Ulm, Ver. f. Math. u. Naturwiss. ..	—	E. Neuffer ..	F. Claus ..	1865	77	M. 6.40	<i>Mittelt.</i>

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Great Britain and Ireland. London, Brit. Assoc. Adv. Sci. .. [1914 meetings in Australia].	Burlington House ..	Sir O. J. Lodge ..	Maj. P. A. Mac- Mahon. Prof. W. A. Herd- man.	1831	3,500	£1	<i>Rept.</i> (A).
London, African Soc.	64, Victoria Street, S.W.	Sir C. L. Hill ..	H. d'Egville ..	1901	—	£1 1s.	<i>J.</i> (Q).
London, Roy. Asiatic Soc. G.B. ..	22, Albemarle Street, W.	Lord Reay ..	Miss Hughes ..	1823	630	Res. £3 3s. Non-Res. 30s.	<i>J.</i> (Q).
London, Roy. Colonial Inst. ..	Northumberland Avenue.	Earl Grey ..	J. R. Boosé ..	1868	7,570	Res. £2. Non-Res. £1 1s. £5 5s.	<i>United Empire (M); Year B.</i> (A). <i>Proc.</i>
London, Roy. Inst. G.B.	21, Albemarle Street W.	The Duke of North- umberland.	A. Siemens ..	1800	—	£2 2s.	<i>J.</i> (W); Reprints of <i>Lects.</i> <i>Rept.</i> (Q), for members only. <i>Trans.</i> (A).
London, Roy. Soc. of Arts, etc. . .	John Street, Adelphi, W.C.	Duke of Connaught	Sir H. T. Wood.	1754	3,500	5s.	
London, Research Defence Soc. . .	21, Ladbroke Sq., W.	Sir D. Gill ..	S. Paget ..	1908	c. 5,000	£2 2s.	
London, Victoria Inst., or Phil. Soc. G.B.	1, Adelphi Terrace House, Charing Cross.	Earl of Halsbury	F. S. Bishop ..	1865	616	7s. 6d.	<i>Tech. J.</i> (Q).
London, Assoc. of Teachers in Tech. Insts.	55, Fife Avenue, Upper Clapton, N.E.	P. Abbott ..	J. P. Yorke ..	1904	1,200	5s.	<i>Ann. Rept.</i> ; <i>Proc.</i>
London, Hampstead Sci. Soc. ..	Stanfield House, Prince Arthur Rd.	W. M. Flinders Petrie.	C. O. Bartrum R. W. Wylie ..	1899	344	12s. 6d.	<i>Proc.</i>
Edinburgh, Roy. Phys. Soc.	Synod Hall, Castle Terrace.	J. A. Thomson ..	O. C. Bradley ..	1771	130	£1 1s. £1 1s. 5s.	<i>Trans.</i> (A). <i>Proc.</i> <i>S. E. Nat.</i> (A).
Edinburgh, Roy. Scott. Soc. Arts Dublin Univ. Phil. Soc.	117, George Street .. Trinity College	W. Graham-Yooll. R. C. Merdith ..	R. Stanfield .. H. W. Lemon ..	1821 1853	183 350		
South Eastern Union of Sci. Soces. Temple, E.C.	Sec., 2 Garden Court, Temple, E.C.	Sir H. Read ..	W. Martin ..	1896	1,100		

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GENERAL—Contd.							
Great Britain and Ireland—Contd.							
<i>Country:</i>							
Aberdeen Phil. Soc.	17, King's Gate	T. Milne	A. Mackie	1840	180	10s. 6d.	<i>Trans.</i> (pub. every decade for mem- bers only). <i>J. (A).</i>
Bath and W. and South. Counties Soc.	3, Pierrepont Street, Bath.	Sir J. T. W. Llewelyn	T. F. Plowman	1777	1,120	£1	
Bath Roy. Lit. and Sci. Inst.	Terrace Walk, Bath.	—	—	1825	—	£2 2s.	
Bath Lit. and Phil. Assoc.	Terrace Walk	M. H. Scott	M. A. Green	1824	52	10s. 6d.	
Belfast Nat. Hist. and Phil. Soc.	Museum, College Sq., North.	Sir J. W. Byers	R. M. Young	1821	200	£1 1s.	<i>Trans.</i> (A).
Birmingham and Midland Inst. Soc.	Paradise Street, Bir- mingham.	J. F. Liverseege	A. Cresswell	1873	133	5s.	<i>Records of Meteorol.</i> <i>Observ. (A).</i>
Birmingham Nat. Hist. and Phil. Soc.	55, Newhall Street, Birmingham.	G. S. West	W. H. Foxall	1858	210	£1 1s.	<i>Trans.; Rept. and Proc. (A).</i>
Bradford Phil. Soc.	Church Inst., Brad- ford.	J. E. Wilson	E. C. Jeffery	1865	222	10s. 6d.	
Bradford Sci. Assoc.	Mechanics' Inst., Bradford.	—	—	1875	200	5s.	<i>Sci. J.</i>
Brighton and Hove Nat. Hist. and Phil. Soc.	9, Marlborough Place, Brighton.	F. R. Hora	J. C. Clark	1856	160	10s.	<i>Ann. Rept.; Proc.</i>
Burton Nat. Hist. and Archæol. Soc.	Friars Walk, Burton- on-Trent.	F. Thompson	G. S. Hollister	1876	250	5s.	<i>Trans.</i>
Cambridge Phil. Soc.	The Museums, Cam- bridge.	Dr. Shipleby	A. Wood (Phys.), F. A. Potts (Biol.).	1819	400	£1 1s.	<i>Trans. (occas.); Proc. (A)(3).</i>
Chester Soc. Nat. Sci., Lit. and Art.	Grosvenor Museum, Chester.	G. P. Miln	F. Simpson	1871	1,020	5s.	<i>Ann. Rept.; Proc.</i>
Roy. Cornwall Polytech. Soc.	Church Street, Fal- mouth.	T. Hodgkin	E. W. Newton	—	—	10s.	<i>Ann. Rept.</i>

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GENERAL—Contd.							
Great Britain and Ireland—Contd.							
Derbysh. Archæol. and Nat. Hist. Soc.	3, Market Place, Derby.	Duke of Devonshire.	P. H. Currey ..	1878	320	10s. 6d.	<i>J.</i> (A).
Devonshire Assoc. Adv. Sci. ..	c/o Messrs. W. Brendon, Plymouth.	J. D. Enys ..	M. Adams ..	1862	602	10s. 6d.	<i>Rept. and Trans.</i>
Dorset Nat. Hist. and Antiq. Field Club.	Milton Abbey, Vicarage, Dorset.	N. M. Richardson.	Rev. H. Pentin.	1875	—	10s.	<i>Proc.</i>
Glasgow Roy. Phil. Soc. ..	207, Bath Street ..	G. Neilson ..	P. Bennett ..	1802	1,000	£1 1s.	<i>Proc.</i> (A).
Glasgow : Sci. Soc. of Roy. Tech. Colls.	—	J. W. Moyes ..	J. W. Campbell	1892	300	5s.	<i>Trans.</i> (8 per session).
Greenock Phil. Soc. ..	Watt Inst. Kelly Street.	Rev. C. Allan ..	W. D. Boyd ..	—	—	10s. 6d.	
Hertfordsh. Nat. Hist. Soc. ..	Upton House, Watford.	G. W. Lamplugh	C. Oldham ..	1875	—	10s.	<i>Trans.</i>
Hull Sci. and Field Nat. Club ..	Shakespeare Hall, Story Street.	H. M. Foster ..	T. Stainforth ..	—	—	5s.	<i>Trans.</i>
Leeds Phil. and Lit. Soc. ...	Philosophical Hall ..	—	—	—	—	£1 1s.	<i>Ann. Rept.</i>
Leicester Lit. and Phil. Soc. ..	Museum Building ..	F. B. Lott ..	C. H. Spencer..	1835	c. 300	£1 1s.	<i>Rept. and Proc.</i>
Leeds, Pricstley Club ..	University ..	C. T. Whitwell ..	H. M. Dawson .	1875	105	5s.	None.
Manchester Lit. and Phil. Soc. ..	36, George Street ..	F. Nicholson ..	R. L. Taylor ..	1781	155	£2 2s.	<i>Proc. and Mem.</i> (A3).
Museums Assoc. ..	Museum and Art Gallery, Leicester.	E. Howarth ..	E. E. Lowe ..	1890	256	10s. 6d.	<i>Museums J.</i> (M).
Newcastle Lit. and Phil. Soc. ..	—	Sir J. W. Swan ..	A. Holmes ..	1793	3,000	£1 1s.	
North British Acad. Arts, Sci. and Lit.	7, Claremont Bldgs, Newcastle.	Duke of Rutland	F. Emley.	1908	1,000	£1 1s.	<i>Trans.</i> (Q).
Oxfordsh., Ashmolean Nat. Hist. Soc. of	Oxford, Univ. Museum.	P. Elford..	Miss A. L. Stone	1828	300	5s.	
Paisley Phil. Inst. ..	3, County Place ..	J. Ferguson ..	J. Gardner ..	1808	520	5s.	<i>Ann. Rept.</i>
Pertshire Soc. of Nat. Sci. ..	Tay St., Perth ..	W. Barclay ..	S. T. Ellison ..	1867	396	5s. 6d.	<i>Trans. and Proc.</i> (A).
Preston Sci. Soc. ..	119a, Fishergate ..	Rev. A. L. Cortie.	F. Chadderton.	1893	420	5s.	
Rochdale Lit. and Sci. Soc. ..	—	W. H. Sutcliffe ..	J. R. Ashworth	1878	243	6s.	<i>Trans.</i> (A2).

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GENERAL—Contd.							
Great Britain and Ireland—Contd.							
Scarborough Phil. and Archæol. Soc.	The Museum ..	Lt.-Col. C. W. Tatham.	E. A. Wallis ..	—	—	£1	<i>Ann. Rept.</i>
Sheffield Lit. and Phil. Soc.	St. James' Chambers, Church St. Smith Inst. ..	W. M. Hicks ..	T. S. Cole .. T. P. Lockwood .. R. Kidston ..	—	—	£2 2s.	<i>Trans.</i> (A).
Stirling Nat. Hist. and Archæol. Soc.	14, Cross Street, Manchester.	Lord Rotherham	G. Moores ..	1878	112	5s.	<i>J.</i> (A/2).
Textile Inst.	The Museum, War- wick.	W. B. Gibbins ..	J. M. Mello .. W. Shephard.	1836	—	£1 1s.	<i>Naturalist</i> (M).
Warwicksh. Nat. Hist. and Archæol. Soc.	Municipal Museum, Hull.	A. C. Seward ..	T. Sheppard ..	—	—	10s. 6d.	<i>Ann. Rept.</i>
Yorkshire Naturalists' Union ..	Museum, York ..	T. Anderson ..	T. Anderson .. C. E. Elmhirst.	1822	—	£2	
Yorksire Phil. Soc.							
Greece.							
Epistemonike Hetaireia	Strophastr. 10, Athens.	Joh. N. Hatzidakis	Geo. N. Hatzidakis.	1888	200	15 fr.	<i>J.</i> (Q).
Parnassos	Athens	S. Sakellariopoulos	S. A. Papafrangos	1865	500	30 fr.	
Holland.							
Batavian Soc. for Prom. of Exper. Phil.	Beursteege 8, Rotterdam.	Z. Zimmerman ..	R. H. van Dorsten:	1769	300	None.	<i>Verhandel.</i>
Holl. Maatsch. d. Wetensch. ..	Haarlem, Spaarne 17	G. van Tienhoven	J. P. Lotsy ..	1752	90	—	<i>Natuurk. Verhandel.</i> ; <i>Archives</i> ; etc.
N. Brabant: Prov. Gen. v. Kun- sten en Wetensch.	's Hertogenbosch ..	L. J. W. Smit ..	F. van Rycke- vorsel.	1837	—	—	
Nederl. Kolonien Maatsch. t. Bevord. v. h. Natuurk.	Amsterdam (with branch in Batavia).	J. B. van Hentz	H. F. Nierstrasz	1890	122	50 fl.	<i>Not. v. d. algem. ver- gadi.</i> ; <i>Bull.</i> ; etc.
Utrecht: Provincial Soc. Arts and Sci.	—	W. Caland ..	J. L. Hoorweg.	1773	747	8s.	

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GENERAL—Contd.							
India.							
Royal Asiatic Soc.	Bombay, Town Hall	Sir N. G. Chanda- varkar.	P. B. Haigh . .	1804	455	50 Rs.	<i>J.</i>
" "	Colombo	Sir H. Clifford . .	H. C. P. Bell . . J. Harward.	1845	225	Rs. 10, 50	<i>J.</i>
" Asiatic Soc. of Bengal	Singapore Calcutta, 1, Park Street.	Col. G. F. A. Harris.	H. N. Ridley . . G. H. Tipper . .	1877 1784	150 508	— 24 Rs.	<i>J.</i> ; <i>J.</i> ; <i>Proc.</i> ; <i>Bibl. In- dica</i> ; <i>Mem.</i>
Italy.							
Rome, Soc. Ital. Progr. Sci.	Via del Collegio Ro- mano, 26.	V. Soialoja . .	V. Reina . .	1907	1,500	10 Lire.	<i>Atti.</i>
Rome, Soc. Ital. d. Sci.	—	V. Dini	E. Paterno . .	1782	52	—	<i>Mem.</i>
Accad. Etrusca	Cortona	—	—	1726	—	—	<i>Disertazioni.</i>
Bergamo, R. Ateneo di Sci., etc.	Via Donizetti	E. Fornoni	G. Mantorani . .	—	c. 300	—	<i>Atti.</i>
Pologne, R. Accad. d. Sci. dell. Istituto.	—	P. Albertoni	E. Costa	1714	c. 150 Sci.	—	<i>Commentari.</i>
Brescia, Ateneo Patrio	—	B. Castiglioni	F. Giassenti . .	1802	80	—	<i>Atti</i> ; <i>Bol.</i>
Catania, Accad. Gisenia di Sci. nat.	Sicily	A. Ricco	A. Russo	1824	80	—	<i>Atti</i> (A); <i>Mem.</i>
Florence, Accad. d. Crusca	—	G. Tortoli	G. Mazzoni	—	210	20 Lire.	(occas.); <i>Natura</i> (M).
Ital. Soc. di Sci. Nat.	Palazzo del Museo Civico, Milan.	M. de Marobi	B. Parisi	1856	—	—	<i>Atti</i> and <i>Mem.</i>
Lucca, Accad. di Sci.	—	H. M. King of Italy.	S. Rindi	1584	150	—	<i>Atti</i> and <i>Mem.</i>
Mantua, Roy. Accad. Virgiliana	Palazzo accademico	—	C. Caneti F. A. Dell'Acqua . .	1768	—	—	<i>Atti</i>
Milan, Ist. Lombardo di Sci. e Lett.	—	G. Celoria	L. Gabba	—	—	—	<i>Rend. Conti</i> ; <i>Atti.</i>
Naples, Soc. R.	—	I. Petrone	F. Masci	1808	—	—	<i>Rend. Conti</i> ; <i>Atti.</i>
Naples, R. Ist. d'Incoraggiamento	—	E. Cocchia	M. Kerbaker	1732	—	—	<i>Rend. Conti</i> ; <i>Atti.</i>
Naples, Accad. di Sci. Fis. e Mat.	—	A. della Valle	G. de Lorenzo	1808	—	—	<i>Rend. Conti</i> ; <i>Atti.</i>

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GENERAL—Contd.							
Italy—Contd.							
Padua, R. Accad. di Sci.	—	V. Crescini ..	G. Vicentini ..	1779	80	—	—
Palermo, R. Accad. di Sci.	Palazzo municipale	G. Pitre ..	A. Sansone ..	1722	40	—	<i>Atti; Mem.</i>
Turin, R. Accad. di Sci.	Via Maria Vittoria, 3	S. E. P. Boselli ..	De Sanctis Segre ..	1757	c. 150	10 L.	<i>Atti; etc.</i>
Udine, R. Accad. di Sci.	—	A. Battistella ..	P. Biasutti ..	1756	100	—	<i>L'Ateneo Veneto.</i>
Venice, Ateneo Veneto ..	—	F. N. Mocenigo ..	G. Favanello.	1810	—	—	—
Japan.							
Japan, Asiatic Soc. of ..	Kyobunkwan, Ginza	Sir C. MacDonald,	Rev. G. F.	1872	406	5 Yen.	<i>Trans. (A).</i>
Tokio, Deutsche Ges. f. Natur-u.	Shichome, Tokyo.	K.C.B.	Sweet.	—	430	12 Yen.	<i>Mitsui. (A/3).</i>
Voelk. Ostasiens.	Imagawakoji	R. Lehmann ..	H. Wänig ..	1873	—	—	—
Java.							
Batav. Genoots. v. Kunsten en	Batavia ..	A. J. Baron Quarles	B. A. J. van	1778	c. 350	40 fl.	<i>Verh.; etc.</i>
Wetensch.	—	—	Wetttum.	—	—	—	—
K. Naturk. Veren. in Nederl. Ind.	Batavia ..	J. de Haan ..	H. J. van	1850	c. 270	12 fl.	<i>Natuurk. Tijds.;</i>
—	—	—	Lunmel.	—	—	—	<i>Acta.</i>
Portugal.							
Lisbon, Soc. Portug. des Sci. Nat.	Inst. Bacteriologico	J. M. de Almeida	D. M. Athias ..	1907	86	6,000 reis.	<i>Bull. (A).</i>
—	Camara Pestand.	Lima.	C. da Costa.	—	—	—	—
Roumania.							
Bucharest, Soc. de Stiinte	—	P. Poni ..	C. I. Istrati ..	1890	29 Ord.	—	<i>Bulet.</i>
Jassy, Soc. de Stiinte ..	Lab. d'Electricité,	P. Poni ..	Dr. Hurmuzescu	1900	85	10 f.	<i>Annales Sci. de</i>
—	Univ.	—	—	—	—	—	<i>F'Univ. de Jassy.</i>
Jassy, Soc. Stiint. si Lit. ..	—	T. T. Burada ..	A. D. Atanasiu	1889	—	—	<i>Arhiva (A/10).</i>
Russia and Siberia.							
Charkow Nat. Sci. Soc. ..	—	—	M. A. Alexenko	1869	135	None.	<i>Trudy.</i>
Dorpat Nat. Sci. Soc. ..	—	—	N. V. Kultaşer	1853	c. 190	5 rub.	<i>Trudy; etc.</i>

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GENERAL—Contd.							
Russia and Siberia—Contd.							
Kasan, Soc. Archeol., Hist. and Ethnol.	Imper. Univ. ..	N. F. Katanoff ..	M. I. Benemansky.	1878	121	5 rub.	<i>Izvestiya</i> (A.6).
Kasan Nat. Sci. Soc.	—	—	M. M. Noiniskij	1869	175	6 rub.	<i>Pril.</i> ; <i>Trudy</i> .
Kiev Nat. Sci. Soc.	Universitat..	S. Nawaschin ..	N. G. Cholodny	1869	130	3 rub.	<i>Zapiski</i> ; <i>Protokoly</i> .
Moscow Nat. Sci., Anthropol. and Ethnol.	—	—	V. V. Bogdanov	1863			
Odessa Nat. Sci. Soc.	—	—	P. S. Sesterikov	1869	300	3 rub.	<i>Zapiski</i> .
Saratov Nat. Sci. Soc.	—	—	B. T. Dixon ..	1895	—	5 rub.	<i>Trudy</i> .
Warsaw Soc. Sci.	Krakowskie Praed- mieście, 7.	A. v. Jablonowski	F. Pulaski ..	1908	c. 100	—	<i>Sprawyozdania</i> ; <i>etc.</i>
Tomsk Soc. of Nat. Sci. and Med.	—	V. Sapožnikov ..	N. Beresnegovsky	1889	100	—	<i>Protokol</i> .
Spain.							
Barcelona, R. Acad. de Ci. y Artes	—	J. Domenech Estapa	A. Bofill y Poch.	1764	60 Res.	—	<i>Bol.</i> ; <i>Mem.</i> ; <i>Nomina</i> (A).
Barcelona, Inst. d'Estud. Catalans	Palau de la Diputació	M. A. M. Alcover.	E. d'Ors ..	1907	21	—	<i>Arxius</i> ; <i>Anuari</i> .
Sweden.							
Gothenburg, K. Vetensk. och Vitterhets-Samh.	—	R. Röding ..	O. Nordenskjöld	1778	100	None.	<i>Handl.</i> (A).
Lund, K. Fysiol. Sällsk.	Lund ..	E. Tegner ..	C. M. Fürst ..	1772	100 Swed. 100 F.M.	None.	<i>Handl.</i> (A), 23rd vol.
Nobel Foundation	Stockholm ..	Count F. Wacht- meister.	Baron C. v. Otter.	1900	—	—	<i>Les prix Nobel</i> (A).
Upsala, K. Vetensk. Soc. ..	—	A. Wiman ..	N. C. Duner ..	1710	50 Swed. 100 F.M.	—	<i>Nova Acta</i> (3 A).
Switzerland.							
Berne, Soc. Hérvét des Sci. Nat. ..	—	E. Sarasin ..	P. Guye ..	1815	c. 2,000	5 fr.	<i>Actes</i> ; <i>Mém.</i>
Berne, Naturforsch. Ges.	—	R. Huber ..	H. Rothenbühler	1786	c. 175	8 fr.	<i>Mitteil.</i>

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GENERAL—Contd.							
Switzerland—Contd.							
Aarau Naturforsch. Ges.	—	F. Mühlerberg	A. Hartmann	1811	c. 230	8 fr.	<i>Mittel.</i>
Basel Naturforsch. Ges.	—	H. Vellou	A. Hagenbach	1817	340	—	<i>Verhandl.</i> , 23 ann. vols.
Fribourg, Soc. Fribourg des Sci. Nat.	—	P. Joye	C. Garnier	1871	150	5 fr.	<i>Bull.</i> (A); <i>Mem.</i> (A).
Geneva, Inst. Nat.	University, Geneva	H. Fazy	J. Briquet	1858	500	10 fr.	<i>Mem.</i> and <i>Bull.</i>
U.S.A.							
Amer. Assoc. Adv. Sci.	Smithsonian Inst., Washington	E. B. Wilson	L. O. Howard	1847	8,000	\$3	<i>Proc.</i> (A); <i>Sci.</i> (W); <i>Pop. Sci. Monthly.</i>
Amer. Acad. Arts and Sci.	Boston, 28, Newbury Street.	J. Trowbridge	E. H. Hall	1780	c. 600	\$10	<i>Mem.</i> ; <i>Proc.</i> ; etc.
Amer. Inst. Sci. Research	New York	—	J. H. Hyslop	1904	800	\$10	<i>Proc.</i> ; <i>J.</i>
Amer. Phil. Soc.	104, S. 5th Street, Philadelphia	W. W. Keen	I. M. Hayes	1743	520	—	<i>Trans.</i> (occas.); <i>Proc.</i> (occas.).
Alpha Omega Alpha	4306, Sansom St., Philadelphia	—	A. W. Goodspeed.				
Boston Soc.	Memorial Hall, Old State House.	G. H. Norcross	W. W. Rost	1881	c. 1,120	\$5	<i>Ann. Proc.</i> ; <i>Bost. Soc. Proc.</i>
Brooklyn Inst. Arts and Sci.	Lafayette Avenue	F. W. Hooper (Direc.), L. H. Smith	—	1824			
Buffalo Soc. Nat. Sci.	—	D. S. Jordan	C. E. Cummings	1861	600	\$5	<i>Bull.</i> (c. A/2), <i>Proc.</i> ; <i>Mem.</i> ; <i>Occas. Papers.</i>
Calif. Acad. Sci.	San Francisco	—	—	1853	200	\$6	<i>Trans.</i> ; <i>Bull.</i> ; <i>Bull. Nat. Hist. Survey.</i>
Chicago Acad. Sci.	Lincoln Park	T. C. Chamberlin	W. A. Atwood	1857	350	\$5	<i>Proc.</i>
Colo. Sci. Soc.	Denver, 1510, Court Place.	C. W. Comstock	W. A. Johnston	1882	246	\$10	<i>Trans.</i> (occas.); <i>Mem.</i> (occas.).
Conn. Acad. Arts and Sci.	New Haven	Hon. S. E. Baldwin	G. F. Eaton	1799	190	\$5	

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GENERAL—Contd.							
U.S.A.—Contd.							
Davenport Acad. Sci.	704, Brady Street ..	E. K. Putnam ..	J. H. Paarmann	1867	382	\$3	<i>Proc.</i>
Franklin Inst.	13, 15, 17, S. 7th Street, Pennsylv- vania.	W. Clark ..	R. B. Owens ..	1824	1,200	Res. \$15 Non-Res. \$5	<i>J. (M).</i>
Indiana Acad. Sci.	Indianapolis ..	D. Bodine ..	A. J. Bigney ..	1885	300	\$1	<i>Proc. (A).</i>
Iowa Acad. Sci.	Des Moines ..	C. N. Kinney ..	L. S. Ross ..	1887	c. 260	\$1	<i>Proc. (A).</i>
Kansas Acad. Sci.	Topeka, Capitol Building.	J. M. McWharf ..	J. T. Lovewell ..	1865	200	\$1	<i>Trans.</i>
Maryland Acad. Sci.	Baltimore, 105, W. Franklin Street.	P. R. Uhler ..	E. Stabler, Jr. ..	1859	210	—	<i>Trans.</i>
Michigan Acad. Sci.	Ann Arbor ..	W. E. Praeger ..	G. D. Shafer ..	1894	c. 170	\$3	<i>Ann. Rept.</i>
Minnesota Acad. Sci.	Minneapolis ..	T. B. Walker ..	H. Gale ..	1873	150	\$3	<i>Bull. (Occas.).</i>
Nebraska Acad. Sci.	Lincoln ..	G. E. Condra ..	O. W. Oestlund ..	1891	c. 110	\$1	<i>Publ.</i>
N.Y. Acad. Sci.	c/o Amer. Mus. Nat. Hist., New York.	E. McMillin ..	F. D. Barker ..	1817	500	\$10	<i>Annals (A); Mem.</i> <i>(occas.); Bull.</i> <i>(W. Oct.—May).</i>
N. Carolina Acad. Sci.	Raleigh ..	—	—	1902	c. 50	—	<i>Ohio Naturalist (M);</i>
Ohio State Acad. Sci.	Columbus ..	B. Fink ..	L. B. Walton ..	1891	250	\$1.50	<i>Proc. (A); Special</i> <i>Papers (occas.).</i>
Philadelphia, Acad. Nat. Sci.	Logan Square, Phila- delphia	Hon. S. G. Dixon	E. J. Nolan ..	1812	480	\$10	<i>Proc. (3 pts. A); J.</i> <i>(Occas.).</i>
St. Louis, Acad. Sci.	3817, Olive Street ..	W. Trelease ..	J. P. Moore.	1856	c. 430	\$6	<i>Trans.; Mem.; etc.</i>
Sigma Xi ..	Cornell Univ., Ithaca, N.Y.	—	W. E. McCourt	—	—	—	—
Sioux City Acad. Sci. and Lett.	—	—	—	—	—	—	—
Southern Cal. Acad. Sci.	Los Angeles, Cal. ..	W. A. Spalding ..	H. O. Collins ..	1891	300	\$3	<i>Bull. (Q).</i>
Staten-Island Assoc. Arts and Sci.	New Brighton ..	Hon. H. R. Bayne	A. Hollick ..	1881	350	\$3	<i>Proc. S. I. Assoc. (Q);</i> <i>Mus. Bull. (M).</i>
Texas Acad. Sci.	Austin, Univ. of Texas.	H. Y. Benedict ..	J. T. Patterson	1892	154	\$1	<i>Trans.</i>

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U.S.A.—Contd.							
Warren Acad. Sci.	Warren	F. A. Dubois	E. Lindsey	1903	o. 100	\$1	<i>Ann. Rept.</i>
Wash. Acad. Sci.	—	O. H. Tittmann	G. K. Burgess	1898	365	\$5	<i>J.</i> (Bi-monthly).
Wash., Phil. Soc. of	Cosmos Club	E. B. Rosa	R. L. Paris	1871	150	\$3	<i>Bulls.</i> in <i>J. Wash. Acad. Sci.</i> (Fort-nightly).
Wisc. Acad. Sci., Arts. and Lett. . . .	Madison	D. C. Manro	W. J. Humphreys. A. Beatty	1870	250	\$1	<i>Trans.</i> 1 vol. every 2 yrs., in ann. pts., 6 numbers in each pt.
AGRICULTURE, FORESTRY, ETC.							
(See also General, especially for France.)							
11th Internat. Cong. of Agric.	—	H. S. Hartnoll	Capt. W. H. Allen.	1864	300	20 Rs.	<i>J.</i>
Burma, Agri. Hortic. Soc. of	Rangoon	—	T. McRoe	1838	10,200	£1	
England, Roy. Agric. Soc.	London, 16, Bedford Square.	Sir W. Seehlich	E. Davidson	1882	1,300	4s.; 7s. 6d.; £1 ls.	<i>J. of Forestry</i> (Q); <i>J. Trans.</i> (A).
Roy. English Arboric. Soc.	Haydon Bridge, Northumberland.	Lord Castletown	E. Knowlton	1900	150	10s. 6d.	<i>Trans.</i> (A).
Irish Forestry Soc.	5, Molesworth St., Dublin.	Peters	H. Barford	1890	3,200	3 M.	<i>Die Heimat.</i>
Kiel Ver. z. Pflege d. Nat. u. Landesk.	Hamburger Chaussee 110.	R. A. Pearson	E. H. Chapman	1832	1,350	4 M.	
N.Y. State Agric. Soc.	Albany, Geological Hall.	Knoke	Brunk	1848	392	4 M.	<i>Mitteil.</i>
Osnabrück, Ver. f. Geschichte u. Landesk.	Ger.						

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AGRICULTURE, etc.—Contd.							
Rio de Janeiro, Soc. de Agric. ..	Georgetown, Brit. ..	Moura Brazil ..	J. Cunningham ..	1844	500	\$10	<i>Timchri</i> (A/2).
Roy. Agric. and Commerce Soc.	Gutana, ..	J. B. Laing ..					
Roy. Scott. Arboric. Soc. ..	19, Castle Street, Edinburgh.	Capt. A. Stirling ..	R. Galloway ..	1854	1,430	£1 1s.; 10s. 6d.; 6s.; 4s.	<i>Trans.</i> (A/2).
Scotland, Highland and Agric. Soc. of.	3, George IV. Bridge, Edinburgh.	Duke of Argyll ..	J. Stirton ..	1787	6,815	£1 3s. 6d.; 10s.	<i>Trans.</i> (A).
ANATOMY.							
<i>(See also Medicine.)</i>							
Bordeaux, Soc. anat. clin. ..	—	Anglade ..	Philip ..	1880	120	20 fr.	<i>Bull.</i>
Brussels, Soc. d'Anat.-pathol. ..	Parc Leopold, Brus- sels.	L. Sténon ..	Sand ..	1846	160	5 fr.	<i>Comptes Rendus.</i>
Lille, Soc. anat.-clin. ..	56, Rue du Port, Lille	Augier ..	J. Steinhaus.	1885	—	—	<i>Bull.</i>
G. B. and I.: Anat. Soc. of ..	(Sec.) 2, Harley Place London, N.W.	R. W. Reid ..	A. Besson ..	1887	159	10s. 6d.	<i>Trans.</i> (A); <i>J. Anat. and Physiol.</i> (Q).
Nantes, Soc. anat. ..	—	A. Malherbe ..	A. Macphail ..				<i>Bull.</i>
Paris, Soc. anat. ..	7, Rue Pierre-Nicole prolongée.	Prof. Perrin de la Touche.	Castagnary ..	1871	40	5 fr.	<i>Comptes-rendus.</i>
St. Petersburg, Soc. of Anat. and Anthrop. of Milit.-Med. Acad.	37, Nijegorodskais, St. Petersburg.	J. Shawlowsky ..	A. Nicolas ..	1899	324	5 fr.	<i>Trudy.</i>
Amer. Anthrop. Assoc. ..	Washington ..	R. B. Dixon ..	K. Jazuta ..	1893	76	3 roubles.	
Amer. Inst. of Anthrop. ..	Cleveland ..	General J. G. Wilson.	G. G. MacCurdy ..	1902	400	\$6	<i>Amer. Anthrop. (Q); Memoirs</i> (period.)
Amer. Ethnol. Soc. ..	Amer. Mus. of Nat. Hist., New York.		M. Zéligzon ..	1890	c. 196	\$5	<i>J.</i>
			R. H. Lowie ..	1842	100	\$10	<i>Pub. Amer. Ethnol. Soc.</i> (A).

THE WORLD'S SOCIETIES—continued.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
ANTHROPOLOGY—Contd.							
Berlin, Ges. f. Anthrop. Ethnol. . .	Königgrätzerstr. 120	H. Virchow . .	P. Traeger . .	1869	950	20 M.	<i>Zeitsch. f. Ethnol.</i> (A 6); <i>Præhist. Zeitsch.</i> (Q). <i>J.</i> (A 3—4).
Bombay, Anthropol. Soc.	Town Hall, Bombay <small>11, 12, 13, 14</small>	Lt.-Col. K. R. Kertikar.	J. J. Modi . .	1886	101	10s.	
Brussels, Soc. d'Anthrop.	9, Rue des Sablons . .	E. Houzé . .	L. Dekeyser . .	1882	200	10 fr.	<i>Bull.</i> ; <i>Mem.</i>
Germany, Deutsche Ges. f. Anthrop., etc.	Binderstr. 14, Hamburg.	Beltz	G. Thilenius . .	1870	c. 2,000	5 M.	<i>Archiv.</i> (A/2); <i>Præhist. Zeits.</i> ; <i>Korrespondenzbl.</i> (M). <i>Mannus</i> (Q).
Ger. Prehist. Soc.	c/o Dr. Kossinna, Berlin-Lichtfelde.	G. Kossinna . .	—	1909	440	12 M.	
Göttingen, Anthropol. Ver.	—	F. Merkel . .	Trenkel . .	1873	109	M. 2.50	<i>J.</i> (A/2); <i>Man.</i> (M); <i>Anthropol. Notes.</i>
G. B. and L., Roy. Anthropol. Inst.	London, 50, Great Russell Street, W.C.	A. Keith . .	T. C. Hodson . .	1871	c. 500	£2 2s.	<i>Research and Rev.</i> ; <i>Trans.</i>
Indian Research Soc.	Calcutta, 78, Serpentine Lane.	A. C. Sen . .	S. Chandra Das	1907	400	10 Rs.	<i>Bull.</i>
Grenoble, Soc. Dauphin d'Ethnol. et d'Anthrop.	Sch. of Med. . . .	Dr. Hermite . .	Dr. Léger . .	1894	250	10 fr.	
Internat. Cong. f. Kriminal. Anthrop.	Cologne	Prof. Flandrin . .	—	1885	300	20 M.	<i>Congressber.</i> (about every 3 years).
Italy, Soc. Ital. di Antrop., Etnol. e Psic. Comp.	Florence, Via Gino Capponi 3.	Prof. v. Balogh. C. De Stefani . .	R. Biasutti . .	1870	187	20 fr.	<i>Archivio</i> (Q).
Köln Anthropol. Ges.	Cologne	C. Rademacher . .	O. Prose . .	1903	c. 110	10 M.	<i>Jahresber.</i> , etc.
Hungarian Ethnol. Soc.	Budapest	E. v. Szalay . .	A. Solyomossy . .	1890	1,063	10 K.	<i>Ethnol.</i> ; <i>Ertasio</i> (A).
Lyon, Soc. d'Anthrop.	Lyon	Morat	E. Chantre . .	1881	160	10 fr.	<i>Bull.</i>
Internat. Soc. of Ethnol.	44, Jan van Goyenkade, Leyden, Holland.	C. Snonck Hurgronje.	A. W. Nienwenhuis	1893	—	£1	<i>Internat. Arch.</i> f. <i>Ethnol.</i> (2 M).
Munich, Ges. f. Anthrop., etc. . .	Munich, Neuhauserstr. 51.	J. Ranke . .	F. Birkner . .	1870	260	6 M.	<i>Beiträge.</i>
Munich, Die Brücke	17, Schwindstr. . .	L. Scherman. W. Ostwald . .	K. W. Bährer.				

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NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
ANTHROPOLOGY—Contd.							
Holland, Nederl. Anthrop. Ver. . .	Mus. of Archæol., Leyden.	A. W. Nieuwenhuis	H. J. Holwerda	1898	89	4s. 2d.	
Niederlausitzer Ges. f. Anthrop. u. Alt.	Guben	H. Jentsch	—	1884	450	3 M.	<i>Mittel.</i>
Oberlausitz, Ges. f. Anthrop. u. Urgesch.	Görlitz	L. Feyerabend	Zernik	1893	300	—	<i>Jahreshefte (A/3).</i>
Oberlausitz, Ges. f. Anthrop. u. Urgesch.	Bautzen, Saxony . .	H. Naumann	Needon	1901	190	—	<i>Geschichte Bl.; Jahreshefte (July, with Görlitz).</i>
Paris, Assoc. pour l'Enseign. des Sci. Anthrop.	Rue de l'École de Médecine, 15.	—	—	1875	300	30 fr.	<i>Bull.; Mém.; Bull. et Mém.</i>
Paris, Soc. d'Anthrop.	"	Paul-Boncour	L. Manouvrier	1859	100	—	Publ. by Ecole d'Anthrop. and Soc. d'Anthrop.
Paris, Soc. d'Autopsie (for autopsy of skulls of eminent men).	"	Thulié	G. Papillault	1876	692	36 K.	<i>Národopisný Vestník Československý.</i>
Prague, Soc. of Czech Anthrop. Museums.	Guichor 98, Prague	L. Niederle	Aug. Zalud	1893	250	12 L.	<i>Revista; Atti.</i>
Rome, Soc. di Antrop.	Via Collega Romano 26.	L. Moschen	S. Sergi	1893	75	8 M.	<i>Mittel.</i>
Schleswig-Holstein, Anthrop. Ver.	Kattenstr. 3, Kiel . .	(Vac.)	F. Knorr	1878	150	5 Rubel	<i>Protokoly; Érsepednik.</i>
St. Petersburg, Anthrop. Soc. . .	(See Anatomy.)	T. Volkoff	S. Rudenko	1888	1,200	10 kr.	<i>Tráskrift; etc.</i>
Russian Anthrop. Soc.	St. Petersburg . . .	—	G. Anderson	1873	626	7 fr.	<i>Schweiz. Archiv f. Volkekunde (Q); Schweiz.-Volkekunde (M); Schriften.</i>
Stockholm, Anthrop.-Geog. Soc. . .	—	E. Boyet (Vice- Pres.)	E. Hoffmann- Krayser.	1896	450	20 kr. 10 kr.	<i>Mittel.</i> (A/6).
Swiss Folk-lore Soc.	Augustinergasse, 8, Basel.	—	—	—	183	\$5	<i>Trans.; Abstr. of Trans.</i>
Vienna, Anthrop. Ges.	Bürging 7, Vienna, I.	C. Toldt	R. Mueh L. Bouchal	1870	250	6 M.	<i>Fandber. aus Schwaben (A); 19 vols.</i>
Washington, Anthrop. Soc. . . .	—	F. W. Hodge	T. Michelson	1879	—	—	—
Württemberg, Anthrop. Ver. Kgl. Nat.-Sammlung.	Stuttgart	Prof. Dr. Fraas	Prof. Dr. Goessler.	1872	—	—	—

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NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Mem- bers.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
ASTRONOMY.							
America, Astron. and Astrophys. Soc. of	Ann Arbor ..	E. C. Pickering ..	P. Fox ..	1899	300	\$5	<i>Abstracts.</i>
Antwerp, Soc. d'Astron. ..	Thiisusstrat 23 ..	Gen. J. Linscen ..	F. de Roy ..	1905	254	5 fr.	<i>Rapport (A); Gaz. Astron. (M); Mem.; etc.</i>
Bagnères de Bigorre, Soc. Ramond	—	Sansot ..	Dort ..	1865	100	12 fr.	<i>Bull.</i>
Barcelona, Soc. Astron. de ..	Gran-Via Diagonal, 462II, Barcelona.	E. Fontseré ..	Salvador Raurich	1910	350	—	<i>Bol.</i>
Berlin, Ver. v. Freunden d. Astron. u. Kosm. Phys.	—	W. Foerster ..	J. Plassmann ..	1891	250	5 M.	<i>Monat. Mitteil.; Sternkarten; etc.</i>
British Astron. Assoc. ..	Sion Coll., Victoria Embankment, London, E.C.	Col. E. E. Markwick.	Major F. L. Grant.	1890	c. 1,000	10s. 6d.	<i>J. (M); Mem.</i>
British Astron. Assoc. (W. of Scotl. branch).	Glasgow ..	E. A. Campbell ..	J. J. Ross (7, Queen's Terrace)	1894			
British Astron. Assoc. (N. S. Wales branch).	Sydney ..	J. Nangle ..	E. H. Beattie..	1894			
Brussels, Soc. Belg. d'Astron., Met. Phys. du Globe.	16, Avenue des Saisons.	F. Jacobs ..	A. Dessy ..	1893	1,200	10 fr.	<i>Bull. (M); Annuaire; etc.</i>
Canada, Roy. Astron. Soc. ..	198, College Street, Toronto.	Prof. L. B. Stewart	J. R. Collins ..	1892	546	\$2	<i>J. (Bi-monthly).</i>
France, Soc. Astron. ..	Paris, 8, Rue Dan- ton.	Comte de la Baume- Pluvinel.	C. Flammarion	1887	6,242	10 fr.	<i>Bull.; Rev. (M).</i>
Italy, Soc. Astron. ..	Turin ..	P. C. Melzi d'Eril	G. Horn ..	1906	c. 300	12 fr.	<i>Revisita.</i>
Leeds Astron. Soc. ..	23, Bond Street, Leeds	H. v. Seeliger ..	R. Lehmann- Filhès.	1859	—	5s.	<i>J.</i>
Leipzig Astron. Ges. ..	—			1863	c. 370	15 M.	<i>Vierteiljahrschrift.</i>
London, Roy. Astron. Soc. ..	Burlington House, W.	Maj. E. H. Hills..	A. S. Eddington	1820	771	£2 2s.	<i>Monthly Notices; Memoirs (occas.); Syllabus (A).</i>
Manchester Astron. Soc. ..	Godlee Observ. ..	Rev. A. L. Cortie	A. Fowler.	1903	136	5s.	
Meteor. Central Bureau ..	Holstenwall, Ham- burg.	C. Birkenstock (Direc.)	W. C. Jenkins				
Mexico, Soc. Astron. ..	1a Calle de Cocheras, 7, Mexico City.	Rev. Father M. Fulcheri.	L. G. Léon ..	1902	1,600	\$2	<i>Bull. (M-illus.).</i>

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NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Mem- bers.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
ASTRONOMY—Contd.							
Münster, Ver. v. Freunden d. Astron. u. Kosm. Phys.	47, Nordstr. ..	W. Foerster ..	T. Plassmann ..	1891	250	7 M.	<i>Mitteil.</i> (M).
Pacific, Astron. Soc. of ..	Room 748, Phelan Bldg., San Francisco	H. D. Curtis ..	D. S. Richard-son.	1889	340	\$5	<i>Publ.</i> (Bi-monthly).
St. Petersburg Astron. Soc.	—	A. Tranoff ..	V. Akhmatov ..	1891	300	5 Rub.	<i>Izvestia.</i>
Treptow Observ., Friends of	Berlin-Treptow, Ger.	F. S. Archenhold	—	1900	500	12 M.	<i>Das Weltall.</i>
Wanganui Astron. Soc. ..	Wanganui, N.Z. ..	C. W. Babbage ..	C. W. Babbage	1903	60	£1 1s.	<i>Rept.</i> (A); <i>Rept.</i> by Hon. Direc. (A).
BACTERIOLOGY.							
Amer. Bacteriologists, Soc. of	East Lansing, Mich.	W. H. Park ..	C. E. Marshall ..	1899	284	\$1	
Brit. Med. Assoc. (Sect. Bact.)	(See Medicine.)						
BIOLOGY.							
(See also Physiology, Zoology, Natural History, etc.)							
Berlin, Microbiol. Soc. ..	Dorotheenstr. 28 ..	Prof. Dr. Abel ..	E. Friedberger Sobernheim.	1911	112	—	<i>Verhandl.</i> in <i>Berl. Klin. Wochenschr.</i>
Christiania Biol. Soc. ..	—	S. Torup ..	S. Schmidt-Niel- sen.	1894	—	—	<i>Jahresber.</i>
Dublin Univ. Biol. Assoc. ..	Memorial Buildings, Trinity Coll. Lab. de Zool., Univ.	W. I. Wheeler ..	H. G. Trayer ..	1873	—	5s.	
Grenoble, Soc. Dauphinoise d'Études biol.	—	J. Offner ..	V. Piraud ..	1906	158	6 fr.	<i>Bull.</i> (Q).
Helsingfors, Soc. Fauna et Flora Fennica.	—	B. J. A. Palmén ..	H. Federley ..	1821	—	—	<i>Rapports et Procès- verbaux</i> (A); <i>Publ.</i>
Internat. Council for Explorn. of Sea	Jens Kofodsgade 2, Copenhagen.	W. E. Archer ..	Commr. C. F. Drechsel.	1902	2 each from 8 countries	—	<i>Bull.</i> (Q); <i>Publ.</i> (occas.); <i>Bull. Statistiques</i> (4 vols.) <i>Verzeichniss.</i>
Leipzig, Biol. Ges. ..	—	v. Brütcke ..	Riecke ..	1891	150	4 M.	

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BIOLOGY—Contd.							
Liverpool Biol. Soc.	—	J. H. O'Connell ..	J. A. Clubb ..	1886	c. 120	£1 ls.	<i>Proc. and Trans.</i>
Paris, Soc. de Biol.	7, Rue de l'École de Médecine.	Dr. Dastre ..	A. Pettit ..	1849	50 Tit.	20 fr.	<i>Comptes-rendus (W); Mém.</i>
Scotland, Marine Biol. Assoc. of	Keppel Pier, Mill- port, N.B.	—	G. Middleton ..	1900	130	£1 ls.	<i>Rept. (A).</i>
W. of Kingdom, Marine Biol. Assoc. of.	Citadel Hill, Ply- mouth.	Sir Ray Lankester, K.C.B.	E. J. Allen ..	1884	236	£1 ls.	<i>J. (A/2).</i>
Washington, Biol. Soc. of ..	Cosmos Club ..	E. W. Nelson ..	D. E. Lantz ..	1880	c. 600	\$3	<i>Proc.</i> —vol. 25.
BOTANY.							
Amer., Bot. Soc. of ..	St. Louis ..	W. G. Farlow ..	G. T. Moore ..	1894	162	\$5	<i>Publ.</i>
Bavarian Bot. Ges. d. heim. Flora	Munich ..	F. Vollmann ..	Schinnerl ..	1890	350	5 M.	<i>Ber.; Mitteil.</i>
Belg., Soc. Roy. de Bot. ..	Rue Royale, Brussels	A. Coguiaux ..	E. De Wildeman	1862	160	10 fr.	<i>Bull.</i>
Birmingham, Bot. and Hort. Soc.	Botanical Gardens, Edgbaston.	—	—	1829	—	£1 5s.	
British Mycol. Soc. ..	34, Foregate Street, Worcester.	A. D. Cotton ..	C. Rea ..	1896	108	10s.	<i>Trans. (A).</i>
British Pteridol. Soc. ..	Kendal, Eng. ..	A. Cowan ..	C. T. Drucry ..	1891	150	5s.	<i>Bri. Fern Gaz. (Q).</i>
Brussels, Soc. Roy. de Flore ..	Jardin Botanique de l'État.	V. DuPré ..	L. Gentil ..	1660	200	8s.; 4s.	<i>La Tribune Horticole (W); La Tribune des Soc. Horticole (Fortnightly).</i>
Coimbra, Soc. Broteriana ..	—	J. A. Henriques ..	—	1880	—	—	<i>Bol.</i>
Dresden, Flora (Roy. Saxon Soc. of Bot. and Hort.) ..	—	Bouché ..	B. Haubold ..	1826	270	10 M.	<i>Sitzungsber u. Abhandl.</i>
Edinburgh, Bot. Soc. ..	5, St. Andrew Square	Sir A. Buchan- Hepburn.	W. W. Smith ..	1836	250	15s.	<i>Trans.; Proc. (A).</i>
France, Soc. bot. de ..	84, Rue de Grenelle, Paris.	Chauveaud ..	L. Lutz ..	1854	400	30 fr.	<i>Bull.; Mem.</i>
France, Soc. mycol. de ..	84, Rue de Grenelle, Paris.	—	Maublanc ..	1885	550	10 fr.	<i>Bull.</i>
Ghent, Kruidk. Genootsch. Dodo- næa.	—	J. MacLeod ..	C. De Bruyker	1887	260	6 fr.	<i>Bot. Jaarboek; Tijdschr.</i>

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BOTANY—Contd.							
Germany, Deutsche Bot. Ges.	Berlin	E. Wettstein	W. Wächter	1882	570	—	<i>Ber. (A/10).</i>
Internat. Assoc. des Botanistes	Spaarne 17, Haarlem, Holland.	E. Warming	J. P. Lotsy	1901	600	25s.	<i>Bot. Centralb. (W); Progressus Ret Botanica (occas.). Trans. and J. (occas.); Proc. (A).</i>
Linnean Soc. of London	Burlington House, Piccadilly.	E. B. Poulton	E. D. Jackson	1788	750	£3	<i>Proc. (A); Vol.</i>
Linnean Soc. of New South Wales	Sydney, 28, Ithaca Road.	W. W. Froggatt	J. J. Fletcher	1874	—	£1 ls.	<i>Proc.; Macleay Mem.</i>
Linnean Soc. of Brussels	75, Rue du Marché aux Herbes, Brus- sels.	F. Lambeau	N. Seghers	1835	755	5 fr.	<i>Bull.; Mém.</i>
Linnean Soc. of Nord de la France	Amiens, 23, Rue Vasosan.	H. Duchaussoy	F. Choquart	1838	80	10 fr.	<i>Proc's Verbaux, Actes (M), Mém.; Bull. (A).</i>
Linnean Soc. of Bordeaux (also for Geol. and Zool.)	Athènes, 53, Rue des Trois-Coins.	Llaguet	P. Barrère	1818	70	2½ fr.	<i>Proc. (A); Trans. Bot. J. (Q).</i>
Linnean Soc. of Normandy	Caen	Husnot	A. Bigot	1823	130	12 fr.	<i>Archief (A); Recueil. Jahresber.</i>
Liverpool Bot. Soc.	The University	W. T. Haydon	A. A. Dallman	1906	140	5s.	<i>Deutschr.; etc.</i>
London, Roy. Bot. Soc.	The Gardens, Inner Circle, Regent's Pk.	Duke of Teck	J. B. Sowerby	1839	2,100	£3 3s.	<i>Tidskrift.</i>
Nederlandsche Bot. Vereen	Amsterdam	F. A. F. C. Went	E. Verschoffelt	1845	232	6 fl.	<i>Ber. Mitteil.</i>
Prussia, Bot. Ver.	Königsberg	J. Abromett	Vogel	1862	300	3 M.	<i>Bull. (M); Torreya (M); Mem.</i>
West Prussia, Bot. Zool. Ver.	Erabank 3, Danzig.	Lakowitz	Dr. Dahms	1878	1,050	3 M.	
Regensburg, Kgl. Bayet. Bot. Ges.	—	Fürnrohr	A. Mayer	1790	c. 100	None.	
Swedish Acclimatization	Utsädesförening, Svalöf, Sweden.	N. Trolle	E. Ljung	—	c. 1,100	5 Kr.	
Swiss Bot. Soc.	Zurich	C. Schröter	H. Schinz	1889	170	5 fr.	
Thüring. Bot. Verein	Weimar	J. Bornmüller	B. Hergt	1883	184	3 M.	
Torrey Bot. Club	Columbia Univ., N. Y., U.S.A.	E. S. Burgess	B. O. Dodge	1870	230	—	
Washington, Bot. Soc.	—	W. W. Stock- berger.	C. L. Shear	1901	110	\$3	

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NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
CHEMISTRY.							
Internat. Assoc. of Chem. Socs. . .	c/o Chem. Soc., Burlington House, London.	Sir W. Ramsay . .	A. W. Crossley	1911	18,000	—	<i>J. (M)</i> ; <i>J. Ind. and Engng. Chem. (M)</i> ; <i>Chem. Abstr. (semi-M)</i> .
Amer. Chem. Soc.	Easton, Pa. . .	A. D. Little . .	C. L. Parsons . .	1876	6,000	—	
Amer. Inst. Chem. Engrs. . . .	—	H. Van Laer . .	J. C. Olsen . . J. Wauters . .	1887	480	10 fr.	<i>Bull. (M)</i> .
Belgium, Soc. chim.	7, Galerie du Travail, Brussels.	E. Fischer . . G. Douglas . .	R. Pasch . . J. B. Atkinson	1908 1884	— 900	1,000 M. £1 ls.	<i>J. (M)</i> .
Berlin Ver. Chem. Reichsanstalt . .	30, Pearl Assurance Buildings.	M. Le Blanc . .	J. Wagner . .	1894	780	25 M.	<i>Zeitschr. f. Elektrochem. u. Angew. phys. Chem. (M/2)</i> ; <i>Abh. (occas.)</i> .
Bradford Soc. Dyers and Colourists.	Mozartstr. 7, Leipzig						<i>Trans. (A)</i> .
Bunsen Ges. (App. Phys. Chem.)							<i>Bull.</i>
English Ceramio Soc.	County Pottery Lab., Stoke-on-Trent.	Sir H. Cunyng- ham.	J. W. Mellor . .	1900	250	15s.	<i>Ber. since 1867, Chem. Zentrabl. since 1897; Literaturregister d. Org. Chem. (2A)</i> .
France, Soc. Chim. de	44, Rue de Rennes, Paris.	—	P. Freundler . .	1857	1,100	36 fr.	<i>Stahl v. Eisen (W)</i> .
Germany, Deutsche Chem. Ges. . .	Sigismundstr. 4, W. 10, Berlin.	W. Wil	B. Lepsius . . H. Jost.	1867	3,352	—	<i>Zeitschr. f. angew. Chem.; Zentrabl. f. tech. Chem. Chem. Weekblad.</i>
Germany, Ver. deutscher Eisenhüttenleute.	Breite Str. 27, Düsseldorf.	F. Springorum . .	E. Schrödter . .	1860	5,630	—	
Germany, Assoc. of Ger. Chemists	Stephanstr. 8 pt., Leipzig.	H. Krey	B. Rassow . .	1887	5,200	20 M.	
Holland, Nederlands, Chem. Ver.	Drift 14, Utrecht . .	E. Cohen	P. A. Meerburg	1900	400	10 Glld.	

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NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Mem- bers.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
CHEMISTRY—Contd.							
Internat. Assoc. for Testing Materials.	50, Nordbahnstr., Vienna II.	H. M. Howe (New York).	— Ernst Reitler	1895	3,000	10 fr.	<i>Proc.</i> (and in Fr. and Ger.)
Internat. Petroleum Comm.	Tech. Hochschule, Karlsruhe, Ger.	L. Ubbelohde ..	L. Ubbelohde	1907	300		
Internat. Rubber Testing Comm.	[Gen. Sec.] J. E. Fol, Delft, Holland.	A. H. Berkhout ..	[Sec. for G.B.] Herbert Wright, 59, Eastcheap, London.	1909			
London, Chem. Soc.	Burlington House, Piccadilly.	W. H. Perkin ..	S. E. Carr (Assist.).	1841	3,200	£2	<i>J.</i> (M); <i>Proc.</i> ; <i>Repts. on Progress of Chem.</i> (A). <i>J.</i> (M/2).
London, Soc. of Chem. Ind.	Broadway Chambers, Westminster.	Sir W. Crookes ..	C. G. Cresswell	1881	4,250	£1 5s.	
London, Inst. of Chem.	30, Bloomsbury Square, W.C.	R. Meldola ..	R. B. Pilcher ..	1877	1,420	£1 1s.	<i>Proc.</i> (Q); <i>Leds. (A/4)</i> ; <i>Off. Chem. Appointments</i> (occas.). <i>Analytist</i> (M).
London, Soc. Publ. Anal.	8, Duke Street, Aldgate, E.C.	L. Archbutt ..	A. C. Chapman P. A. E. Richards	1874	400	£1 1s.	
London, Inst. of Brewing	Brewers Hall, Adde St., London, E.C.	P. F. Whitbread ..	Julian L. Baker	1836	1,000	25s.	<i>J.</i> (A/7).
Paris, Soc. de Chim.-Phys.	9, Rue de Ragneux	A. Cotton ..	C. Marie ..	1908	225	5 fr.	<i>Proc.</i> (pub. in <i>J. de Chim. Phys.</i>).
Portugal, Soc. Chim.	141, Lusiadas, Lisbon	A. J. Ferreira ..	H. Mastbaum ..	1911	97	5 Mil.	<i>Revista</i> (M).
S. Africa, Chem., M. and M. Soc. of	9, S. A. Sch. of Mines Bldg., Eloff St., Johannesburg.	C. B. Saner ..	F. Rowland ..	—	—	£2 2s.	<i>J.</i>
Vienna, Chem.-Phys. Ges.	Türkenstr. 3	L. Hastinger ..	E. Krause ..	1874	185	4 kr.	<i>None.</i>
Washington, Chem. Soc.	—	W. W. Skinner ..	H. S. Bailey ..	1884	260	\$10	<i>Bull.</i>
ENGINEERING.							
Aberdeen, Assoc. Civ. Engrs.	Robt. Gordon's Tech. Coll.	G. Gregory, jr. ..	H. R. Barr ..	1900	232	Res. 15s. Non-Res. 10s.	<i>Minutes of Proc.</i> (A).

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NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
ENGINEERING—Contd.							
Aero Club of America	12, E. 42nd St., New York City.	—	T. O'B. Hubbard	1866	—	\$2 2s.	<i>Aeronaut J.</i> (Q).
Aeronaut Soc. of G. B.	11, Adam Street, Adelphi, London.						
Amer. Soc. Civil E.	220, W. 57th St., New York City.						
Amer. Soc. Mech. E.	29, W. 39th St., New York City.						
Amer. Soc. Elec. E.	29, W. 39th St., New York City.						
Amer. Soc. Min. E.	29, W. 38th St., New York City.						
Barrow and District Assoc. of Engnrs.	Tech. Sch., Barrow- in-Furness.	H. R. Burnett ..	J. W. Osborne	1908	186	10s.	<i>Trans.</i> (A).
Berlin, Luftschiffer-Ver. Borussia							
Berliner Ver. f. Luftschiffahrt ..	Bachstr. 9	Prof. Dr. Müller- Breslau.	Weese	1846	1,457	—	<i>Hütte; etc.</i>
Berlin, Akad. Ver. Hütte	Schumannstr. 2 ..	Busley	F. Hochstetter	1899	1,675	—	<i>Jahrb.</i>
Berlin, Schiffbautechnische Ges.	Königgratzerstr. 106	Christiani ..	L. Schüller ..	1879	2,800	20 M.	<i>Electrotech.-Zeitschr.</i> (W).
Berlin Electrotech. Ver.							<i>Proc.</i> (A).
Doncaster Engrng. Soc.	27, Cartwright St.	H. N. Gresley ..	F. H. Eggleshaw A. R. Thomlin- son.	1906	76	7s. 6d.	
France, Soc. des Ing. civils de ..	19, Rue Blanche, Paris.	H. Gall	A. de Dax ..	1848	4,000	36 fr.	<i>Mém. et compte-rendu</i> (M); <i>Résumés</i> (M/2).
France, Assoc. franç. des Ing. de Propriété Indust.	19, Rue Blanche, Paris.						<i>Bull.; Offiz. Ber.; Tech. Teil. Report</i> (A).
Bucharest, Soc. Politech.	—	A. Saligny ..	—	1881	c. 450	36 Lei.	
Internat. Electrotech. Comm. ..	28, Victoria Street, London, S. W.	E. Budde ..	C. le Maistre ..	1906	400	—	
Internat. Electrotech. Congr. 1915	San Francisco ..						

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ENGINEERING—Contd.							
Internat. Cong. Mines and Geol., 1915.	London	Kammerer ..	H. Beck (Direc.)	1908	1,300	25s.	<i>Engng. Abstracts</i> (Monthly pts.—Mech., Elec., Civ., M. and M., Chem., Milit. and Marine).
Internat. Inst. of Tech. Bibliog. ..	Spichernstr. 17, Ber- lin; Eng. Sect., 68, Hampstead Way, London.						
Ireland, Inst. Civil Engrs. of ..	35, Dawson Street, Dublin.	W. Collen ..	P. F. Purcell ..	—	—	—	
Ireland, Engrg. and Sci. Assoc. of	43, Dawson Street, Dublin.	G. E. Shanahan ..	A. E. Porte .. G. Idle	1903	225	15s.	
Germany, Ver. Deutscher Ing. ..	Roy. Inst., Colquitt Street.	F. E. Cooper ..	T. R. Wilton ..	1875	604	£1 1s.	<i>Rept. ; Trans.</i>
Liverpool Engrg. Soc.	Gt. George St. ..	A. G. Lyster ..	J. H. T. Tudsbury	1818	9,120	£4 4s.	<i>Proc. (Q).</i>
London, Inst. Civil Engrs. ..	Storey's Gate, St. James's Park.	Sir H. E. Donaldson	E. Worthington	1847	5,770	£3	<i>Proc. (Q).</i>
London, Inst. Mech. Engrs. ..	Victoria Embank- ment, W.C.	W. Duddell ..	P. F. Rowell ..	1871	7,300	£4 4s.	<i>J. (6 per ann., Feb., Oct.); Sci. Abstracts (M).</i>
London, Inst. Elec. Engrs. ..	58, Romford Road, Stratford, E.	T. L. Devitt ..	J. Adamson ..	1889	1,350	£1 1s.	<i>Trans. (M. and ann. bound vol.).</i>
London, Inst. Marine Engrs. ..	39, Victoria Street, Westminster	W. E. Garforth ..	L. T. O'Shea .. P. Sturzebecki.	1889	3,226	—	<i>Trans. (M).</i>
London, Inst. Mining Engrs. ..	39, Victoria Street, S.W.	—	W. T. Dunn ..	1863	862	£1 1s.	<i>Trans. (A).</i>
London, Inst. Gas Engrs. ..	304, High Holborn, W.C.	J. E. Hartley ..	W. G. Hollin- worth.	1897	440	£1 1s.	
London, Heating and Ventil. Engrs.	13, Queen Anne's Gate, S.W.	J. S. Critchley ..	B. H. Joy ..	1906	750	£3 3s.	<i>Proc. (A).</i>
London, Automobile Engrs. ..	5, Adelphi Terrace..	Marquis of Bristol	R. W. Dana ..	1860	2,093	£2 2s.	<i>Trans. (A).</i>
London, Inst. Naval Architects ..	Caxton House, West- minster.	Prof. A. K. Hun- tingdon.	G. S. Scott ..	1908	625	£2 2s.	<i>J. (2 per ann.—Price £1 1s. per vol.).</i>

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ENGINEERING—Contd.							
London, Inst. Mining and Metal- lurgy.	Salisbury House, E.C.	B. McNeill ..	C. McDermid ..	1892	2,400	£3 3s.	<i>Bull. (M); Trans. (A).</i>
London, Iron and Steel Inst. ..	28, Victoria Street, Westminster.	A. Cooper ..	G. C. Lloyd ..	1869	2,200	£2 2s.	<i>J. (2 vols. A); Cer- negie Scholarship Memoirs (A).</i>
London, Junior Inst. of Engrs. ..	39, Victoria Street, Westminster.	Sir A. T. Dawson	O. C. Swales ..	1884	1,150	£1 1s.	<i>J. (M).</i>
London, Roy. Engrs. Inst. ..	17, Victoria Street, Westminster.	A. Valon ..	A. S. E. Acker- mann.	1854	586	£1 1s. to £2 2s.	<i>J. (M); Law Relat- ing to Engrng. Proc. (A).</i>
London, Assoc. Munic. and Co. Engrs.	92, Victoria Street, S.W.	J. W. Cockrill ..	T. Cole ..	1873	16	£1 11s. 6d.	<i>Trans., issued to members only (A).</i>
London, Inst. Water Engrs. ..	20, Victoria Street, Westminster.	C. C. Smith ..	P. Griffith ..	1896	401	£1 11s. 6d.	<i>Proc. (A).</i>
London, Cold Storage and Ice Assoc.	3, Oxford Court, Cannon St.	J. T. Milton ..	J. Raymond ..	1900	140	£1 1s.	<i>Trans., issued to members only (A).</i>
London, Permanent Way Inst. ..	74, Faversham Rd., Catford.	G. T. Sibbering ..	S. E. McLewin	1884	c. 1,500	5s.—£1 1s.	<i>Rept. (A/3).</i>
London, Surveyors' Inst. ..	12, Great George St., Westminster.	W. E. Woolley ..	A. Goddard ..	1868	5,100	£3 3s.	<i>Trans. (pub. in Trans. Inst. Min. Engrs., (M).</i>
N. of Eng. Inst. Min. and Mech. Engrs.	Neville Hall, New- castle.	W. C. Blackett ..	L. Austin ..	1852	1,298	£2 2s.	<i>Trans. (A/8).</i>
N.-E. Coast Inst. Engrs. and Ship- builders.	Bolbec Hall, Westgate Road, Newcastle.	Sir C. A. Parsons.	E. W. F. Smith	1884	1,150	£2 2s.	<i>Bull. (M).</i>
Paris, Soc. Internat. des Ellec- triciens.	14, Rue de Staël ..	D. Berthelot ..	de Valbreuze ..	1883	1,722	20 fr.	<i>Bull., Fr. Eng. and Span. edns. (M).</i>
Paris, Assoc. Internat. du Froid ..	9, Avenue Carnot ..	André Lebon ..	E. Gouault ..	1909	1,650	20 fr.	<i>Proc. (M).</i>
Pennsylvania, Engrs. Soc. of W.	2,511, Oliver Bldg., Pittsburgh.	—	Elmer K. Hiles.	—	—	\$5	

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ENGINEERING—Contd.							
Prague, Verband böhm. Techniker.							
Rio de J., Inst. Polytech. Brasil ..							
Rio de J., Soc. de Engenharia ..							
Rugby Engng. Soc. ..	27, Regent St. ..		A. H. Brett ..	1903	c. 200	5s.	<i>Proc.</i> (A).
Scotland, Inst. of Engngs. and Shipbuilders of.	39, Elmbank Cres- cent, Glasgow.	R. T. Moore ..	E. H. Parker ..	1857	1,700	£2	<i>Trans.</i> (M during Ses- sion, and 1 bound vol. per ann.).
Scotland, Mining Inst. of ..	39, Elmbank Cres- cent, Glasgow.	J. Hamilton ..	J. Barrowman	1878	650	£2 2s. £1 5s.	<i>Trans.</i> (pub. in <i>Trans. Inst. Min. Engngs.</i> .)
Scotland, W. of ; Iron and Steel Inst.	39, Elmbank Cres- cent, Glasgow.	W. Dixon ..	R. G. Jenkins ..	1892	450	£1 ls.	<i>J.</i> (M, Oct.—April).
San Francisco, Tech. Soc. of Pacific Coast.			O. v. Geldern ..	1884	130	\$6	<i>Trans.</i> in <i>J. Assoc. Engngg. Soc.</i> (M).
Washington Soc. of Engngs. ..	1330 F. Street, N. W.	F. Sutton ..	J. C. Hoyt ..	1905	365	\$5	<i>Yearbook</i> (A).
Western Soc. of Engngs. ..	1737, Monadnock Block, Chicago					\$3	<i>J.</i> (M, except July and Aug.).
ENTOMOLOGY.							
(See also <i>Natural History, Zoology, etc.</i>)							
Amer. Ent. m. Soc. ..	Logan Square, Phila- delphia.	P. P. Calvert ..	H. Skinner ..	1859	51	None.	<i>Trans.</i> (Q—1 vol. per ann.).
Belgium, Soc. entom. de B. ..	89, Rue de Namur, Brussels.	V. Willem ..	J. A. G. Rehn .. H. Schonfeden	1855	160	16 fr.	<i>Annales</i> (M); <i>Mem.</i> (period.).
Berlin Entom. Ver. ..	Königgratzerstr. 111	F. Wichgraf ..	H. Bischoff ..	1856	c. 175	10 M.	<i>Berlin Entom. Zeitsch.</i> (Q).
Copenhagen Entom. Assoc. ..	Nørre Sögade, 234, Copenhagen.	T. E. Engelhart ..	F. P. Kryger ..	1868	100	5 sh.	<i>Entom. Meddel.</i> (A 3—4).
Egypt, Soc. entom. ..	P.O. Box 430, Cairo	H. E. Nubar Pasha	W. Innes bey ..	1907	60	100 p.	<i>Bull. Mem.</i>
France, Soc. d'Entom. de ..	Paris, 28, Rue Serpente.	C. Allnaud ..	R. Jeannel ..	1832	521	25 fr.	<i>Annales</i> ; <i>Bull.</i>

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NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
ENTOMOLOGY—Contd.							
France, Soc. fr. d'Entom. Cambridge Entom. Club ..	Caen .. Cambridge, Mass., U.S.A.	—	A. Fauvel ..	1881	280	12 fr.	<i>Revue. Psyché.</i>
Germany, Deut. Entom. Ges. Holland, Nederl. Entom. V ..	Berlin .. Mathenesserlaan, 252, Rotterdam.	—	—	1881 1845	500 133	10 M. 6 G.	<i>Zeitsch. Tijdschr. v. Entom. (A/4); Entom. Ber. (A/6).</i>
Internat. Entom. Soc. ..	Zurich ..	—	M. Rühl ..	1886	2,000	8 Mk.	(F.).
Internat. Entom. Soc. ..	Rheinstr. 25, Frank- furt a. M.	M. Nassauer ..	(Vac.) ..	1885	3,000	6 M.	<i>Entom. Zeits. (W); Fauna exotica (F.) Bull.</i>
Italy, Soc. Entom. Italiana ..	Via Romana 19, Flor- ence.	D. Rosa ..	A. Scnna ..	1869	60	15 L.	
Lancashire and Cheshire Entom. London, Entom. Soc. of ..	Liverpool, Roy. Inst., Colquitt Street, W.	—	O. Whittaker ..	1877	124	5s.	<i>Ann. Rept.; Proc.</i>
London, South, Entom. and Nat. Hist. Soc. London, City of, Entom. and Nat. Hist. Soc.	11, Chandos Street, Hibernia Chambers, London Bridge, London Inst., Fins- bury Circus, Museum, Owens Coll. c/o American Museum of Nat. Hist.	Rev. F. D. Morice A. E. Tonge .. A. W. Mera ..	Commander J. J. Walker. S. Edwards .. V. E. Shaw .. H. B. Williams .. A. W. Boyd .. C. W. Leng ..	1863 1872 1858	380 180 75	£1 1s. 10s. 7s. 6d.	<i>Trans. and Proc. (5 pts. A). Proc. (A). Trans. (A).</i>
Manchester Entom. Soc. ..	Museum, Owens Coll.	J. H. Watson ..	A. W. Boyd ..	1902	51	5s.	<i>Rept. and Trans. (A).</i>
New York Entom. Soc. ..	c/o American Museum of Nat. Hist.	R. C. Osburn ..	C. W. Leng ..	1892	81	\$4	<i>J. (Q)—20 vols. com- pleted.</i>
Ontario, Entom. Soc. of ..	Guelph, Canada ..	C. J. S. Bethune ..	A. W. Baker ..	1863	544	\$1	<i>Canadian Entom. (M); Rept. to Legislature of Ont. (A). Revue; Trudy.</i>
Russian Entom. Soc. ..	St. Petersburg ..	P. P. Semenov- Tjan-Shansky.	G. G. Jacobson	1860	266	5 Rub.	
Stockholm Entom. Assoc. Swiss Entom. Soc. ..	—	—	Y. Sjøstedt ..	1879	c. 300	6 K.	<i>Entom. Tidakrift.</i>
Washington Entom. Soc. ..	Berne .. U.S. National Museum.	A. Busek ..	S. A. Rohwer ..	1858 1884	130 c. 300	6 fr. \$2	<i>Mittel. Proc. (Q).</i>

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GEOGRAPHY.							
Amer. Geog. Soc.	New York, 156th Street.	A. M. Huntington	A. D. Russell. W. Libbey .. H. F. Kean ..	1852	1,200	\$10	<i>Bull.</i> (M).
Amer. Nat. Geog. Soc.	Washington	—	O. P. Austin ..	1888	—	\$3	<i>Nat. Geog. Mag.</i>
Amer. Geographers, Assoc. of	Hamilton	H. G. Bryant ..	A. P. Brigham ..	1904	85	\$5	<i>Ann.</i> (A).
Antwerp, Soc. Roy. Geog.	Antwerp, Rue Gérard 9,	—	M. de Cock ..	1876	700	10 fr.	<i>Bull.</i>
Algiers and N. Africa, Soc. de Geog.	Algiers, Boulevard Laferrière.	—	V. Demontes ..	1896	1,560	12 fr.	<i>Bull.</i>
Algiers and N. Africa, Soc. de Geog. (Morocco Sect.).	Tangier	—	—	1884	—	5 Rub.	<i>Zapiski, Bel.</i>
Amurland, Soc. for Exploration of	Vladivostok	—	—	1879	c. 350	—	<i>Proc.</i> (A).
Argentina, Inst. Geog.	Buenos-Aires	Hon. J. Lewis ..	T. S. Reed ..	1885	225	10s. 6d.	
Australasia, Roy. Geog. Soc. of ..	Institute Buildings, Adelaide.	J. A. Pantton, C.M.G.	E. A. Petherick	1883	120	£1 ls.	<i>J. Roy. Geog. Soc. of Vict.</i> (every 2nd year since 1905).
Australasia, Roy. Geog. Soc. of ..	421, Collins Street, Melbourne.	—	—	1885	260	£1 ls.	<i>Queenstand Geog. J.</i> (A).
Australasia, Roy. Geog. Soc. of ..	Public Library Bldgs., William Str., Brisbane.	Hon. F. T. Brent-nall.	J. P. Thomson	1885	260	£1 ls.	
Austria, Ver. f. Landesg. v. Niederösterreich.	Herrergasse 13, Vienna.	Graf F. Colleredo-Mannfeld.	Max Vancsa ..	1864	925	7 K.	<i>Jahrb.</i> ; <i>Monatbl.</i> ; "Topog. of Lower Austria," <i>Revisia.</i>
Bahia, Inst. Geog. e Hist. de	—	—	J. Torres ..	1894	—	—	<i>Bull.</i>
Baltimore, Geog. Soc. of ..	—	—	—	1902	c. 1,200	—	
Belgium, Soc. Roy. Belge de Geog.	Brussels, 116, Rue de la Limite.	—	M. Rahir ..	1876	1,000	12 fr.	
Berlin Ges. f. Erdkunde	Wilhelmstr. 23	—	—	1828	1,437	30 M.	<i>Monatsher.</i> ; <i>Zeits.</i> ; <i>Verhandl.</i>
Berne Soc. Geog.	—	E. Flückiger ..	E. Bärtschi ..	1873	135	8 fr.	<i>Jahresber.</i> (every two years).
Bordeaux, Soc. de Geog. commerciale.	Rue Rolland, 14	F. Samazeuilp ..	G. Lasserre ..	1873	746	10 fr.	<i>Bull.</i> (M).

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GEOGRAPHY—Contd.							
Bremen Geog. Ges.	—	H. Melchers	W. Volkenhauer	1876	200	15 M.	<i>Deutsche Geog. Blätter</i> (A/4). <i>Full.</i>
California, Geog. Soc. of	San Francisco	—	P. MacEwen	1891	c. 800	\$1	<i>Full.</i>
Chicago, Geog. Soc. of	P. O. Box 223	—	O. W. Caldwell	1894	600	\$3	<i>Aarbok (A).</i>
Christiania Geog. Soc.	—	A. S. Steen	V. Eugström	1889	1,650	—	<i>Full.; Mém.; etc.</i>
Dijon, Soc. Bourguig. de Geog. et d'Hist.	—	—	Michaud	1881	250	10 fr.	
Douai, Union Geog. du Nord	Musée de Douai	L. Lavoix	J. Lavoix	1881	400	10 fr.	<i>Bull. (Q).</i>
Dresden, Ver. f. Erdkunde	Kleine Brüdergasse 21 ¹¹ .	Pattenhausen	Mahler	1863	c. 700	15 M.	<i>Jahresber.; Mittell.; etc.</i>
Finland, Soc. Exploration of	Helsingfors	—	J. A. Palmén	1888	106	—	
Frankfurt, Ver. f. Geog. u. Statistik	Stadtbibliothek, Schöne, Frankfurt a. M.	B. Hagen	H. Traut	1836	640	15 M.	<i>Jahresber. (74 vols.).</i>
Germany, Deutscher Geogra- phentag.	Berlin	—	—	1881	640	—	<i>Verhandl.</i>
Giessen, Ges. f. Erd- u. Völkerk.	—	Dr. Sievers	O. Kindt	1896	312	4 M.	<i>Geog. Mitt. aus Hessen.—6 vols.</i>
Greifswald Geog. Ges.	—	M. Friederichsen	H. Praesent	1882	c. 700	5 M.	<i>Jahresber. (A/12).</i>
Halle, Sächs.-Thür. Ver. f. Erdk.	—	D. A. Schenck	W. Schatte	1873	312	9 M.	<i>Mitt. (A).</i>
Hamburg, Geog. Ges. in	Mönckeberg Str. 221.	O. Wertphal	L. Friederichsen	1873	775	12 M.	<i>Mitt., 26 vols.</i>
Hanoi, Soc. de Geog. commer- ciale.	—	—	—	—	—	—	
Hautes-Alpes, Soc. d'Études des.	Gap	—	—	1881	c. 240	10 fr.	<i>Bull.</i>
Helsingfors Geog. Assoc.	—	J. E. Rosberg	E. Hägrén	1886	305	—	<i>Tidskrift; etc.</i>
Holland, K. Nederl. Aardrijksk. Genoots.	Amsterdam	—	J. F. Hoekstra	1873	1,134	5 fl.	<i>Zeitschr.</i>
Holland, Internat. Geod. Assoc.	Leiden	General Bassot	H. G. de S. Bakhuuzen.	1862	22 Govts.	—	<i>Comptes Rendus of Gen. Conferences.</i>
Hungarian Geog. Soc.	Sandorutca 8, Buda- pest.	L. de Loczy	Count P. Teleki	1872	1,560	10 Cr.	<i>Földrajzi Közlem. (M), edns. n Fr., Ger., Eng., Ital.</i>

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GEOGRAPHY—Contd.							
Italian Geog. Soc.	Via del Plebisicito, 102, Rome.	H. E. Marquis R. Cappelli.	Commander J. M. Roncagli.	1868	1,530	20 Lir.	<i>Bull.</i> (M—illus. with maps); <i>Mem.</i> (1 vol. per ann.); Occas. Papers.
Khediv. Geog. Soc.	Cairo, Egypt	—	Bonola Bey ..	1875	c. 400	10 fr.	<i>Bull.</i> <i>Bol.</i>
Languedoc, Soc. de Geog. La Paz, Soc. Geog. Leipzig, Ges. f. Erdk. ..	Montpellier — Grassimuseum, Königsplatz, Leipzig.	— — H. Meyer ..	Thomas .. A. Fosnanaky .. H. Reishauer ..	1878 1889 1861	— — —	— — —	<i>Jahresber.</i> ; <i>Mitth.</i> (A); <i>Wiss. Veröff.</i> <i>ent.</i> , 27 vols. since 1891. <i>Bull.</i> <i>Bol.</i> ; "El Peru"; "Map of Peru," 32 sheets; "Mono- graphs." <i>Bull.</i> (M).
Lille, Soc. de Geog. Lima, Soc. Geog. de	— Alto de la Biblioteca Nacional.	— J. Balta ..	— C. B. Cisneros ..	1880 1888	2,135 500	15 fr. 8s.	<i>Trans. and Ann. Rept.</i> <i>Geog. J.</i> (M).
Lisbon, Soc. de Geog.	R. Eugenio dos Santos.	A. B. Freire ..	E. de Vascon- cellos.	1875	2,500	6 esc.	
Liverpool Geog. Soc. London, Roy. Geog. Soc.	Kensington Gore, S. W. Map Dept., Brit. Mus., W. C.	— Rt. Hon. Earl Curzon.	E. C. D. Phillips J. Scott Kelbie	1892 1830	550 5,000	£1 1s. £3	
London, Hakluyt Soc.	Map Dept., Brit. Mus., W. C.	—	J. A. J. de Villiers.	1846	500	£1 11s. 6d.	
London, Challenger Soc. ..	Sec., 5, Valley Road, Streatham Common.	—	J. O. Borley ..	1903	42	10s.	<i>Sci. of the Sea</i> , 1912; <i>etc.</i> <i>Mitth.</i>
Lübeck, Geog. Ges. Lund, K. Fysiog. Sällsk. Lyon, Soc. de Geog. Manchester Geog. Soc. ..	— — — 16, St. Mary's Parsonage.	— — — H. Nuttall ..	C. M. Fürst .. — H. Sowerbutts	1882 1873 1884	180 317 688	5 M. 20 fr. £1 1s.	<i>Bull.</i> <i>J.</i>
Marseilles, Soc. de Geog. Metz, Ver. f. Erdk. in ..	Rue Noailles 5	L. Estrine Majet ..	J. Léotard .. Amend ..	1876 1878	650 c. 380	25 fr. 12 M.	<i>Bull.</i> (Q). <i>Jahresber.</i>

THE WORLD'S SOCIETIES—continued.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Mem- bers.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
GEOGRAPHY—Contd.							
Mexico, Soc. Mex. de Geog. y Estadica.	1a, Calle de la Academia, No. 9, Mexico City.	F. Romero ..	F. Belmar ..	1833	800	—	<i>Bull.</i> (M).
Munich, Geog. Ges.	Kaufingerstr. 3v ..	E. V. Drygalski ..	N. Wührer ..	1869	600	10 M.	<i>Mitt.</i> (Q).
Nancy, Soc. de Geog. de l'Est ..	44, Rue de Cronstadt, Nancy.	Prof. B. Auerbach ..	P. Colleson ..	1878	350	10 fr.	<i>Bull.</i> (Q).
Neuchâtel, Soc. de Geog.	—	—	C. Knapp ..	1885	485	5 fr.	<i>Bull.</i>
Oran, Soc. de Geog. et d'Archéol.	7, Rue Schneider,	F. Doumergue ..	Commandant Béranger	1878	400	12 fr.	<i>Bull.</i> (Q).
Oxford, Geog. Assoc.	40, Broad St.	E. J. Garwood ..	A. J. Herberison	1893	c. 1,000	5s.	<i>Geog. Teacher</i> (A/3).
Paris, Soc. de Geog.	184, Boulevard Saint-Germain.	Prince Roland Bonaparte.	Baron Hulot ..	1821	2,300	36 fr.	<i>La Geographice</i> (M).
Philadelphia, Geog. Soc.	400, Witherspoon Building.	—	P. J. Sartain ..	—	875	\$5.	<i>Bull.</i>
Prague Geog. Ges...	Inst. geog. de l'Univ. tcheque.	F. Poeta ..	V. Švambera ..	1894	400	7 k.	<i>Sbornik Ceske Spolecnosti Zeměvědné</i> (Q).
Rio de Janeiro, Brazil, Soc. de Geog.	—	Conde de Affonso Celso.	M. Fleituss ..	1838	200	£20	<i>Revista.</i>
Rocheport, Soc. de Geog.	—	—	J. Laferrière ..	1878	c. 230	10 fr.	<i>Bull.</i>
Rouen, Soc. Normande de Geog.	40 Bis, Rue St. Lô, Rouen.	E. Anquetil ..	G. Mondrier ..	1879	850	—	<i>Bull.</i> (Q).
Roumanian Geog. Soc.	Bucharest ..	—	S. Stefanescu ..	1875	c. 430	—	<i>Bul.</i> (Q); <i>etc.</i>
Russian Geog. Soc.	St. Petersburg ..	—	A. A. Dostojevskij	1845	c. 1,320	—	<i>Zapiski</i> ; <i>etc.</i>
Russian Geog. Soc., Caucasus Sect.	Tiflis ..	—	D. Pagirev ..	1850	104	—	—
Russian Geog. Soc., E. Siberia Sect.	Irkutsk ..	—	—	1851	c. 220	—	<i>Mém.</i> ; <i>etc.</i>
Russian Geog. Soc., W. Siberia Sect.	Omsk ..	—	—	—	c. 150	—	<i>Sapiski.</i>
Russian Geog. Soc., Orcnburg Sect.	Orenburg ..	—	P. A. Voroncovskij	1868	108	5 Rub.	<i>Zapiski.</i>
Scotland, Roy. Scott. Geog. Soc.	Synod Hall, Castle Terrace, Edin- burgh.	M. M. Eversmann Earl of Stair ..	G. G. Chisholm	1884	1,900	£1 ls.	<i>Scott. Geog. Mag.</i> (M).
Thüringen, Geog. Ges. f. ..	Jena..	—	E. Richter ..	1882	c. 670	4 M.	<i>Mitteil.</i>

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GEOGRAPHY—Contd.							
Toulouse, Soc. de Geog. ..	—	Col. Tamignao ..	S. Guénot ..	1882	600	10 fr.	<i>Bull.</i>
Tyneside Geog. Soc. ..	St. Mary's Place, Newcastle	Lord Joicey ..	H. Shaw ..	1887	800	£1 ls.	J. (A).
Vienna*, K.-K. Geog. Ges. ..	Wollzeile, 33	E. Oberhammer ..	E. Gallina ..	1856	c. 2,000	12 K.	<i>Mittteil.</i> (A)10; <i>Abhandl.</i>
GEOLOGY and MINERALOGY.							
Africa, Geol. Soc. of South ..	P. O. Box 1071, Johannesburg.	A. L. Hall ..	G. S. Corstor- phine,	1895	185	£2 2s.	<i>Trans. and Proc.</i> (half-yearly or oftener).
America, Geol. Soc. of ..	c/o Amer. Mus. Nat. Hist., New York.	G. F. Becker ..	E. O. Hovey ..	1838	374	\$10	<i>Bull.</i> (4 pts., 1 vol. per ann.).
Belgium, Soc. Geol., Paleont., Hydrol.	Brussels, 19, Ru- Tasson Shel.	—	Baron L. Graindl	1887	500	15 fr.	<i>Bull.</i> ; etc.
Belgium, Soc. Geol. de ..	7, Place de l'Univer- sité, Liège.	J. Libert ..	P. Tourmarier	—	350	15 fr.	<i>Annales</i> (Q.); <i>Mem.</i>
Cornwall, Roy. Geol. Soc. of ..	Penzance ..	Lord St. Levan ..	J. B. Cornish ..	1814	82	£1 ls.	<i>Trans.</i> (A).
Edinburgh Geol. Soc. ..	1, India Bldgs., Edin- burgh.	J. S. Flett ..	W. T. Gordon..	1834	250	12s. 6d.	<i>Trans.</i> (A).
France, Soc. Geol. de ..	Paris, 28, Rue Serpente	S. Mennier ..	P. H. Tritel .. F. Cannu.	1830	500	30 fr.	<i>Compte Rendu; Bull.</i> ; <i>Mém. de Géol.</i> ; <i>Bull.</i> (M).
France, Soc. de Minér. ..	1, Rue Victor Cousin, Paris.	H. Copaux ..	R. Tronquoy ..	1878	155	20 fr.	<i>Geol. Rundts.</i> (A)8).
Frankfurt, Geol. Ver. ..	Viktoria Allee, 7, Frankfurt a. M.	Geh. Rat. E. Kay- ser.	F. Drevermann	1910	—	10 M.	<i>Zeitschr.</i> (Q); <i>Monats- ber.</i> ; <i>Abhandl.</i>
German Geol. Soc. ..	Invalidenstr. 44, Berlin.	Geh. Bergrat Wahn- schaffe.	Dr. Bärting .. Dr. Fleißel	1848	850	30 M.	<i>Fortschr. d. Miner., Kristallog.-u. Petrog.</i> (A).
German Miner. Soc. ..	Jena ..	F. Becke (Vienna)	G. Linck ..	1908	268	7½ M.	

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GEOLOGY, etc.—Contd.							
Glasgow, Geol. Soc. of	207, Bath Street	—	P. Macnair	1858	—	10s.	
Hungarian Geol. Soc.	Stefania ut. 14, Buda- pest.	F. Schafarzik	K. v. Papp	1850	750	10 Kr.	<i>Trans. Foldians. Koziány (M).</i>
Internat. Congr. Agro-Geol., 1914	St. Petersburg.	A. Robin	Ch. Amat	1904	36 Counc.	15 lire.	<i>Bull.</i>
Internat. Cong. of Hydrology, Climatol. and Geol.	18, rue Beaujon, Paris	D. Pantanelli	A. Verri	1881	292	2 M. 10s. 6d. 5s.	<i>Mittell. (A). Proc. (A). Proc.</i>
Italian Geol. Soc.	Via S. Susanna 13, Rome.	R. Wagner	W. A. Whitehead	1909 1859	130 80	—	
Jona, Ges. f. Miner. u. Geol.	Mineralog. Inst.	—	—	—	—	—	
Liverpool Geol. Soc.	Royal Institution	—	—	—	—	—	
Liverpool Geol. Assoc.	Lord Derby Museum, William Brown Street.	—	—	—	—	—	
London, Geol. Soc. of	Burlington House	A. Strahan	A. S. Woodward	1807	1,300	£2 2s.	<i>J. (Q); Geol. Lit. (A); Abstracts of Proc. (Fortnightly). Miner. Mag. and J. Miner. Soc. (twice yearly). Proc. (5 pts. per ann.).</i>
London, Miner. Soc. of	Nat. Hist. Mus., S. Kensington.	A. E. H. Tutton	G. T. Prior	1876	140	£1 ls.	
London, Geologists' Assoc. of	University Coll.	J. W. Evans	A. L. Leach	1858	770	10s.	
Luxembourg, Soc. géol. de	Arton, Rue St. Jean, 59.	—	A. Jérôme	1894	c. 60	5 fr.	
Manchester Geol. and Mining Soc.	5, John Dalton Street	—	S. A. Smith	1838	400	£2 2s.	<i>Trans. (M).</i>
Mexican Geol. Soc.	6a, Ciprés 176, Mexico	J. G. Aguilera	P. Waitz	1904	120	\$12 Mex.	<i>Bull. (A/2).</i>
Mexican Geod. Commission	Tacubaya	—	—	1899	—	—	
Oberrheinischer Geol. Ver.	Heidelberg	Sauer (Stuttgart)	W. Salomon Häberle.	1871	460	5 M.	<i>Jahresber.; Mitt</i>
Stockholm Geol. Assoc.	—	—	H. Munthe	1871	c. 450	—	<i>Förhändl.</i>
St. Petersburg, Imp. Miner. Soc.	—	A. P. Karpinsky.	F. N. Tscherny- schew	1817	395	5 Rub.	<i>Trudy; Zapiski; etc.</i>
Vienna, Geol. Ges.	Franzensring 3	F. E. Suess	F. X. Schaffer	1907	342	10 k.	<i>Mitteil.</i>

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NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
GEOLOGY, etc.—Contd.							
Vienna, Miner. Ges.	The University	F. Becke	A. Himmelbauer	1901	152	10 k.	<i>Mitt.</i> (in <i>Tschermak's Miner. u. Petrog. Mitt.</i>). Abstracts pub. in <i>J. Wash. Acad.</i> —bound (A).
Washington, Geol. Soc. of	1330, F. Street, Washington, D.C., U.S.A.	T. W. Stanton	R. Anderson . . W. R. Richards	1893	245	\$1.50	Abstracts pub. in <i>J. Wash. Acad.</i> —bound (A).
Wyoming Hist. and Geol. Soc.	Sheffield, Burnside, Pitmoor Road.	—	—	—	—	13s.	<i>Proc.</i>
MATHEMATICS.							
Amer. Math. Soc.	501, W. 116th St., New York.	H. B. Fine	F. N. Cole	1894	668	\$5	<i>Trans.</i> (Q); <i>Bull.</i> (M, except Aug. and Sept.), <i>Sitzungsber.</i> (A/5).
Berlin, Math. Ges.	Enzianstr. 3, Berlin- Lichterfelde.	A. Korn	F. Weiss	1901	271	8 M.	<i>Mém.</i>
Bohemian Mathematicians, Assoc. of.	Prague	—	L. Corbière	1851	c. 60	16 fr.	<i>Časopis pro pěstování math. a. fys.</i> (A/5).
Cherbourg, Soc. nat. des Sci. nat. et math.	—	—	T. Sobotka	1862	1,051	8 K.	<i>Proc.</i> (A, Sept.); <i>Math. Notes</i> (A/3). <i>Bull.</i>
Czech Math. and Phys. Soc.	Krémencová 16, Prague.	V. Stronhal	—	1876	760	—	<i>Jahresber.</i>
Brussels, Cong. des Géomètres	42, Rue de la Pâtisserie, Brussels.	—	—	1883	216	7s. 6d.	
Edinburgh Math. Soc.	Edinburgh Inst., 8, Queen Street.	J. Miller	P. Comrie	1872	286	20 fr.	
France, Soc. math. de	Paris	Cartan, Montel.	—	1891	760	—	
Germany, Deutsche Math. Ver.	Leipzig	—	A. Krazer [57, Westendstr., Karlsruhe].				

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MATHEMATICS—Contd.							
Incorp. Soc. Inspectors of Weights and Measures.	Watford	C. S. Cobb ..	R. Robertson ..	1894	387	16s. 6d.	Rev. (M); etc.
Internat. Comm. de l'Enseignement math.	Florissant 110, Geneva.	F. Klein ..	H. Fehr ..	1908	40	—	L'Enseignement Math., Revue Internat. Bull. (A).
Internat. Assoc. Prom. Study of Quaternions.	904, W. California Ave., Urbana, Ill.	A. Macfarlane ..	J. B. Shaw ..	1899	64	12 fr.	Bull. (A).
Internat. Inst. de Statistique	La Haye, Holland	L. Bodio ..	H. W. Methorst	1885	220	£1	Bull.
Kasan, Phys.-math. Soc.	Imperial University	D. N. Seliger ..	N. N. Parfen- tref.	1880	130	3 Roub.	Bull. (Q).
Kharkoff Math. Soc.	—	—	A. P. Pehéboarskij	1879	160	—	Soobščenijsja, Protokoly.
Kijew, Phys.-Math. Soc.	—	—	A. D. Bilimovic.	1890	c. 300	2 Rnb.	Math. Gaz. (A/B).
London, Math. Assoc.	King's Coll.	Sir G. Greenhill..	C. Pendlebury.	1871	c. 730	10s.	Proc.
London, Math. Soc.	22, Albemarle Street, W.	A. E. H. Love ..	J. H. Grace. ..	1865	307	£1 ls.	—
London, Roy. Econ. Soc.	9, Adelphi Terrace, W.C.	Viscount Haldane	T. J. Bromwich.	1890	600	£1 ls.	Econ. J. (Q).
London, Roy. Statistical Soc.	9, Adelphi Terrace, London, W.C.	F. Y. Edgeworth.	C. M. Koban ..	1834	c. 850	£2 2s.	J. (M, Dec.—July).
London, Decimal Assoc.	Finsbury Court, Fins- bury Pavement, E.C.	Lord Belhaven ..	G. E. M. John- son.	1889	2,000	Optional.	Reprints of lectures.
Moscow Math. Soc.	—	—	S. A. Caplygin, N. Jaccona Guccia.	1867	110	—	Mat. Sbornik.
Palermo, Circ. mat. di	30, Via Ruggiero Settimo.	M. L. Albergiani	G. La Mensa, S. Petira ..	—	—	12 fr.	—
Prague Math. Assoc.	Kremencova ul. 16. n.	V. Strouhal ..	H. Rothe ..	1862	1,229	—	Casopis pro pestování math. a fys.
Vienna Math. Ges.	The University ..	—	G. M. Duncan ..	1904	72	5 kr.	—
MEDICINE, SURGERY, etc.							
Aberdeen Med.-Chirurg. Soc.	29, King Street	G. Dean ..	G. M. Duncan ..	1789	104	£1 ls.	—
Alpha Omega Alpha	4306, Sansom St., Philadelphia.	W. S. Hall ..	W. W. Root ..	1902	1,200	£2	—

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MEDICINE, etc.—Contd.							
Amer. Med. Assoc.	535, Dearborn Ave., Chicago.	V. C. Vaughan . .	A. R. Craig . .	1847	70,538	\$5	<i>J. (W); etc.</i>
Amer. Soc. of Trop. Med.	457, Park Avenue, Rochester, N. Y.	R. P. Strong . .	J. M. Swan . .	1903	171	\$4	<i>Amer. J. Trop. Dis. and Prev. Med. (M).</i>
Amer. Pub. Health Assoc.	755, Boylston Street, Boston.	R. Hering . .	S. M. Gunn . .	1872	1,050	\$3	<i>Amer. J. Pub. Health (M).</i>
Amer. Therap. Soc.	(Sec.) The Cecil, Wash- ington, D. C., U. S. A.	N. P. Barnes . .	L. H. Taylor . .	1900	100 ltd.	\$5	<i>Trans. (A).</i>
Antwerp, Soc. de Méd. phys. de	1, Rue des Escri- meurs.	Dr. Froidbise . .	Dr. Gunzburg . .	1902	95	10 fr.	<i>Ann. de Méd. phys. (A/6).</i>
Bahia, Soc. de Med. Belgium, Acad. Roy. de Med.	Palais des Académies, Rue Ducale, Brus- sels.	P. Heger . .	E. Masoin . .	1941	140	—	<i>Bull.; Mem.</i>
Belgium, Soc. Belge de Chirurg. Belgium, Soc. Belge de Dermatol. et Syph. Belgium, Soc. Belge de Gynéc. et d'Obstét. Belgium, Soc. de Med. Mentale de Belgium, Soc. Belge de Neurol. Belgium, Soc. Belge d'Ophthalm. Belgium, Soc. Belge de Physio- thérapie. Bello Horizonte, Soc. de Med., Cir., e Pharm. Berlin, Med. Ges. Berlin, Balneol. Ges. Berlin, Ophthalm. Ges.	Brussels 17, Avenue des Ger- mains, Brussels. 37, Rue Joseph . . 110, Boulevard Dolez, Mons. Brussels Brussels, Place, 17. Maison des Médecins, Brussels. — — 24, Thomasius Street, Berlin. —	— Dr. Bertrand . . Dr. Brouha . . Dr. Massart . . — — R. Verhoogen . . — — Brieger —	Herman Wiener. Dr. Dubois- Havenith M. Cheval . . F. d'Hollander Crocq Van Duyse . . R. Wybaner . . B. Mons v. Hansemann Brock —	1893 1900 1889 1867 1896 1896 1910 — — — 1860 1878 —	132 36 60 — 45 c. 100 27 — — — c. 1,700 420 —	— 10 fr. 10 fr. 10 fr. 10 fr. 20 fr. 15 fr. — — — 20 M. — —	<i>J. de Chirurg.; An- nales. Bull. (Q).</i> <i>Bull. (M, except Aug. and Sept.). Bull. (A/6).</i> <i>Annales; J. de Neurol. Bull.</i> <i>Verhandl. Veröffentl. (A).</i> <i>Verhandl.</i>

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MEDICINE, etc.—Contd.							
Berlin, Ges. f. Rassenhyg.	Dorotheenstr. 28	Grotjahn	A. Korff-Petersen	1909	120	2-20 M.	<i>Archiv. f. soz. Hyg.</i>
Bohemia, Assoc. Bohem. Physicians (lékři).	Prague	J. Hlava	Libensky	1862	500	8 kr.	<i>Gaz. Arch. Rev. of Biol., and others, all in Czech.</i>
Bohemia, Assoc. Bohem. Surgeons	Prague						
Bordeaux, Soc. de Med. et de Chir.	Roy. Infirmary	Dr. Manknell	F. W. Goyder	1863	133	10s. 6d.	<i>Rept. (A).</i>
Bradford, Med.-Chirurg. Soc.	Rio de Janeiro						
Brazil, Acad. Nacl. de Med.	Rio de Janeiro						
Brazil, Soc. de Psychiat., Neurol. e Med. Legal.	Rio de Janeiro						
Brazil, Assoc. da Imprensa Med.	Rio de Janeiro						
Bristol Med.-Hist. Club	Med. Library, Uni- versity.	P. W. Williams	J. A. Nixon	1910	8	None.	<i>J. (Q).</i>
Bristol Med.-Chir. Soc.	Med. Library, Uni- versity.		A. J. Wright	1874	170	£1 ls.	
British Med. Assoc.	429, Strand, London	W. Ainslie Hollis	G. Eliaston	1872	26,000	25s.	<i>Brit. Med. J. (W).</i>
Brussels, Soc. R. des Sci. med. et nat. de.	69, Rue de la Loi, Brussels.	F. Godart-Dan hieux.	E. Zunz	1822	50	50 fr.	<i>Ann. (1822-42, 1892-1910); Bull., A. since 1843; J. (W) 1842-95).</i>
Caen, Soc. de Med.	—	—	—	1798	—	—	<i>J.</i>
Cairo, Soc. Khediv. de Med.	—	—	—	1898	73	—	<i>Bull.</i>
Cairo, Ver. deutscher Artze in	—	—	—	1909	35	—	
Cambridge Med. Soc.	Addenbrooke's Hosp.	—	A. Wright	1880	112	5s.	<i>Proc.</i>
Cardiff Med. Soc.	Queen Street	—	W. Martin	1870	110	£1 ls.	<i>Norsk Mag.</i>
Christiania Med. Soc.	—	K. Fervell	N. B. Koppang	1833	250	—	
Denver Acad. of Med.	—	—	—	—	—	—	
Denver, Med. Soc. of City and Co. of	Metropolitan Build- ing.	W. H. Sharpley	W. M. Wilkinson	1871	350	\$10	<i>Bull. (W).</i>
District of Columbia, Med. Soc. of	Washington	W. P. Carr	H. C. Macatel	1817	590	\$4	<i>Wash. Med. Annals (B-M).</i>
Dresden, Ges. f. Natur-u. Heilk.	Zeughauspt. 3	—	H. Haenel	1819	493	12 M.	<i>Jahresber.</i>
Edinburgh Med.-Chirurg. Soc.	—	—	F. D. Boyd	1821	360	10s.	<i>Trans.</i>
Edinburgh, Roy. Med. Soc. of	7, Melbourne Place	M. Lyon	W. A. Alexander	1737	—	£2 2s.	

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MEDICINE, etc.—Contd.							
Edinburgh Obstet. Soc.	The Hall, Lady Law- son Street, Manchester.	J. H. Ferguson	A. Macdonald	1840	600	5s.	<i>Trans.</i> (A).
England, North of, Obstet. and (Gynæc. Soc.)	Manchester.	—	H. Clifford	1890	254	5s.	<i>Trans.</i>
Erlangen Phys.-med. Ges.	—	—	A. Gotbier	1808	70	10 M.	<i>Sitzungsber.</i>
Florence, Acad. Med.-Fis. Floren- tina.	6, Via Lamarara	F. Schupfer	L. Picchi	—	138	—	<i>Atti; Sperimentalia.</i>
France, Acad. de Med.	Paris, Rue Bona- parte, 16.	—	Jacoud	1820	88 Corresp.	—	—
France, Assoc. Gén. des Médecins de.	5, Rue de Surène, Paris.	—	C. L. Darras	—	35	60 fr.	<i>Bull.; Mém.; Bull. et Mém.</i>
France, Soc. Natl. de Chirurg.	Paris, 12, Rue de Seine.	—	E. Rochard	1843	410	20 fr.	<i>Bull.; Mém.</i>
France, Soc. franç. d'Ophthalm.	Paris, 23, Rue de Madrid.	—	Duboys de Lavi- gère.	1883	400	—	<i>Bull.; Mem.; Ann. Cong., 2nd Mon- day in May.</i>
France, Soc. franç. d'Oto, Rhino- Laryng.	20, Rue Soufflot, Paris.	Gellé fils	Depierris	1882	—	—	<i>Bull.</i>
France, Soc. Centrale de Med. vet.	Paris, 12, Rue de Seine.	Texier (1913-14).	Railliet	1844	—	—	<i>Bull. (M—except Aug. and Sept.).</i>
France, Soc. franç. d'Electro- therap. et de Radiol.	2, Rue de la Bien- faisance, Paris.	Bergonié	L. Delherm	1891	188	15 fr.	<i>Trans. publ. in Deut. Med. Wochenschr.</i>
Freiburg Med. Ges.	Freiburg i. B., Ger.	W. Straub	Fühner	1910	96	10 M.	<i>Verhandl. (A). Verhandl. (A).</i>
Germany, Aerzte-Verein-Bund	Berlin	W. Müller (Rostock)	W. Körte	1872	2,200	20 M.	<i>Ber. (A).</i>
Germany, Deut. Ges. f. Chirurg.	Berlin	Kölliker	Drehmann	1901	530	—	<i>Verhandl. (A).</i>
Germany, Deut. Ges. f. Orthopæd. Chirurg.	Berlin, Langenback- haus.	Prof. Levy	M. Immelmann	1895	687	10 M.	<i>Ber. (A).</i>
Germany, Ges. f. Urologie	Berlin	—	Wosidlo	1906	340	10 M.	<i>Verhandl. (A).</i>
Germany, Ver. deut. Laryng.	Wiede 35, Bremen	G. Spiess	E. Winkler	1894	510	10 M.	<i>Verhandl. (A).</i>
Germany, Deut. Ges. f. Geschichte d. Med. u. d. Naturwiss.	Hamburg	—	—	1901	c. 300	10 M.	<i>Mitteil.</i>

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MEDICINE, etc.—Contd.							
Germany, Ges. deut. Natur- forsch. u. Ärzte.	Leipzig	—	—	1822	c. 2,850	5 M.	<i>Tagebl.; Verhandl.</i>
Ghent, Soc. de Med.	—	—	E. Tytgat ..	1834	300	7 fr.	<i>Annales (M); Fréde- ricq; De Nobels; De Beule.</i>
Glasgow, Med.-Chir. Soc. of	242, St. Vincent Street.	A. E. Maylard ..	A. Young ..	1814	460	5s.	<i>Trans. (A).</i>
Glasgow Obstet. and Gynæc. Soc.	Faculty Hall, St. Vincent Street.	—	W. D. Macfar- lane.	1885	c. 200	5s.	<i>Trans.</i>
Glasgow, Sanitary Assoc.	—	—	G. Middleton ..	—	445	—	<i>Trans. (A).</i>
Glasgow and W. of Scotl. Med. Assoc.	Glasgow, 70, Mitchell Street.	A. Young ..	J. Anderson ..	1828	—	£1	<i>Glasgow Med. J. (M).</i>
Heidelberg Naturhist.-med. Ver...	Hauptstr. 52 ..	Dr. Klebs ..	W. Solomon ..	1856	243	4 M.	<i>Verhandl. (Q).</i>
Heidelberg Ophthalm. Ges.	—	T. Leber ..	Häberle.	1863	700	10 M.	<i>Ber.</i>
Helsingfors Soc. of Physicians	—	—	A. Wagenmann	1835	c. 500	20 fr.	<i>Handl.; etc.</i>
Hong Kong Far Eastern Assoc. of Trop. Med.	—	Surg.-Gen. Charac	F. Clark ..	1908	160	10s. 6d.	<i>Trans. A/2.</i>
Innsbruck Naturwiss.-med. Ver. ..	—	—	W. L. R. Montel	—	o. 80	8 K.	<i>Ber.</i>
Internat. Dental Federn.	20, Kettenhofweg, Frankfort a. M.	—	J. Loss ..	1869	—	—	—
Internat. Assoc. for Cancer Re- search.	Magdeburgerstr., 14, Berlin.	—	Schaefferstuckert	—	—	—	—
Internat. Soc. de Med. ..	Cairo	—	G. Meyer ..	1908	1,100	100 M.	<i>Cancer (M).</i>
Internat. Soc. of Eugenicists	Munich, Gundelin- denstr. 5. ..	A. Ploetz ..	E. Rüdín ..	1908	123	20 M.	<i>Archiv. f. Rassen. u. Ges.-Biol. (A/6).</i>
Internat. Med. Congress (18th) 1917	Munich	Prof. Dr. F. von Müller.	—	1905	550	—	—
Internat. League against Epilepsy	Nervierstraat 33, Antwerp.	A. Tamburini ..	A. Claus ..	1909	120	£1	<i>Epilepsia.</i>
Internat. Assoc. des Méd. Mecano- therap.	Rue des Escimeurs 1, Antwerp.	Prof. Guermou- prez.	L. J. J. Muskens Dr. Gunzburg ..	—	—	—	<i>Bulletin (A/6).</i>
Internat. Assoc. de Méd. Phys. ..	26, Rue de Château- dun.	F. de Courmelles	L. de Munter. P. N. Barbatis	1904	150	10 fr.	<i>Arch. Gen. de Thérap. Phys. (M.); L'An- née Elec., Electro- therap. et Radiog. (A).</i>

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MEDICINE, etc.—Contd.							
Ireland, Roy. Acad. of Med. of ..	Dublin ..	—	—	1882	c. 260	£2 2s.	<i>Trans.</i>
Ireland, Roy. Coll. Physicians of ..	6, Kildare St., Dublin	C. E. Fitzgerald ..	T. P. E. Kirk- patrick.	—	—	—	<i>Janus</i> (M).
Janus (Internat. Soc. of Hist. of Med. and Med. Geog.)	Jan van Goyenkade 44, Leyden.	A. W. Nieuwenhuis	—	1896	—	—	<i>Bul.</i> <i>Zeitschr.</i> ; etc.
Jassy Soc. of Med. and Naturalists	—	—	J. Tănăsescu ..	1833	100	—	<i>Dnevnik.</i>
Jena Med.-naturwiss. Ges. ..	—	—	L. Wolf ..	1854	115	6 M.	<i>Neurot. Vestnik.</i>
Kasan Soc. of Physicians ..	—	—	A. Favorskij ..	—	62	—	<i>Trudy.</i>
Kasan Soc. of Neuropath. and Psychiat.	—	—	V. K. Vorosilov.	1892	—	—	<i>Protokol.</i> <i>Protokol.</i> <i>Protokol.</i>
Kharkoff Soc. of Exper. and Pract. Med.	—	—	A. M. Cerevkov.	—	—	—	<i>Ann. Rept.</i>
Kief, Phys.-med. Soc. ..	—	—	—	1899	—	—	<i>Jahresber.</i>
Kief, Dermatol. Soc. ..	—	—	—	—	—	—	<i>Bul.</i>
Kief, Gynec. Soc. ..	Bibikowsky Boule- vard, 17.	A. A. Monratoff..	G. Bruno ..	1886	120	5 R.	<i>J. Annals of Trop. Med. and Parasit. (Q).</i>
Kief, Psychiat. Soc. ..	—	—	W. Lozinski ..	1898	40	—	<i>Proc. (M).</i>
Leeds and W. Riding Med.-Chir. Soc.	Leeds ..	T. W. Griffith ..	V. V. Seletzkiij	1873	c. 390	£1 1s.	<i>Trans. (A).</i>
Leipzig, Med. Ges. ..	—	Prof. Marchand..	G. W. Walsin..	—	—	—	<i>W. London Med. J.</i>
Lille, Soc. de Med. du Nord ..	—	—	J. F. Dobson ..	1829	370	—	—
Lisbon, Soc. das Sci. Med. de ..	Rua do Alcazim, 53	—	Dr. Riecke	1843	140	20 fr.	—
Liverpool Sch. Trop. Med. ..	B. 10, Exchange Blds.	Princess Christian	Irgelrans ..	1835	340	30 fr.	—
London, Roy. Soc. of Med. ..	15, Cavendish Square, W.	Sir F. H. Champ- neys.	A. H. Milne ..	1898	—	—	—
London, Med. Soc. of ..	11, Chandos Street, Cavendish Square	J. M. Bruce ..	A. Latham ..	1907	c. 3,000	£3 3s.	—
London, West, Med.-Chir. Soc. ..	W. London Hosp., Hammersmith.	Sir W. Cheyne, Bt. (1813—14).	H. S. Pendlebury	1773	700	£1 1s.	—
London, Charing Cross Hosp. Med. Soc.	72, Chandos Street, Charing Cross.	—	G. Bethell (Registrar).	—	65	5s.	—
		—	K. V. Smith ..	1895	70	2s. 6d.	—

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MEDICINE, etc.—Contd.							
London, Med.-Legal Soc. of ..	11, Chandos Street, W.	—	R. Burrows .. J. H. Evans.	1901	250	10s. 6d.	<i>Trans.</i> (A).
London, Ophthalm. Soc. of U.K.	11, Chandos Street, Cavendish Sq.	J. B. Lawford ..	E. F. Buzzard.. E. Brewerton.	1880	500	£1 ls.	<i>Trans.</i> (A/3).
London, Roy. Sanitary Inst. ..	90, Buckingham Palace Road.	Earl of Plymouth	E. W. Wallis ..	1876	4,257	£2 2s.	<i>J.</i> (M).
London, Roy. Inst. Pub. Health	37, Russell Square, W.C.	Lord Beauchamp	J. Cantlie ..	1885	1,550	£2 2s. £1 ls.	<i>J. of State Med.</i> (M).
London, Nat. Assoc. for Prev. of Consumption.	20, Hanover Square, W.	Lord Balfour of Burleigh.	J. J. Perkins ..	1898	850	£1 ls.	<i>Trans. Tuberc. Con- fer.</i> (A).
London Röntgen Soc.	c/o Inst. Elec. Eng'ns., Victoria Embankment.	Sir J. M. Davidson	R. Knox.	1897	200	£1 ls.	<i>J.</i> (Q.).
London, Harveian Soc. of London, Hunterian Soc.	London Inst., Fins- bury Circus.	A. H. Tubby ..	A. C. Jordan .. O. K. Williamson (Nav.) Flect- Surg. E. J. Finch, R.N. (Army) Maj. S L. Cummins, R.A.M.C.	1819	199	10s. 6d.	
London, United Services Med. Soc.	R.A.M.C., Grosvenor Road, S. W.	Fleet - Surg. P. Bassett-Smith.	W. A. Lawton	1907	452	5s.	<i>Trans.</i> (Q.).
London, Soc. Med. Officers of Health.	1, Upper Montague Street, Russell Sq., W.C.	A. K. Chalmers..	Major Green- wood.	1856	1,100	£1 ls.	<i>Public Health</i> (M).
London, Lister Inst. Prev. Med.	Chelsea Bridge Road	Sir J. R. Bradford	Vallas Barjon	1889	—	—	<i>Collected Papers</i> (A).
Lyons, Soc. de Chirurg.	—	—		1897	37 Ord.	30 fr.	<i>Bull. Comptes rendus</i> (pub. in <i>Lyons Méd.</i> and <i>Bull.</i>).
Lyons, Soc. Nat. de Méd..	Hotel Dieu	Dr. Monisset ..		1792	75	30 fr.	
Madrid, R. Acad. de Med. de Manchester Med. Soc.	The University ..	J. J. Cox.. ..	M. Iglesias y Diaz E. B. Leech ..	1732 1834	442	£1 ls.	<i>Rept.</i> (A).

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MEDICINE, etc.—Contd.							
Manila Med. Soc.	—	—	F. B. Bowman.	—	c. 130	\$1	<i>Bull. (M.).</i>
Milan, R. Soc. d'Igiene	—	D. N. Zernow . .	A. A. Souhow . .	1804	173	5 Rub.	<i>J. (A).</i>
Moscow Phys.-med. Soc.	—	—	H. Mesčerskij . .	1891	62	5 Rub.	<i>Protokoly.</i>
Moscow Chirurg. Soc.	—	—	W. A. Colley . .	1892	125	5 Rub.	<i>Trudy.</i>
Moscow Gynæc. Soc.	—	—	H. A. Loerenthal	—	c. 300	5 Rub.	<i>Trudy.</i>
Moscow Soc. for Children's Dis. . .	—	—	S. Mirabeau . .	1884	75 Ord.	10 M.	<i>Sitzungsber.</i>
Moscow Therap. Soc.	—	—	L. Seneoert . .	1842	90	12 fr.	<i>Comptes Rendus et Mém. Gazette.</i>
Munich Gynæc. Ges.	—	—	—	—	c. 130	20 fr.	—
Nancy, Soc. de Med.	—	—	G. Iappelli . .	—	c. 120	\$1	<i>N. Y. State J. Méd. (M); Med. Direc. (A).</i>
Nantes, Soc. Med. Chir. des Hôpitaux.	—	—	—	1807	c. 7100	\$20	<i>Trans.</i>
Naples, R. Accad. Med.-Chir. . . .	Albany	—	J. H. Huddleston	1847	1200	\$3	—
New York, Med. Soc. of State of . .	New York	—	B. B. Clark . .	1850	c. 600	3 M.	<i>Sitzungsber A12.</i>
New York Acad. of Med.	Albany	—	{ Uhlig (Nat. Sci.), Stursberg (Med.) Gewecke (Chem.) } E. Schroeder . .	1818	58	5 M.	<i>Sitzungsber.</i>
New York, Homœopath. Soc. of State of.	Bonn	{ Brauns (Nat. Sci.), Bonnet (Med.), Anschütz (Chem.) }	—	—	—	—	—
Niederrhein. Ges. f. Natur.-u. Heilk.	—	Prof. Dr. Winter.	—	1902	160	5 M.	—
Nordostdeutsche Ges. f. Gynæc. . . .	Königsberg, Tragheim, Kirchenstr. 24	—	W. E. Hume . .	1848	220	10s.	<i>J.</i>
Northumberland and Durham Med. Soc.	Newcastle	—	R. J. Willan . .	1833	—	—	<i>Ber.</i>
Oberhessische Ges. f. Natur.-u. Heilk.	Giessen	—	—	—	—	—	—
Odessa Med. Soc.	—	—	G. Pitrè . .	1892	163	10 fr.	<i>Bull. Atti.</i>
Onest, Soc. Sci. et Med. de l'	Rennes	—	Jaccond . .	1649	40	—	<i>Bull. and Mém.</i>
Palermo, R. Accad. d. Sci. Med.	—	—	—	1820	110	—	—
Paris, Acad. de Med.	Rue Bonaparte, 16.	Chauveau . .	—	—	—	—	—

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MEDICINE, etc.—Contd.							
Paris, Soc. de Med. de	69, Boulevard Maesherbes, Rue Bonaparte, 16.	C. de la Carrière	P. Guillon ..	1796	621	—	<i>Bull. and Mémoires</i> (M.2).
Paris, Soc. d'Histoire de la Med.	Rue Bonaparte, 16.	P. Dorveaux ..	E. Wickersheimer.	1902	210	12 fr.	<i>Bull.</i> (M); <i>Publications.</i>
Paris, Soc. de Neurol. de	12, Rue de Seine ..	P. Marie ..	H. Meige ..	1899	143	100 fr.	<i>Rev. Neurol.</i> (F).
Paris, Soc. d'Obstet. de	—	—	C. Jeannin ..	1898	c. 200	100 fr.	<i>Bull.</i>
Paris, Soc. de Therap.	—	—	—	1866	c. 200	30 fr.	<i>Bull.</i>
Paris, Assoc. de Med. Inspect. ..	10, Boulevard Majenta	Dr. Cayla ..	L. Dufestel ..	1910	800	—	<i>L'Hyg. et la Med. Sc.-laïres Internat.</i> (A).
Paris, Soc. Centr. de Méd. Vet. ..	12, Rue de Seine ..	Prof. Dechambre	Prof. Railliet ..	1844	54	—	<i>Bull. and Mém.</i> (M).
Philadelphia, College of Physicians	19, S. 22nd Street ..	J. C. Wilson ..	T. R. Neilson ..	1787	504	—	<i>Trans.</i> (A).
Philippine Is. Med. Assoc.	Manila	—	B. Baptista ..	—	—	—	<i>Bol.</i>
Rio, Soc. Med. dos Hosp. Assoc. do.	—	—	—	—	—	—	<i>Bol.</i>
Rio, Soc. de Med. e Cirurg.	Policlínico Umberto I.	—	A. Zeri.. ..	1876	—	—	<i>Boll.</i>
Rome, R. Accad. Medica	—	—	X. da Silveira	—	—	—	
Scotland, Incomp. San. Assoc. ..	—	—	C. Niemeyer ..	—	—	—	
Sao Paolo, Soc. de Med. e Cirurg. de.	—	—	—	1845	—	—	
Spain, Acad. Med. Española	Madrid	—	Severin Jolin ..	1808	c. 1,140	30 K.	<i>Handl.</i> (occas.); <i>Hygtea.</i> (M); <i>etc.</i>
Swedish Medical Assoc.	Stockholm	T. Hellström ..	—	1889	104	—	<i>Protocol.</i>
Tomsk, Soc. of Nat. Sci. and Med.	—	—	N. Beresnegovskij	1801	—	—	<i>Bull.</i> ; <i>Revue.</i>
Toulouse, Soc. de Med., Chirurg. et Pharmacie.	—	—	V. Oliva ..	—	48 Ord.	£1 ls.	<i>Trans.</i>
Turin, R. Accad. di Med.	—	—	E. Brewerton ..	1880	c. 480	—	<i>Förhandl.</i>
United Kingdom, Ophthalm. Soc. of.	London	—	E. F. Buzzard	—	c. 150	\$2.00	<i>Quarterly.</i>
Upsala Medical Assoc.	—	—	O. V. Huffmann	1912	—	—	<i>Verhandl.</i> ; <i>Zeits.</i> ; <i>Wiener Klin. Woch.</i>
U.S.A. Fed. of State Med. Boards	Educ. Bldg., Albany, N.Y.	—	—	—	—	—	
Vienna, K.-K. Ges. d. Ärzte ..	Frankgasse 8 ..	S. Exner ..	O. Bergmeister. R. Paltanf.	1837	811	50 Kr.	

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MEDICINE, etc.—Contd.							
Vienna, Ges. f. innere Med. u. Kinderheilk.	—	Choostek	J. Mannaberg	1901	557	10 Kr.	<i>Mittel.</i> (W).
Vienna, Dermatol. Ges.	Alsenstr. 4	—	Kren v. Mucha	1890	c. 300	10 Kr.	<i>Protokolle.</i>
Vienna, Ophthalm. Ges.	Wickenburggasse 14.	F. Dimmer	E. Gazmann	1903	74	4 Kr.	<i>Mittel.</i>
Vienna, Ges. f. Phys. Med.	Lazarettgasse 14	M. Herz	M. Kahane	1907	230	6 Kr.	<i>Jahrb.</i>
Vienna, Ver. f. Psych. u. Neurol.	Lazarettgasse 14	—	E. Raimann	1868	c. 330	10 Kr.	<i>Protokoll.</i>
Vilna, Imper. Med. Soc.	—	—	A. Safarewicz	1805	c. 250	—	<i>Trans.</i>
West Kent Med.-Chirurg. Soc.	Greenwich	—	W. H. Payne	1856	150	10s. 6d.	None.
Wigan Med. Soc.	Bidston House	J. T. Shirlaw	J. Blair	1875	65	5s.	None.
Worcester District Med. Soc.	Worcester, Mass., U.S.A.	—	R. J. Ward	1804	225	\$5	None.
Zurich Med.-Chirurg. Bibl. Ges.	—	M. Cloetta	V. Witz	1780	51	25 fr.	None.
METEOROLOGY.							
Austria, K. K. Osterr. Ges. f. Met.	Hohe Warte, 38, Vienna.	V. v. Lang	W. Trabert	1866	300	10 Kr.	<i>Met. Zeitschr.</i> (M) (Jdy. with German).
France, Soc. met. de	Paris, 28, Rue Serpente	—	C. Goutereau	1852	145	10 fr.	<i>Annuaire.</i>
Germany, Deutsche Met. Ges.	Schinkelplatz 6, Berlin W. 56.	G. Hellmann	C. Kassner	1883	351	10 M. and postage.	<i>Met. Zeitschr.</i> (M).
Italy, Soc. Sismol.	Via Caravita 7, Rome	L. Palazzo	—	1895	96	15 f.	<i>Bull.</i> (M).
London, Roy. Met. Soc.	70, Victoria Street, S. W.	C. J. P. Cave	W. Marriotti.	1850	730	£2	<i>Q. J.</i>
Scottish Met. Soc.	Edinburgh	—	R. T. Omond	1855	—	£1 ls.	<i>J.</i>
MICROSCOPY.							
Amer. Micros. Soc.	Decatur, Illinois	F. Creighton	T. W. Galloway	1878	400	\$2 (for Trans.)	<i>Trans.</i> (Q).
Belgium, Soc. B. de Micros.	Brussels	—	—	1874	—	—	<i>Annales.</i>
Bradford Nat. Hist. and Micros. Soc.	Church Institute, North Parade.	—	F. Jowett	1875	100	4s.	<i>Epitome of Records for District</i> (A).
Dublin Micros. Club	c/o Roy. Dub. Soc., Kildare St.	J. H. Woodworth	Sir F. W. Moore	—	23	10s.	None.

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MICROSCOPY—Contd.							
Edinburgh Field Nat. and Micros. Soc.	—	—	A. A. Rinkerton.	1869	c. 210	5s.	<i>Trans.</i>
London, Roy. Micros. Soc.	20, Hanover Square, W.	H. G. Plimmer ..	J. W. H. Eyre .. F. S. Seales.	1839	522	£2 2s.	<i>J. (Bi-Monthly).</i>
Manchester Micros. Soc.	Grand Hotel, Aytoun Street, Piccadilly.	F. E. Weiss ..	F. Dishley ..	1880	175	6s.	<i>Rept. & Trans. (A).</i>
Quekett Micros. Soc.	London, 20, Hanover Sq., W.	A. Dendy ..	J. Burton ..	1865	475	10s.	<i>J. (A/2).</i>
Scottish Micros. Soc.	Edinburgh, 4, Queen Street.	—	W. C. Aitchison- Robertson.	1880	100	10s. 6d.	<i>Proc. (A).</i>
MINERALOGY.							
<i>See Geology.</i>							
MINING and METALLURGY.							
<i>(See Engineering and Chemistry.)</i>							
NATURAL HISTORY.							
<i>(See also General, Botany, Zoology, etc.)</i>							
Amer. Soc. of Naturalists	Vassar Coll., Pough- keepsie, N. Y.	R. G. Harrison ..	B. M. Davis ..	1883	342	\$1	None.
Ashmolean Nat. Hist. Soc.	University Museum, Oxford.	Commander Walker	A. F. Stone ..	1828	296	5s.	<i>Proc. and Rept. (A).</i>
Asia, Deutsche Ges. f. Natur.-v. Völkerk. Ostasiens.	Tokyo	—	Waentig. M. Wolff.	1873	425	12 Yen.	<i>Mittel.</i>
Autin, Soc. d'Hist. nat.	Autun, France ..	—	L. Gillet.	1886	550	10 fr.	<i>Bull.</i>
Baar, Ver. f. Gesch. u. Natur- gesch. d.	Donaueschingen ..	—	—	1870	190	2 M.	<i>Schriften.</i>
Bayreuth, Naturwiss. Ges.	—	—	A. Hiendlmayr.	1910	190	4 M.	<i>Jahresber.</i>

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NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS.
NATURAL HISTORY—Contd.							
Bombay Nat. Hist. Soc.	6, Apollo Street, Bombay.	Lord Willingdon.	W. S. Millard . .	1883	1,650	15s.	J. (Q).
Bonn, Naturhist. Ver. d. pruss. Rheinland u. Westf.	Maarfach, 4	B. Vogel . .	Dr. Voigt . .	1843	557	6 M.	<i>Verhandl.</i> (A/2); <i>Sitzungsber.</i> (A/2).
Boston Soc. of Nat. Hist. "Brandenburgia," [Nat. Hist. of Brandenburg].	Berkeley Street . . Märkisches Museum, Berlin.	C. S. Minot . . E. Friedel . .	G. M. Allen . . E. Zache . .	1830 1892	486 300	\$5 —	J.; <i>Proc.</i> ; <i>Mem.</i> ; etc. <i>Monatsbl.</i> ; <i>Arch. f.</i> <i>Heimatk. d. Brand-</i> <i>denburg</i> (occas.). <i>Jahresber.</i>
Braunschweig, Ver. f. Naturwiss. Bremen, Naturwiss. Ver.	—	—	—	—	—	—	—
Bristol Naturalists' Soc.	Städt. Museum	Dr. Hergt . .	K. Weber . .	1864	349	6 M.	<i>Abhandl.</i> (A).
British Columbia; Nat. Hist. Soc. of Brünn, Naturf. Ver.	The University . . Victoria, B.C.	Miss M. Roper . . Baron S. v. Haupt	O. V. Darbshire — A. Rzehak . .	1863 1890 1862	120 85 300	10s. \$2 6 Kr.	<i>Proc. and Rept.</i> (A). <i>Rept.</i> <i>Verhandl.</i> (A).
Cardiff Naturalists' Soc.	Gresham Chambers, Kingsway.	J. W. Rodger . .	O. L. Rhys . .	1867	510	12s. 6d.	<i>Trans.</i> (A).
Cheltenham Nat. Sci. Soc.	—	E. T. Wilson . .	H. Tinker . .	1875	73	5s.	<i>Proc.</i> (A).
Chemnitz, Naturwiss. Ges.	—	E. Stecher . .	L. Weinhold . .	1859	139	6 M.	<i>Ber.</i>
Cincinnati Soc. of Nat. Hist.	312, Broadway . .	M. H. Fletcher . .	C. Kroy . .	1870	70	\$5	J.
Colmar, Naturhist. Ges.	Unterlindenkloster.	H. E. de Bary . .	C. Koenig . .	1859	170	8 M.	<i>Mitteil.</i> (A/2).
Copenhagen Nat. Hist. Assoc.	Zool. Mus. . .	H. F. E. Jungersen	T. C. Nielsen . .	1833	200	6 Kr.	<i>Videnskab. Meddel.</i> (A).
Cotteswold Nat. Field Club	10, Oxford Parade, Cheltenham.	Rev. W. Butt . .	L. Richardson	1846	120	15s.	<i>Proc.</i>
Crimean Soc. of Naturalists	Simferopol . .	—	N. Dubrovskij.	1910	—	—	<i>Bull.</i>
Danzig, Naturforsch. Ges.	Frauen-gasse 26	—	Kumm . .	1743	—	12 M.	<i>Schriften.</i>
Dorpat Nat. Soc.	Jurjew, Russia . .	E. Šepilevski . .	N. Kultašev . .	1852	191	5 Roub.	<i>Sitzungsber.</i> ; <i>Schri-</i> <i>ften</i> ; <i>Archiv f.</i> <i>Naturk.</i> (occas.).
Dorset Nat. Hist. and Antiq. Field Club.	Dorchester . .	N. M. Richardson	Rev. H. Pentin	1875	400	10s.	<i>Proc.</i> (A).
Dublin Naturalists' Field Club	Roy. Irish Acad. House, Dawson St.	W. F. Gunn . .	C. M. Selbie; G. R. Humphreys	1885	94	5s.	<i>Proc. pub. in Irish</i> <i>Nat.</i> (M).
Dunfermline Naturalists' Soc.	—	H. Beveridge . .	R. Somerville . .	1902	150	5s.	—

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NATURAL HISTORY—Contd.							
Emden, Naturforsch. Ges. ..	—	—	C. Hermann ..	1813	c. 300	9 M.	<i>Jahresber.</i>
Finland, Soc. pro Fauna et Flora Finnica. ..	Helsingfors, Finland	J. A. Palmén ..	H. Federley ..	1821	—	—	<i>Acta; Middeland.</i>
Folkstone Nat. Hist and Gen. Sci. Soc. ..	Tech. Inst. ..	G. C. Walton ..	G. W. Tuck ..	1868	78	5s.	<i>Bull.</i>
France, Soc. nat. d'Acclimat. de ..	Paris, 33, Rue de Buffon. —	—	M. Loyer ..	1854	1,000	25 fr.	<i>Hétoz.</i> (26 vols.); <i>Bericht</i> (Q); <i>Abhandl.</i> <i>Bänden</i> (Q). <i>Ber.</i> <i>Annals</i> (occas.).
Frankfurt a. O., Naturwiss. Ver. Frankfurt a. M., Senckenbergische Naturforsch. Ges. ..	Viktoria Allée 7 ..	H. Roedel .. A. Knoblauch ..	Baltzer .. F. W. Winter ..	1883 1817	c. 200 1,249	6 M. 20 M.	<i>Ber.</i> <i>Annals</i> (occas.).
Freiburg, Naturforsch. Ges. ..	—	—	E. Fischer ..	1826	320	M. 3.50	<i>Ber.</i>
Glasgow, Andersonian Nat. Soc. ..	Roy. Tech. Coll. ..	J. R. Jack ..	R. B. Johnstone .. H. G. Cumming	1885	302	2s. 6d.	<i>Glasgow Nat. (Q).</i> <i>Abhandl.</i> <i>Jahresber.</i> <i>Mitt.</i> (A, 1 vol.).
Glasgow Nat. Hist. Soc. of Görlitz, Naturforsch. Ges. ..	207, Bath Street ..	J. R. Lee ..	A. Ross ..	1851	350	7s. 6d.	<i>Glasgow Nat. (Q).</i> <i>Abhandl.</i> <i>Jahresber.</i> <i>Mitt.</i> (A, 1 vol.).
Graubünden, Naturf. Ges. ..	—	—	W. Meyer ..	1811	466	12 M.	<i>Glasgow Nat. (Q).</i> <i>Abhandl.</i> <i>Jahresber.</i> <i>Mitt.</i> (A, 1 vol.).
Graz, Naturwiss. Ver. ..	Chur, Switz. ..	G. Nussberger .. B. Reinitzer ..	K. Marz .. R. Stummer .. v. Traunfels.	1825 1862	161 435	55 f. 6 K.	<i>Glasgow Nat. (Q).</i> <i>Abhandl.</i> <i>Jahresber.</i> <i>Mitt.</i> (A, 1 vol.).
Great Britain and I., Conchol. Soc. of. ..	Manchester, Museum, University. —	—	v. Dolenz. L. J. Shackelford	1874	340	5s.	<i>J. of Conchol. (Q).</i> <i>Mitt.</i>
Greifswald, Naturwiss. Ver. ..	—	—	Eisenlohr ..	1868	72	5 M.	<i>J. of Conchol. (Q).</i> <i>Mitt.</i>
Grisons, Soc. nat. de ..	Coire, Switz. ..	J. C. Kapteyn .. G. Karsten ..	J. Hudig .. H. E. Boeke ..	1899 1779	117 83	—	<i>Mitt.</i> (A); <i>Abb.</i> , new series.
Groningen, Naturk. Genootsch. Halle, Naturforsch. Ges. ..	Domstr. 5, Halle a. d. S. —	A. Voigt ..	O. Steinhaus ..	1837	527	10 M.	<i>Verhandl.</i> (A); <i>Abhandl.</i> <i>Acta</i> ; etc. <i>Trans.</i>
Hamburg, Naturwiss. Ver. ..	—	—	H. Federley ..	1821	—	—	<i>Verhandl.</i> (A); <i>Abhandl.</i> <i>Acta</i> ; etc.
Helsingfors Nat. Hist. Soc. Hertfordsh. Nat. Hist. Soc. ..	St. Albans, Eng. ..	Sir G. Fordham ..	C. Oldham .. E. J. Salisbury.	1875	c. 180	10s.	<i>Verhandl.</i> (A); <i>Abhandl.</i> <i>Acta</i> ; etc.
Holmesdale Nat. Hist. Club ..	The Museum, Reigate	F. Gayner ..	Miss M. C. Crossfield.	1857	76	10s.; 5s.	<i>Proc.</i> (pub. every 3 or 4 years). <i>Termeset. Füzetek.</i>
Hungary, S., Nat. Sci. Assoc. ..	Temesvár ..	—	S. Steiner ..	1873	268	8 K.	<i>Proc.</i> (pub. every 3 or 4 years). <i>Termeset. Füzetek.</i>

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NATURAL HISTORY—Contd.							
"Isis"	Dresden ..	—	J. Deichmüller	1835	c. 278	10 M.	<i>Sitzungsber u. Abhandl.</i> (A/2); <i>etc.</i> <i>Atti e Mem.</i>
Italy, Soc. Ital. di Sci. Nat.	Milan ..	—	E. Repossi ..	1856	220	20 L.	<i>Verhandl.</i>
Icelandic Nat. Soc.	Reykjavik ..	—	Schultheles ..	1889	176	1 K.	<i>Trudv; etc.</i>
Karlsruhe, Naturwiss. Ver. in	—	—	M. M. Noiniskij	1869	c. 175	—	<i>Trudy; etc.</i>
Kasan Soc. of Naturalists	University ..	L. Reinhard ..	M. A. Alexenko	1869	123	None.	<i>Zapiski.</i>
Kharkoff Nat. Hist. Soc.	—	—	N. G. Cholodny	1870	150	3 Rub.	<i>Rept. (A).</i>
Kieff Soc. of Naturalists	—	—	N. M. Johnson	1882	121	5s.	<i>Bull. (Q).</i>
Kirkaldy Naturalists' Soc	130, High St.	W. Young ..	Gagnebin ..	1815	280	4 K.	<i>Jahresber.</i>
Lausanne, Naturwiss. Ges.	—	P. Dutoit ..	J. Kloiber ..	1869	c. 160	6 K.	<i>Zeitz; Abhandl.; etc.</i>
Linz, Ver. f. Naturk.	—	E. Munganast ..	—	1848	450	5 M.	<i>Abhandl u. Ber.</i>
"Lotus"	Prague ..	—	R. Weidenhagen	1860	300	10s. 6d.	<i>Rept. & Proc. (A).</i>
Magdeburg, Naturwiss. Ver.	Domplatz 5 ..	Sir W. H. Bailey ..	J. Lunt ..	1833	290	—	<i>Gelegentl. Veroffentl.</i>
Manchester Field Nat. and Archæol. Soc.	27, Brazennose St., Manc.	Dr. Peitavij ..	W. Föhner ..	1847	350	M. 3.50	<i>Archiv.</i>
Mannheim, Ver. f. Naturk.	Rostock ..	E. Gemnitz ..	—	—	150	3 M.	<i>La Naturaleza.</i>
Mecklenburg, Ver. d. Freunde d. Naturgesch. in.	—	Overbeck ..	—	1868	50	—	<i>Proc.</i>
Meissen, Naturwiss. Ges.	Mexico City ..	—	J. Baxter ..	—	73	12 L.	<i>Atti.</i>
Mexico, Soc. Mex. de Hist. Nat.	Chatham, N. B., Can.	—	G. Bignotti ..	1865	33	\$4	<i>Can. Record of Sci.</i>
Miramichi Nat. Hist. Assoc.	—	—	A. Griffin ..	1827	250	4 Rub.	<i>Mém; Bull.</i>
Modena, Soc. di Nat. e Mat. di	—	—	E. Leyst ..	1806	680	—	<i>Jahrb.</i>
Montreal, Nat. Hist. Soc. of	Univ. Moscow ..	N. Umoff ..	—	—	c. 250	5 M.	<i>Bull; Mém.</i>
Moscow, Soc. Imper. des Natura- listes.	Wiesbaden ..	—	L. Grünhut ..	1829	231	8 fr.	<i>Bull. (A).</i>
Nassau, Ver. f. Naturk. ..	—	A. Jaqueroed ..	P. Konrad ..	1882	660	\$2	<i>Trans. (A).</i>
Neuchâtel, Soc. des Sci. nat.	St. John, Can.	Hon. J. V. Ellis ..	W. McIntosh ..	1862	420	£1 1s.	<i>Trans. (A).</i>
New Brunswick, Nat. Hist. Soc. of	Hancock Mus., New- castle.	Rt. Hon. Lord Joicey.	C. E. Robson ..	1829	140	3 M.	<i>Vereinsber. (1 every 3 years).</i>
Northumberland, Durham and Newcastle, Nat. Hist. Soc. of	Hof ..	Prof. Adami ..	J. A. Richardson	1891	—	—	—
Nordoberfränk. Ver. f. Naturgesch. u. Landesk.	—	—	K. Seiffert ..	—	—	—	—

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NATURAL HISTORY—Contd.							
Northamptonsh. Nat. Hist. Soc...	17, St. Matthew's Parade, Northamp- ton.	R. B. Loder ..	H. N. Dixon ..	1878	215	10s.	<i>J. (Q).</i>
Norfolk and Norwich Naturalists' Soc.	Norwich, The Castle Museum.	—	W. A. Nicholson	1869	290	6s.	<i>Trans. (A).</i>
Nottingham Naturalists' Soc. ..	Univ. Coll. ..	—	J. W. Carr ..	1852	150	5s.	<i>Ann. Rept. & Trans.</i>
Nuremberg. Naturhist. Ges. ..	—	Prof. Dr. Küsspert	Dr. Hess ..	1801	650	10 M.	<i>Abhandl. (A).</i>
Odesa Soc. of Naturalists ..	—	—	P. S. Sesterikov	1869	300	3 Rub.	<i>Zapiski.</i>
Oldenburg, Naturwiss. Ver. ..	Mus. d'Hist., nat., Nantes.	H. v. Buttell-Reepen	—	1861	700	2 M.	—
Ouest de la France : Soc. des Sci. nat. de l'.	—	A. Labbé ..	J. Péneau ..	1891	200	10 fr.	<i>Bull. (Q).</i>
Padua, Soc. Veneto Trentina di Sci. Nat.	—	G. Dal Piaz ..	R. Fabiani ..	1872	142	10 L.	<i>Atti. (1 vol. A).</i>
Polish Nat. Sci. Copernicus Assoc.	Lemberg ..	—	S. Sokolowski..	1873	400	24 K.	<i>Kosmos. Monatschr.</i>
"Pollchia," ..	Dürkheim ..	—	—	1840	210	5 M.	<i>Jahresber.</i>
Prague, Naturwiss. Klub ..	—	—	—	1894	800	—	—
Ray Soc. (for public. of works on Brit. Nat. Hist.)	Weetwood, Watford, Engl.	W. C. McIntosh..	J. Hopkinson ..	1844	300	£1 1s.	1 or 2 vols. annually. (In 1914 "Brit. Freshwater Rhizo- poda," vol. iii.; "Brit. Desmi- diaceæ," vol. v.)
Regensburg, Naturwiss. Ver. ..	—	—	Lagally ..	1847	224	6 M.	<i>Ber.</i>
Rheims, Soc. de l'Étude des Sci. nat.	—	—	A. Guillaumé ..	1890	80	10 fr.	<i>Bull.</i>
Rhein. Naturforsch. Ges. ..	Mainz ..	—	Balser ..	1834	c. 175	12 M.	—
Riga Assoc. of Naturalists ..	—	—	R. Meyer ..	1845	425	—	—
Rostock, Naturforsch. Ges. ..	—	—	Will ..	1882	100	6 M.	<i>Sitzungsber. etc.</i>
Rouen, Soc. des Amis des Sci. nat.	—	—	A. Fousser ..	1865	c. 250	10 fr.	<i>Bull.</i>
Saône-et-Loire, Soc. des Sci. nat.	Châlon-s.-Saône ..	—	H. Guillemin ..	1875	c. 400	6 fr.	<i>Bull.</i>
St. Petersburg, Imper. Soc. of Naturalists.	—	—	F. Jevdokim Tur.	1868	c. 300	6 Rub.	<i>Trudy.</i>
Saratov Soc. of Naturalists ..	—	—	B. L. Dixon ..	1895	—	5 Rub.	<i>Trudy.</i>

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NATURAL HISTORY—Contd.							
Savoie, Soc. d'Hist. nat. de ..	Chambéry ..	—	Saunier ..	1844	80	12 fr.	<i>Bull.</i>
Saxony and Thüringen, Naturwiss. Ver. f. ..	Halle ..	Aichel Oels ..	Staudinger ..	1848	350	9 M.	<i>Zeits. f. Naturwiss.</i> (A/6).
Scottish Nat. Hist. Soc. ..	5, St. Andrew Square, Edinburgh.	J. C. Ewart ..	R. White ..	1881	180	5s.	<i>Trans.</i> (occas.).
Schleswig - Holstein, Naturwiss. Ver. f. ..	Kiel ..	V. Hensen ..	L. Weber ..	1855	220	6 M.	<i>Schriften</i> (c. A.).
Selborne Soc. ..	42, Bloomsbury Sq., London, W.C.	—	H. Lohmann. W. M. Webb ..	1885	3,111	5s. min.	<i>Selborne Mag.</i> (M).
Semur, Soc. des Sci. hist. et nat. de, ..	—	—	Clergier ..	1842	480	10 fr.	<i>Bull.</i>
Siebenbürg Ver. f. Naturwiss. ..	Hermannstadt ..	—	K. Ungar ..	1849	320	K. 6.80	<i>Verhandl. u. Mitteil.</i> ; <i>etc.</i>
Torquay Nat. Hist. Soc. ..	—	—	Major E. V. Elwes	1844	194	£1 ls.	<i>J.</i>
Toulouse, Soc. d'Hist. nat. ..	—	—	Ribaut ..	1866	c. 60	12 fr.	<i>Bull.</i>
Ural Soc. of Naturalists ..	Ekaterinburg	—	N. Mikheeff ..	1870	456	5 Rub.	<i>Zapiski.</i>
Vienna, Ver. Deutsche Heimat ..	Stiftgasse, 15	E. Stepan ..	—	1905	—	—	<i>Deutsche Heimat.</i>
W. Australia, Nat. Hist. and Sci. Soc. of, ..	W. Australian Cham- bers, Perth.	W. J. Dakin ..	M. A. Browne..	1897	114	10s. 6d.	<i>J.</i> (A).
Wisconsin Nat. Hist. Soc. ..	Milwaukee, Public Museum.	G. P. Barth ..	J. R. Heddle ..	1857	164	\$3	<i>Bull.</i> (Q); <i>Occas.</i> <i>Papers.</i>
Woolhope Nat. Field Club ..	Hereford ..	Rev. S. C. Watkins	T. Hutchinson	1852	220	10s.	<i>Trans.</i> (every 3 years).
Worcestersh. Naturalists' Club ..	Education Offices, Worcester.	Rev. E. R. Dowdeswell.	F. T. Spackman	1847	170	5s.	<i>Trans.</i> (A).
Zürich, Naturforsch. Ges. ..	—	—	E. Schoch ..	1746	c. 384	20 fr.	<i>Vierteljahrsschr.</i> ; <i>etc.</i>
ORNITHOLOGY.							
Amer. Ornithologists' Union ..	Portland, Conn. ..	—	J. H. Sage ..	1883	c. 970	\$5	<i>The Auk</i> (Q); <i>etc.</i>
Australasian Ornithologists' Union ..	Melbourne ..	R. Hall ..	F. E. Wilson ..	1901	250	15s.	<i>Emu</i> (Q).
British Ornithologists' Union ..	c/o Zoological Soc. of London, Regent's Park, London, N.W.	F. D. Godman ..	J. L. Bonhote ..	1858	480	£1 ls.	<i>Ibis</i> (Q).

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ORNITHOLOGY—Contd.							
Cooper O. Club of Calif. ..	Berkeley (N. Div.) .. Los Angeles (S. Div.) ..	H. W. Carriger .. J. E. Law ..	T. I. Storer .. H. S. Swarth ..	1893	450	\$2	<i>The Condor</i> (Bi.M.); <i>etc.</i>
Germany, Deut. O. Ges. ..	Berlin, Invalidenstr. 43	—	Reichenow ..	1850	c. 160	20 M.	<i>J. f. Ornith.</i> (A/2).
London, Roy. Soc. Protection of Birds.	23, Queen Anne's Gate.	Duchess of Port- land.	F. L. Lemon ..	1889	—	£1 ls.	<i>Bird Notes and News</i> (Q).
Swiss O. Soc. ..	Zurich ..	—	A. Weibel ..				
PALAEONTOLOGY.							
America, Pal. Soc. of ..	U.S. National Museum, Washington.	C. D. Walcott ..	R. S. Bassler ..	1908	152	\$3	<i>Contrib.</i> (Q.—pub. in <i>Bull. Geol. Soc.</i> <i>Amer.</i>).
Amer. Soc. of Verteb. Pal. ..	Chicago, Field Mus. of Nat. Hist.	—	E. S. Riggs ..	1901	c. 50	\$1	
London, Palaeontograph. Soc. ..	c/o Geological Soc., Burlington House, W.	H. Woodward ..	A. S. Woodward	1847	c. 450	£1 ls.	Vol. of instalments of <i>Monog.</i> (A).
PATHOLOGY. (See also <i>Medicine.</i>)							
Chicago Path. Soc. ..	1743, W. Harrison Street.	D. J. Davis ..	G. H. Weaver ..	1878	175	\$3	<i>Trans.</i> (occas., c. Q).
London, Roy. Soc. of Med. (Path. Sect.) ..	15, Cavendish Square, W.	R. T. Hewlett ..	H. R. Dean .. G. W. Goodhart	1907			
Manchester, Path. Soc. of Moscow Neuropath. and Psychiat. Soc.	New York Acad. Med. Philadelphia, Coll. of Physicians.	A. B. Wadsworth "	R. A. Lambert. E. H. Goodman.	1884 1857	201 300	\$5 \$4	<i>Proc.</i> (Q). <i>Trans.</i> ; <i>Proc.</i>
New York Path. Soc. ..							
Philadelphia, Path. Soc. of ..							
PHARMACY.							
Amer. Soc. for Pharmacol. and Exper. Therap.	Rockefeller Inst., New York.	F. Sollmann ..	J. Auer ..	1908	69	—	<i>Proc.</i> (A) in <i>J. Phar- macol. and Exper. Therap.</i>

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PHARMACY—Contd.							
Austria, Österr. Pharmazent. Ges.	Vienna, Währingerstr. 56.	—	H. Heger ..	1873	600	4 K.	<i>Pharm. Post.</i>
Bordeaux, Soc. de Pharmacie de	6, rue Théodore Ducoq.	M. Beille ..	L. Barthe ..	1834	52	—	<i>Bull.</i>
Brussels, Soc. de Pharm. de B.	316, Chaussée d'Ixelles	—	P. Erculisse ..	1845	150	8 fr.	<i>Bull. Pharm. J.</i> (W.—6d.)
Great Britain, Pharmaceut. Soc. of.	17, Bloomsbury Sq., London.	E. White..	W. J. U. Woodcock.	1841	7,400	£1 ls.	<i>Register of Pharm. Chem.</i> (A); <i>Calendar</i> (A); <i>Chem. Ann. and Diary</i> (A), <i>Weekblad.</i>
Holland, Nederlands Maatsch t, bevord. d. Pharm.	2, Voorburgeral, Amsterdam.	J. J. Hofman ..	J. F. Suijver ..	1842	700	f. 10	<i>Bull.</i> (pub. 1st time 1912).
Internat. Féd Pharm. ..	Senkenweg 4, The Hague.	M. L. S. van Ledden Hulsebosch.	J. J. Hofman ..	1910	15,000	100 fr.	<i>Calendar</i> (A.—Jan.).
Ireland, Pharmaceut. Soc. of ..	67, Lower Mount Street, Dublin.	Sir W. J. Baxter..	A. F. Ferrall ..	1875	341	£1 ls.	<i>J. de Pharm. et de Chim.</i> (M/2).
Paris, Soc. de Pharmacie de ..	4, Avenue de l'Observatoire.	M. Preud'homme M. Mourey(1913-14)	M. Bourquelot	1803	240	40 fr.	<i>Proc.</i> (pub. in <i>Phys. Rev.</i>); <i>Horol. J.</i> (M).
PHYSICS.							
Amer. Phys. Soc. ..	Ithaca, New York ..	B. O. Peirce ..	A. D. Cole ..	1899	625	\$6	<i>Proc.</i> (3 per ann.); <i>Proc.</i> (after each meeting).
Brit. Horological Inst. ..	35, Northampton Sq., London, E.C.	W. J. Barnsdale ..	J. Savidge ..	1858	—	£1 ls.	<i>Bull. des Sciences.</i>
Budapest Math. Phys. Soc. ..	Synod Hall..	—	G. Rados	1771	152	12s. 6d.	
Edinburgh, Roy. Phys. Soc. of ..	82, Victoria Street, London, S.W.	R. T. Glazebrook	J. Ritchie .. F. S. Spiers ..	1903	210	£2	
Faraday Soc. ..	London, S.W.	General Bourgeois	M. de Broglie ..	1873	1700	25 fr. (Res.) 20 fr. (Non-Res.)	
France, Soc. fr. de Phys. ..	Paris, 44, Rue de Rennes.						

THE WORLD'S SOCIETIES—continued.

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PHYSICS—Contd.							
Frankfurt, Phys. Ver	Kettenhofweg, 136.	L. Gans	O. Reuber	1824	1,100	20 M.	<i>Jahresber.</i>
Geneva, Soc. de Phys. et d'Hist. nat.	c/o Museum	A. de Candolle	F. L. Perrot	1790	141	20 fr.	<i>Mem.</i> ; <i>Compte rendus (A).</i> <i>Verhandl. (F)</i> ; <i>Lit- verzeichnis, Phys.</i> <i>Fortachr. d. Phys.</i> <i>(F)</i> . (Together with Jahresber. Jahresber.)
Germany, Deut Phys. Ges.	Reichstagsufer, 7/8, Berlin, N.W. 7.	H. Rubens	R. Pohl	1845	600	20 M.	<i>Il Nuovo Cimento.</i> <i>Memoria (M).</i>
Italy, Soc. Ital. di Fis.	Univ. Genoa	A. Garbasso	O. M. Corbino	1897	300	18 L.	<i>Trovax; Suppléments.</i> <i>Schryft. (A/3).</i>
Italy, Soc. d. Spettrosc. Ital.	Observatory, Catania	P. Blaserna	A. Ricco	1871	30 Ital. 30 F.M.	—	<i>Proc. (F)</i> , 1 vol. per ann.; <i>Sci. Ab- stracts (M)</i> , in assoc. with Inst. E. E.)
Kharkoff Phys.-chem. Soc.	Université	J. P. Ossipow	G. E. Timoféeff	1872	91	3 Rub.	<i>Mittel.</i>
Königsberg Phys.-ökon. Ges.	—	M. Braun	M. Lühe	1790	379	9 M.	
London, Phys. Soc.	Imperial Coll. of Sci., S. Kensington.	A. Schuster	W. R. Cooper S. W. J. Smith	1874	500	£2 2s.	
London, Optical Soc.	39, Victoria St., S. W	Sir D. Gill	T. Smith	1899	175	£1 1s.	
Russ. Phys.-Chem. Soc.	St. Petersburg	—	W. Tschady	1887	c. 100	10 fr.	
Zürich Phys. Soc.	—	—	—	—	—	—	
PHYSIOLOGY.							
Amer. Physiol. Soc.	Univ. of Chicago, Chicago.	S. J. Meltzer	A. J. Carlson	1887	200	—	<i>Amer. J. of Physiol.</i> <i>(M).</i>
Berlin, Physiol. Ges.	—	—	E. Grunmach	1875	120	20 M.	<i>Verhandl.</i>
Internat. Physiol. Cong., 1916	Helsingfors	Tigerstedt	—	—	—	—	
London, Physiol. Soc.	Univ. Coll. Gower Street	—	W. M. Bayliss	1876	c. 275	£1 11s. 6d.	<i>Proc.</i>
Munich, Ges. f. Morph. u. Physiol. Vienna, Morphol.-Physiol. Ges.	Physiol. Inst. Währingerstr. 13	O. Frank F. Hochstetter	L. Neumayer C. Schwarz	1876 1900	147 200	7 M. 2 Kr.	<i>Sitzungsber. (A).</i> <i>Ber. in Zentralb. f. Physiol</i>

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PSYCHOLOGY.							
Amer. Psych. Assoc.	Dartmouth Coll., Hanover, N.H.	E. L. Thorndike..	W. Van D. Bingham.	1892	262	\$1	<i>Proc. (A, in Psych. Bull.—Feb.)</i> .
Berlin, Ges. f. exper. Psychol.	—	G. E. Müller ..	F. Schumann ..	1904	c. 177	5 M.	<i>Bericht.</i>
Great Britain and I., Med.-Psych. Assoc. of London, W.	11, Chandos Street, London, W.	J. G. Soutar ..	M. A. Collins ..	1841	743	£1 ls.	<i>J. Mental Sci. (Q.)</i> .
Leipzig, Inst. f. exper. Pädagogik u. Psychol.	Kramerstr. 4 ..	—	P. Schlager ..	1906	250	10 M.	<i>Pädagog.-psychol. Arbeiten.</i>
London, Ethological Soc.	57, Wimpole Street, W.	B. Hollander ..	E. Gardner ..	1904	200	£1 ls.	<i>Ethol. J. (Q.)</i> .
London, Soc. for Psychological Research.	20, Hanover Square, W.	Prof. H. Bergson.	Miss I. Newton	1882	1,250	£2 2s.	<i>Proc. (occas.—about 3 pis. per ann.); J. (M.)</i> .
London, Aristotelian Soc.	22, Albemarle Street, W.	—	H. W. Carr ..	1879	110	£1 ls.	<i>Proc.</i>
London, Child Study Soc.	90, Buckingham Palace Road.	Sir R. B. Martin, Bt.	W. J. D. Muirford	1894	470	10s. 6d.; 5s.	<i>Child Study (Q.)</i> .
London, Sociol. Soc.	21, Buckingham St., Strand, W.C.	Rt. Hon. A. J. Balfour.	S. K. Ratcliffe	1903	—	£1 ls.	<i>Sociol. Rev. (Q.)</i> .
Moscow, Psychol. Soc.	—	—	N. D. Vinogradov	1885	c. 210	5 Rub.	<i>Bull. (occas.); Mémoires (occas.)</i> .
Paris, Inst. général psychol.	14, Rue de Condé ..	Dr. d'Arsonval ..	Dr. F. Bordas..	1900	500	20 fr.	
St. Petersburg, Soc. Norm. and Path. Psychol.	—	—	K. Siegel ..	1906	20	6 K.	
Vienna, Ges. f. Psychol.	Lederergasse 23 ..	—	J. Herz.				
ZOOLOGY.							
Amer. Soc. of Zoologists	Univ. Illinois, Urbana, Ill., U.S.	H. B. Ward ..	C. Grave ..	1890	267	\$1	<i>Ann. Proc. (pub. in Sci.)</i> .
Amsterdam K. Zool. Genoots. "Natura Artis Magistra."	Amsterdam	C. Kerbert (Direc.)	W. C. Curtis ..	1838	3,000	26 guil.	<i>Bydvaagen Lot de Dierk., since 1848.</i>
Antwerp, Soc. Roy. de Zool.	—	—	A. Osterrieth ..	1843	c. 9,000	60 fr.	<i>Rept. Annales (Q.)</i> .
Australia, S., Zool. and Acclim. Soc.	Adelaide	—	M. de Selys-Longchamps.	1879	c. 90	£1 ls.	
Belgium, Soc. Roy. Zool. et malacol. de B.	14, Rue des Sols, Brussels.	A. Frachet ..	—	1863	102	15 fr.	

THE WORLD'S SOCIETIES—continued.

NAME.	ADDRESS.	PRESIDENT.	SECRETARY.	Date of Founda- tion.	No. of Members.	Annual Subscrip- tion.	PERIODICAL PUBLICATIONS
ZOOLOGY—Contd.							
France, Soc. zool. de	Rue Serpente, 28, Paris.	L. Roule ..	A. Robert ..	1876	340	20 f.	<i>Bull. (M); Mém. (Q).</i>
Germany, Deut. Malako-Zool. Ges.	Frankfurt-a-M. ..	—	W. Kobelt ..	1868	c. 220	M. 7.50	<i>Nachrichtsbl.</i>
Germany, Deut. Ges. f. Züch- tungsk.	Halberstädterstr. 3, Berlin-Halensee.	F. Hoesch ..	Wilsdorf ..	1906	2,800	—	<i>Jahrb. f. wiss. u. prakt. Tierzucht (A).</i>
Hague, K. Zool.-Bot. Genootsch.	Dillenburgerstraat 13, Utrecht.	P.P.C. Hoek (1910- 16).	J. E. W. Ihle ..	1872	200	6 f.	<i>Tijdschr. (1 vol. in 2 years).</i>
Holland, Nederl. Dierk. Vereenig	Zool. Gardens, Phoe- nix Park, Dublin.	Sir C. B. Ball, Bt.	G. H. Carpenter	1832	1,000	£1	<i>Rept. (A).</i>
Ireland, Roy. Zool. Soc. of ..	Regent's Park, N.W.	H.G. The Duke of Bedford.	P. Chalmers Mitchell	1826	—	£3	<i>Proc. (Q); Trans.</i>
London, Zool. Soc. of	c/o Linnean Soc., Burlington House, London	Rev. A. H. Cooke.	G. K. Gude ..	1893	—	10s. 6d.	<i>Proc. (3 per ann.).</i>
London, Malacol. Soc. of ..	Sydney	Major Spain ..	A. S. Le Souef ..	1879	120	£1 ls.	<i>Rept. (A).</i>
Middlesex Zool. Soc.	—	C. B. Penrose ..	W.B. Cadwalader	1859	1,575	\$5	<i>Rept. (A).</i>
New South Wales, Roy. Zool. Soc. of.	Moscow	—	J. Anderson ..	1909	230	1 0s. 6d	<i>Ann. Repts.</i>
New York Zool. Soc.	Edinburgh, 7, Howe Street.	C. Ryan ..	W. H. D. le Souet (Direc.).	1857	100	£1 ls.	<i>Rept. (A).</i>
Philadelphia Zool. Soc.	Royal Park, Park- ville, Melbourne.	R. Wettstein ..	R. Schrödinger.	1850	660	12 K.	<i>Verhandl. (A/10); Abhandl. (1 vol. A).</i>
Russ. Acclimatis. Soc.	Mechelgasse 2						
Scotland, Zool. Soc. of							
Victoria, Roy. Zool. and Acclim. Soc. of							
Vienna, K.-K., Zool.-bot. Ges. ..							

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B. 1838, New York City. *Educ.* Coll. City of N.Y.; Univs. of Michigan and Harvard. A.M. (Coll. City N.Y.) 1860; B.Sc. (Harv.) 1864; LL.D. (Mich.) 1884, (Glas.) 1896. *Soc.*—Ger. Astron.; Wash. Phil.; Wash. Acad. Sci.; Met., Amer., Austria, Ger., Fr., Italy; Amer. Assoc.; Brit. Assoc.; F.R.A.S. *Late* Assist., U.S. Coast and Geod. Surv., 1860—66; Assist., U.S. Naval Observ., 1867—68; Direc., Cincinnati Observ., 1860—73; Ed., *Bull. Mount Weather Observ. and U.S. Monthly Weather Rev.*

Books.—"Treatise on Met. Apparatus and Methods"; "Altitude of the Aurora"; "Relations of Climates and Crops"; "Objects of a State Weather Service"; "Mechs. of Earth's Atmos.," 3 vols. *Art.*—"Meteorol." in *Encyc. Brit.* *Contrib.*—"Parallax of Sirius" (*R.A.S. Monthly Notices*, 1867); "Relation of Nebulae and Milky Way" (*Ib.*, 1868); "Much Extended Nebulae" (*Amer. J. Sci.*, 1871); "Tail of Cuggia's Comet" (*Astron. Nachr.*, 1874).

Started U.S. Weather Bur., 1869—70, Amer. Soc. E.E., and modern reform and unific. of standard time.

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B. 1872. M.Sc. (Mass. Inst. Technol.) 1895. *Soc.*—Wash. Acad.; Wash. Phil. (P.V.-P.); F.A.A.; Amer. Astron. and Astrophys.

Book.—"The Sun," 1911.

Infra-red solar spectrum; variability of radiation of sun.

ABBOTT, ALEXANDER CREVER, Prof. of Hyg., and Direc. of Lab. of Hyg., Penna. Univ. since 1897.

4229, Baltimore Av., Philadelphia, Pa.

B. 1860, Baltimore. *Educ.* Baltimore City Coll.; Univs. Johns Hopkins, Munich, Berlin. M.D. (Md.) 1884; Hon. Sc.D. *Soc.*—Fell. Coll. Physicians, Phila.; Amer. Physicians; Amer. Med.; Amer. Phil.; Amer. Physiol.; Amer. Path. and Bact.; Amer. Pub. Health; Amer. Bact.; F.A.A.A.S.; Exper. Biol. and Med. *Late* Chief Bur. of Health, and Pres., Phila. Board of Health, 1903—09.

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B. 1874, Alma, Ill. *Educ.* De Pauw Univ.; Mass. Inst. Technol. B.Sc. 1895; A.M. 1896

(De Pauw); Ph.D. (Mass. Inst. Technol.) 1908. *Soc.*—Ind. Acad. Sci.; N. Dakota Acad. Sci. (Sec.); Amer. Chem. *Late* Official Repres., N. Dakota, at Internat. Cong. of App. Chem., 1912.

Contrib.—"Dissociation relations of Ortho and Pyro Phosphoric Acids" (*J. Amer. Chem. Soc.*, 1909); "Rate of Hydrolysis of Pyrophosphoric Acid."

ABBOTT, JAMES FRANCIS, Prof. of Zool., Washington Univ., St. Louis.

B. 1876, Greeley, Col., U.S.A. *Educ.* Leland Stanford Univ.; Univ. of Chicago. M.A. (Stanford) 1903; Ph.D. (Chicago) 1906. *Late* Prof. of English, Imp. Jap. Nav. Coll., 1901—03; Fell. Zool., Univ. Chicago, 1904. *Soc.*—Amer. Assoc. Adv. Sci.; Amer. Naturalists; Amer. Zool.; Amer. Entomol.; Zool., Tokyo.

Contrib.—"Morphology Coeloplana" (Spengel's *Year Book*, 1907); "Galvanotropism in Bacteria" (*Amer. J. Phys.* 1909); "Marine Fishes of Peru" (*Proc. Acad. Nat. Sci. Phil.* 1899); "Fishes of Pei-ho River" (*Proc. U.S. Nat. Mus.* 1900).

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Books.—"Bibliog. of Alcoholism"; "Physiol. Chem.," "Biochem. Practice"; "Progress of Nat. Sci.," "Biochem. Handlex.," "Protective Ferments in Animal Organisms"; "New Results in Albuminoid Chem." *Contrib.*—100 on physiol. chem., immunity, ferments, etc.

ABEL, JOHN JACOB, Prof. of Pharmacol., Johns Hopkins Med. Sch., Baltimore, U.S.A.; Ed. *J. Pharmacol. and Exper. Therapeutics.*

B. 1857, Cleveland. Ph.B. 1883; A.M. (Mich.) 1903; M.D. (Strass.) 1888. *Soc.*—F.A.A.A.S.; Amer. Physiol.; Amer. Physicians; Exper. Biol.; Pharmacol. *Late* Lect. and Prof. of Mat. Med. and Therapeutics, Michigan Univ., 1889—93.

Contrib. on isolation of pigment of negro's skin; aethyl sulphide from urine of dogs; carbamic acid from blood of horse and urine of child; active principle of suprarenal glands in form of monobenzoyl derivs., etc.

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B. 1846, Gorizia. *Educ.* Padua; D.Sc. (Padua), 1867. *Late* Prof. in Observ., Padua. Mem. Roy. Geodet. Commiss.; Acad. Padua; Inst. Venice; Colomb., Florence; Spectro., Catania.

Books.—"Construc. of Sun-dial in Vertical

Plane," 1876; *Ital. Meteorol. Ann.*, 1887; "Diff. in Long. between Rome, Padua and Arcetri," 1891; "Annals of Arcetri Observ., 1896—1911. *Contrib. to Astron. Nachricht.*; *Atti Ist. Veneto; Mem. Spettroscop. Ital.; Rend. Accad. Lincei.*

ABNEY, Sir WILLIAM DE WIVELESIE, K.C.B., F.R.S., Adviser in Science to Bd. of Educ., Mem. of Roy. Com. for the Ital. Exhibn. Measham Hall, Atherstone, Eng.

B. 1843, Derby. *Educ. Rossall Sch.*, Private and Roy. Mil. Acad. D.C.L. (Dun.); D.Sc. (Vic.); Sc.D. (Dubl.). *Late Direc. for Science in the Science and Art Dept.*; Prine. Assist. Sec. *Educ. Dept.*; Capt. R.E. *Soc.*—F.L.S.; F.I.C.; F.R.A.S.; F.R.P.S.; Hon. Mem., Manc. Lit. and Phil.

Books.—"Photography"; "Photography" (*Encyc. Brit.*); "Colour Vision"; "Colour Measurement and Mixture." *Contrib.*—"Infrared spectrum" (*Phil. Trans.*); "Influence of Molec. Grouping" (*Phil. Trans.*); "Colour Photometry," 3 parts (*Phil. Trans.*); "Sensitiveness of Eye to Light and Colour" (*Phil. Trans.*).

Abney Level. A one-exposure three-colour camera.

ABRAHAM, HENRI, Prof. of Phys., Univ. Paris.; Chev. Leg. Hon. Fr.; Off. Pub. Instr. Fr.

47, Rue Denfert-Rochereau, Paris, Fr.

ABRAHAM, MAX, Extraord. Prof. since 1909, of Rat. Mech., Polytech. Inst., Milan, Italy.

Via Bocaccio 4, Milan, Italy.

B. 1875. *Educ.*—Freiburg, Berlin. Ph.D. (Berlin) 1897. *Soc.*—Corresp. Roy. Lombard. Inst.; *Ital. Phys.*; *Ital. Progress of Sci.*; *Ger. Phys.*; *Ger. Math.*; Berlin Math.; Math. Palermo, etc. *Late Priv. Doz. Univ. Göttingen*, 1900—09.

ABRAHAM, PHINEAS SIMON, Dermatol., W. London Hosp.; Lect. W. London Post-Grad. Coll.

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B. Falmouth, Jamaica. *Educ. Univ. Coll. Sch. and Coll. Lond.*; Trin Coll. and Roy. Coll. Sci. Dublin; Clausthal; Paris; St. Bartholomew's Hosp. London. Hon. M.A., M.D. (Trin. Coll. Dublin); B.Sc. (Lond.); F.R.C.S.I. *Soc.*—Roy. Med.; W. L. Med.-Chr. (P.P.); Brit. Med. (P.P. Derm. Sect.) New Lond. Dermatol. (Pres.); Trop. Med. *Late Curator of Museums and Examr. Roy. Coll. Surg.*, Dublin; Lect. on Physiol. and Histol., Westminster Hosp.

Arts.—"Leprosy," etc., in Allbutt's "System of Med."; "Affections of Skin," in Oxford System of Syph. *Contrib.*—"Notes on the Geol. of the Hartz" (*J. Roy. Geol. Soc.*, 1872); Revision Anthobranch. Medibranch. Mollusca" (*Proc. Zool. Soc. Lond.* 1877); and on Pathol. and Dermatol. since 1880.

ABRAMS, LE ROY, Assoc. Prof. of Bot., Stanford Univ., Cal., U.S.A.

B. 1874, Sheffield, Ia. *Educ. Univs. Stanford and Columbia.* A.M. (Stanf.); Ph.D. (Colum.). *Soc.*—F.A.A.; Pacific Coast Biol. *Late Assist. Curator, U.S. Nat. Herbarium*, 1905—06.

Books.—"Flora of Los Angeles," 1904, supplement, edn., 1911. *Contrib.*—"Studies on Flora of S. Calif." (*Bulls. Torrey Bot. Club*, 1905 and 1910); "Phytogeog. and Taxonom. study of S. Calif. Trees and Shrubs" (*Bull. N.Y. Bot. Garden*, 1910).

ABROMEIT, JOHANNES, Prof. of Bot., Univ., Pres. of Pruss. Bot. Soc., Königsberg; Mem. Leop. Carol. Acad. Tragheimer Kirchenstr. 30, Königsberg, Ger.

ABRUZZI, Prince LUIGI A. G. M. F. F., Duke of, Capt. in Ital. Navy; Explorer. Quirinal, Rome, Italy.

B. 1873, Madrid. *Late Ascended Mt. Elias, Alaska*, 1896; Exped. to Franz-Joseph-Land, 1900; Chief, Exped. to Mt. Ruwenzori, 1906.

Books.—"Ascent of Mt. Elias," 1900; "Ruwenzori," 1908.

ACHARD, EMILE CHARLES, Prof. of Path and Therap., Paris Univ.; Mem. Fr. Acad. Med.; Physic., Hosp. Necker.

B. 1860, Paris. M.D.

Books.—"Hysterical Apoplexy"; "Man. of Med."; "Rôle of Salt in Path. and Therap."; "Dis. of Digestion."

ACHESON, EDWARD GOODRICH, Pres., Internat. Acheson Graphite Co., Niagara Falls, N.Y.; Pres., Acheson Oildag Co. Port Huron, Mich., U.S.A.; Pres., E. G. Acheson, Ltd., London, Eng.

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B. 1856, Washington, Pa. *Educ. Bellefonte Acad. Hon. Sc.D. (Pitts.)* 1909; Rumford medal, Amer. Acad., 1908; Perkin medal, 1910; Order St. Anne, 2nd cl., 1913. *Soc.*—Amer. Inst. E.E.; Franklin Inst.; Amer. Electrochem. (P.P.); Amer. Inst. Chem. Engrs. (P.V.-P.); F.A.A.; Hon. Mem., Russ. Imper. Tech. *Late Assist. to Edison*, 1880.

Disc. Carborundum; deflocc. of solid matter. *Inv. Acheson-graphite, aquadag, oildag, siloxicon, gredag, Egyptianised clay.*

ACKER, GEORGE N., Prof. of Childr. Dis. and Clin. Med., George Washington Univ., Washington, D.C., U.S.A.

ACKERMANN-TEUBNER, BENEDICTUS GUSTAV ALFRED, Math.; Propr. of B. G. Teubner, Publisher, Leipzig.

Poststr. 3, Leipzig, Ger.

B. 1857, Leipzig. *Educ. Leipzig. Hon. Ph.D. (Greifs.)* 1906; Hon. Dr. Ing. (Darmstadt), 1911. *Soc.*—Berlin Math.; Fr. Math.; London Math.; Ger. Math.; Mat. Palermo; Math. Amer.; Ger. Astron.; Gen. Phys. and Math. Göttingen; Ger. Engrs.; Ger. Nat. Sci. and Med.; Ital. Adv. Sci.

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B. 1865, Shizuoka-ken. *Educ. Tokyo*, Strassburg.

Contrib.—"Skin Pigment in Men and Apes" (*Schwalbe's Zeitschr. f. Morphol. u. Anthrop.*, 1903; "Anat. of Japs" (*Ib.*, and in other *J.*, since 1896).

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B. 1854, Lindau. *Educ. Munich*; Weiden; Traunstein; Ansbach; Bayreuth.

Books.—"Nat. Sci.," 2 vols.

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Medical Coll., McGill Univ., Montreal, Canada. B. 1862, Manchester, Eng. *Educ.* Owens Coll., Manchester; Cambridge, Breslau, Paris. M.A., M.D. (Cantab.); M.A., M.D. (McGill); LL.D. (New Brun.); M.R.C.S., M.R.C.P. (Lond.). *Late* Fell. Jesus Coll. Cambridge; Demonstr. in Pathol., Cambridge. *Soc.*—F.R.S., Lond., Edin., Can.; Roy. Med. London; Assoc. Amer. Physic. (P.P.); Hon. Mem. Amer. Veter. Assoc.; Corresp. Mem. Soc. Méd. de Lyons; Mem. Ger. Path.; Physiol. G.B.; Path. G.B.

Books.—"Inflammation, an Intro. to Study of Pathol."; "Principles of Pathol." 2 vols.; "Inflammation" in Allbutt's "System of Medicine"; "Inheritance and Disease" in Osler and McCrae's "System of Medicine"; "Cirrhosis of Liver" in *Sajous's Cyc.* *Contrib.* on Physico-chemical concept of hered., classification of tumours, nature of inflammation process, subinfection, lipid degeneration, etc.

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Contrib.—"Variation in Io." (*Proc. Amer. Assoc.*, 1900); "Base Levelling and its Faunal Significance" (*Amer. Nat.*, 1901); "Postglacial Dispersal of N. Amer. Biota" (*Biol. Bull.*, 1905); "Ecol. Succession of Birds" (*Ann. Repts. Mich. Geol. Survey*, 1908, 1909).

ADAMS, COMFORT AVERY, Prof. of Elec. Engrng., Harvard Univ.; Consult. Engr. to Amer. Tool and Mach. Co., Boston, Warner Sugar Refining Co., N.Y., and to Ford Bacon and Davis, N.Y.; Sec., Standards Comm.; Mem. Edison Medal Com. and of Indust. Power Com. Amer. Inst. E.E.

13, Farrar St., Cambridge, Mass., U.S.A.

B. 1868, Cleveland, O. *Educ.* Cleveland Pub. Sch.; Case Sch. of App. Sci., Cleveland. S.B. (Case) 1890; E.E. 1905. *Late* Mem. Jury of Awards Louisiana Purchase Expos., St. Louis, 1904; Cons. Engr. Brooklyn Gas and Elec. Lt. Co. *Soc.*—Fell. Amer. Acad. Arts and Sci.; Amer. Assoc.; M.I.E.E.; Amer. Inst. Elec. Engrns.; Am. Electrochem.; Illum. Engrng.; Nat. Elect. Light Assoc.

Books.—"Dynamo Design Schedules"; "Alternator Regulation"; "Synchronous Motors"; "Induction Motor." *Contrib.*—"Study in Design of Induction Motors" (*Trans. Amer. Inst. E.E.* 1905); "The Split Pole Converter" (*Trans. Amer. Inst. E.E.* 1908); "E.M.F. Wave Shape of Alternators" (*Id.*, 1909); "Pole Face Losses in Dynamos" (*Id.*).

Development of large-size electrically direct-driven centrifugal machinery for Sugar Refining, Textile Industry and Smokeless Powder Manuf.

ADAMS, EDWIN PLIMPTON, Prof. of Phys., Princeton Univ., Princeton, N.J., U.S.A. Ph.D. (Harvard) 1904. *Soc.*—F.A.A.; Amer. Phys.

ADAMS, FRANK DAWSON, F.R.S., Logan Prof. of Geol., and Dean of Fac. of Applied Sci., McGill Univ., Montreal, Canada.

B. 1859, Montreal. *Educ.* High Sch., Mon-

triel; Univs. McGill, Yale, Heidelberg. D.Sc. (McGill); Ph.D. (Heidel.); D.C.L. (Bishop's Coll.); Lyell Medal, Geol. Soc. Lond. *Soc.*—F.R.S. Can.; F.G.S.; Fell. Amer. Assoc. Adv. Sci.; Geol. Amer.; Wash. Acad. Sci.; Corresp. Mem. Geol. Stockholm; Pres. 12th Internat. Geol. Congress; Hon. Mem. Inst. Min. and Metall. *Late* Petrographer, Geol. Survey, Canada.

Contrib.—Repts. issued by Geol. Survey of Canada, Carnegie Inst. Washington, etc.; Papers on Exper. Geol., Geol. of ancient Crystalline Rocks of Canada, etc., in *Trans. Roy. Soc. Amer. J. Sci.*, *Bull. Geol. Soc. Amer.*, *Amer. Geol.*, etc.

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B. 1836. *Educ.* Univ. Cambridge. M.A.; D.Sc.; F.G.S.; F.C.P.S.; V.-P. Phys. Soc.; P.P.Inst. E.E.

Contrib. on Action of Light on Se; etc.

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Effect of freezing on concrete.

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M.D. 1893; M.R.C.S., L.R.C.P., 1891 (Lond.) *Late* Examr. in Anat., Roy. Coll. Surg.; Prof. of Anat., Univ. Coll., Sheffield; Hunt Prof., Roy. Coll. Surg., 1901.

Books.—"On Pancreas and Adjoining Viscera"; Ed. "Ellis's Demonstrations of Anat." 1905. *Contrib.*—"Topog. Anat. of Abdom. Viscera, esp. Gastro-Intestinal Canal in Man" (*Proc. Roy. Soc.*, Vol. 64, and *J. Anat. and Physiol.*, Vols. 33, 35, etc.); "On abdominal surface markings" (*Proc. Anat. Soc.*, *J. Anat. and Physiol.*, *Brit. Med. J.*, 1904); Ed. *Q. Med. J.*

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Soc.—F.I.C. (P.V.-P.); M.R.I.A.; F.C.S.

Books.—"Pollution of Estuaries and Tidal Waters," jty. with Letts (Roy. Comm. on Sewage Disposal, 1908). *Contrib.*—"Measurements of Wave-lengths of High Refrangibility in Spectra of Elem. Substances," jty. with Hartley (*Phil. Trans.* 1884); "Fermentative Changes in Nat. and Polluted Waters" (*Trans. R.D.S.* 1895—97); "Photos of Ultra-violet Spark Spectra from Rowland's Spectrometer" (*Id.* 1901—03—04); "Studies of 'Streaming'

of Dissolved Atmos. Gases in Fresh and Salt Waters" (*Sci. Proc. R. D.S.* 1911).

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Books on Eqns. of Partial Deriv.; "Henri Poincaré"; "Principles of Anal.," 2 vols. *Contrib.*—"Art and Science" (*Rev. d. Deux Mondes*, 1900).

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Books.—"Agric. Chem.;" "Intro. to Carbon Compounds"; "Junr. Chem." *Contrib.*—"Sulphates of arsenic, antimony and bismuth" (*Chem. Soc. J.*, 1889—90); "Osmotic pressures of salts in solution" (*ib.*, 1891); "Bismuth" (*Camb. Phil. Soc. Proc.*, 1903).

ADLER, AUGUST, Direc. of State Sch., and Priv. Doz., Ger. Tech. Sch., Vienna, Austria; Mem. Ger. Math. Soc.

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Books.—"Myrmecol. Studies," 4 vols., 1884—1902; "Life-habits and Instincts of Pompilidae and Sphegidae," 4 vols., 1903—1912; "Cenopalesmaculata," 1902; "Methoecaichneumonides," 1905. *Contrib.*—"Periodic Increase as factor in Evol." (*Biol. Centr. Bl.*, 1902); "Tiphia femorata" (*Ark. f. Zool. Stockholm*, 1911).

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Contrib.—"Blast processes" (*Jernkontorel's Ann.*, 1871); "Bessemer process" (*Ing.-fören. Förh.*, 1871); "Infl. of Si, S, P and Mn on Iron" (*Jernk. Ann.*, 1873); and others on iron-founding, etc.

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Late Extraord. Prof., Univ. Breslau; Ord. Prof., Bonn-Poppelsdorf.

Books.—Agric. Repts.; "Land Taxation," 1912.

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Books on Lit., Poetry, etc.

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Contrib.—"Typhoid-malarial symbiosis" (*Rev. de Méd. and Cirug.*, 1901); "Tuberculosis Prophyl. in Cuba" (*ib.*, 1902); "Yellow fever prophyl. in Cuba" (*Med. Record*, 1909); "Our Sanitary Progress" (*Cronica Méd. Quirurg.*, 1910).

Demonstrated transmiss. yellow fever by mosquitoes (with Reed and Carroll, 1901).

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Books.—"Princ. of Logic.;" Transl. Forel's "Mental Hyg." *Contrib.* various on individual psych. and educ.

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AITKEN, JOHN, F.R.S., F.R.S.E., LL.D. (Glas.) Physician.

Ardenlea, Falkirk, Scot.

Contrib. on colour sensation, dust in air, cyclones, etc.

Inv. Koniscope.

AITKEN, ROBERT GRANT, Astron., Lick Observ., Mt. Hamilton, Cal., U.S.A., since 1895.

B. 1864, Jackson, Cal. A.M. (Williams)

1892; Hon. Sc.D. (Pacific) 1903; Lalande Gold Med., Paris, 1906. *Soc.*—Amer. Astron. and Astrophys.; F.A.A.; Pacific Astron.; Ger. Astron. *Late Instr.* in Maths., Livermore Coll., 1889—91; Prof. of Maths. and Astron. Pacific Univ., 1891—95.

Disc. 2,500 double stars.

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Book.—"Man. of Hum. Physiol.," 2 edns. *Arts* numerous, in *Encic. di Chim.* *Contrib.* Alimentary balance of Italians; Sugars; Cocaine; Alcohols (*Atti Sci. Acad. Bologna*); Cerebral centres of movement (*Sperimentale*, 1876); Action of bromides upon excitability of brain (*Arch. f. exp. Path. u. Pharmacol.*).

ALBERTOTTI, GIUSEPPE, Emer. Prof., Univ. Modena; Prof. of Ophthalm., Univ. Padua, Italy.

Soc.—Hon. Assoc. Acad. Med. Turin; Acad. Sci. Modena; Fr. Phys.; Acad. Med. Padua; Corresp. Acad. Sci., Padua; etc.

ALBRECHT, CARL THEODOR, Geh. Reg.-Rat; Chief of Section, Roy. Prussian Geod. Inst. and Central Bur. of Internat. Geod., Potsdam, Ger.

B. 1843, Dresden. *Educ.* Dresden Polytech.; Univs. Berlin and Leipzig. Ph.D.; Prof. *Soc.*—Assoc. R.A.S. London; Corresp. Inst. France; F.-M. Acad. Lincei; Mem. Leop. Carol. Acad.; Corresp. Russ. Geog.

Books.—"Estim. of Longitude by Elec. Teleg.," 1869; "Formulae and Tables for Estim. of Geog. Position," 1873, 4th edn. 1908; "Premiker's Log.-Trig. Tables to 6 Decimals," 10th—15th edns. 1883—1911; "Log.-Trig. Tables to 5 Decim.," 1884, 13th edn. 1912; and 41 official publ. since 1875. *Contrib.* numerous to *Astron. Nachr.*

ALBRECHT, SEBASTIAN, Assist. Astron., Lick Observ., Mt. Hamilton, Cal., U.S.A. Fell. Amer. Assoc.

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B. 1859. *Educ.* Mill Hill Sch.; Blackheath

Sch.; Westminster Sch.; Aberdeen Univ. M.B.; LL.D. *Late Surg.* Naturalist, Marine Survey India; Supt. of Indian Mus.

Books.—"A Naturalist in Indian Seas"; "Entomol. for Med. Officers." *Contrib.*, numerous, on marine zool. and carcinol.

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B. 1863, Plymouth, Mass. A.B. (Harv.) 1885, D.Sc., (Beloit Coll.) 1903; D.Sc. (Armour Inst. Tech.) 1903. *Soc.*—F.A.A.; Colo. Sci.

Contrib. on ore dressing, econ. of mining and metall., etc.

ALDRICH, JOHN MERTON, Expert in Diptera, since 1913, Bur. of Entom., Washington, D.C., U.S.A.

B. 1866, Olmsted Co., Minn. *Educ.*—S. Dak. Agric. Coll.; Univs. Kansas, Stanford. M.S. (S. Dak.) 1891, (Kans.) 1893; Ph.D. (Stan.) 1906. *Soc.*—Fell. Entom. Amer. *Late Prof.* of Biol., Univ. Idaho, 1893—1913.

Book.—"Cat. of N. Amer. Diptera," 1905. *Contrib.*—"Biol. of Western species of Ephydra" (*J. N. Y. Entom. Soc.*, 1913); "N. Amer. species of Lispa" (*ib.*, 1913); etc.

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Contrib.—numerous.

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B. 1865, Dublin. M.Sc. (Dunelm.) 1913. *Soc.*—M.I.N.A.; N.E. Coast I. Engrs. and Shipb. *Late Assist.* N.A. to Swan and Hunter, 1895—98; to John Brown & Co., 1898—1902.

Contrib. on form and proportion of ships, and distrib. of weight to meet wave-stress, to *I.N.A.*, etc.

ALEXANDER, SAMUEL, Prof. of Clin. Surg., Cornell Univ., Ithaca, U.S.A.

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Educ. Glasgow. M. Inst. C.E.I. *Late Prof.* of C.E., Japan.

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B. 1863, Coal City, U.S.A. Ph. D (Penna.) 1897; LL.D. (Franklin) 1910. *Soc.*—Math. Assoc. Edinburgh; Math. London; Ger. Math.; Amer. Math.; Amer. Assoc.; Indiana Acad. *Late Lect.* Princ. High Sch., Spencer, Ind.; Prof. Vincennes Univ.; Prof., Indiana

Univ., 1891—1910; Supt. of Public Instr., Indiana, 1909—10.

Books.—"Essentials of Alg.," jtly.

ALFIERI, E., Direc. of Midwifery Sch., Perugia Univ., Italy.

ALFORD, CHARLES J., Hôtel Angleterre, Vevey, Switzerland. F.G.S.; Hon. Mem. I.M.M.

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Contrib. on Earthquakes, etc.

Inv.—Barocyclonometer.

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Contrib.—"Vapour-tension of hydrochloric acid" (*J. Phys. Chem.*), 1898; "Basic Nitrates of Bismuth" (*Amer. Chem. J.*, 1901); "Sulphates of Bismuth" (*ib.*, 1902); "Barium Salts of Phthalic Acid" (*J. Amer. Chem. Soc.*, 1910).

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Books.—Ed. "System of Med.," 1896—99; Jt. Ed. "System of Gynaecol.," new ed., 1906; etc.

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Books.—"The Sherbro and its Hinterland"; "A Transformed Colony (Sierra Leone)."

Soc.—F.R.G.S.; Hon. F.Z.S.

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Contrib., numerous, on composition of Amer. tars; electrolysis of underground metallic structures; phenol ethers.

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Contrib.—"Embryonic develop. of ovary and testis of mammals" (*Amer. J. Anat.*, 1904); "Eye of Bdellostoma Stouti" (*Anat. Anz.*, 1905); "Origin of sex-cells of Amia and Lepidosteus," (*J. Morph.*, 1911); and of "Chrysemys marginata" (*Anat. Anz.*, 1906).

Early hist. and active migration of germ-cells in 5 types of verteb.

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Contrib. on cell wall formation, spindle formation, reduction divisions and spermatogenesis in plants.

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Soc.—Boston C.E. (P.P.); New Eng. Railroad Club (P.P.); Mass. Highway Assoc. (P.P.); Amer. S.P.E.E. (P.P.); Amer. C.E.; Amer. Ry. Engrng. Assoc. *Late* C.E., Providence (R.I.) Water Works and Sewerage, Newton (Mass.) Water Works; Chief Engrn., Las Vegas (N. Mex.) Water Works; Atchison, Topeka and Santa Fé Railroad; Mex. Centr. Ry.

Books.—"Railroad Curves and Earthwork," 1889; "Field and Office Tables," 1903. *Contrib.* to *Proc. Amer. Ry. Assoc.*

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Arts on Agric., in "Internat. Encyclo." and "Nelson's Encyclo.;" "Summary of Progress in Agric.," in "Internat. Year Book" and "Amer. Year Book." *Contrib.* to *Expt. Station Record*.

Separation of Xylose from woods and straw, and prep. of Xylonic Acid.

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Contrib. on develop. of Crustacea, nerv. syst. of Crustacea, and on Polychaetes, in *Q. J. Micr. Sci.*; on Marine Fauna in *J. Mar. Biol. Assoc.*

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Researches on Inorg. and Min. Chem.
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Papers on Optics, Colour Vision, Colour Blindness, Measurements of Colour, Efficiency of Production of Liquid Air.
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Contrib.—"Motion of a Sphere in a Viscous Fluid" (*Phil. Mag.*, 1900); "Radio-active Gas in Mineral Springs" (*Nature*, 1903—04); "Photo-electric Fatigue of Zinc" (*Proc. Roy. Soc.*, 1907—09); "Path of an Electron in combined radial Magnetic and Electric Fields" (*Proc. Roy. Soc.*, 1911).
- ALLEN, IRVING COWAN**, Chem. and Technol. of Petroleum, U.S. Bur. of Mines, Pittsburg, Pa., U.S.A.; Mem. Internat. Petroleum Comm.
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Contrib.—"Liquefied products from nat. gas"; "Meth. for determ. total sulphur in fuels, particularly petroleum"; "Determ. of water in petroleum and its products"; "Oils suitable for heavy oil internal-combustion engines"; etc.
- ALLEN, JOEL ASAPH**, Curator Amer. Mus. Nat. Hist., New York City, U.S.A.
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Ed. Bull. of Nuttall Ornithol. Club, 1876—83; Ed. The Auk, 1884.
N. Amer. Rodentia and Pinnipedia; Mammals of Patagonia.
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- McGill, Johns Hopkins. M.Sc. (McGill) 1901. Ph.D. (Hopkins) 1906. *Soc.*—Can. C.E.; Amer. Phys.; Ohio Acad. Sci.
Contrib.—"Radioactivity of atmosphere" (*Phil. Mag.*, 1902); "Veloc. of primary and secondary β Rays" (*Phys. Rev.*, 1906); "Secondary β Rays" (*ib.*, 1909); "Absorption of X Rays by matter" (*ib.*, 1912).
- ALLEN, WILLIAM HENRY**, Founder and Chairman, Queen's Engng. Works, Bedford, Eng.
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Contrib.—"Auxiliary machines" (*Inst. C.E.*).
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Publ. num. on Comp. Anat. of Vertebrates.
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Contrib.—"Spark potential in solid and fluid dielectrics" (*Ann. d. Phys.*, 1900); "Discharge current from surface of large curvature" (*Amer. J. Sci.*, 1901); "Spark discharge in gases and vapours" (*Phys. Rev.*, 1907); "Minimum spark potentials" (*Phil. Mag.*, 1908).

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Contrib. numerous on biochem. and pharmacol.

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Contrib.—"Azoxybenzylidene Bases" (*Ber. deut. chem. Ges.*, 1902); "Prep. of aromatic nitroso-compounds" (*Amer. Chem. J.*, 1904); "Soil moisture in 'Great Plains' region" (*J. Agric. Sci.*, 1908); "Nitrogen problem under dry farming" (*J. Ind. and Eng. Chem.*, 1910).

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"Stonehenge," Charlottesville, Va., U.S.A.

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Books.—"Orchard Technique," 1897—1910; "Study of Cider-Making in Fr., Ger., and Eng.," 1902; "Enol. Studies," Nos. 1—5, 1908—12.

Orchard culture; manuf. of by-products from low-grade fruits; disc. of Sucrase in Amer. native grapes.

ALZHEIMER, ALOYS, Ord. Prof. of Psychiat., Univ. Breslau, Ger.

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Contrib. on critical points, spec. heat of fluids, elasticity, statics of gases and liquids, change of state, etc.

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Books.—"Handb. to Astron. Instruments," 1898; Co-Ed. of numerous astron. *J.* and contrib. to "Phys. Handwörterb."

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Orchids, etc.

AMI, HENRY MARC, Inverteb. Palaeont., Geol. Survey of Canada, Ottawa, Canada.

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Books on Canadian Resources, Palaeozoic Fauna of Canada, etc.

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Books.—"Jurassic Beds between Regensburg and Passau," 1875; "Permian Amphibia of Rhine Palatinate," 1889; "Region of Munich, Geol.," 1894; "Geol. of Togo," 1905; "Geogn. Chart of Bavaria," 1903 and 1910; "Bavarian Coal and its Value," 1911 *Contrib.*, numerous to *Geognost. Jahreshefte*, &c.

AMMON, OTTO, Anthrop.

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B. 1842, Karlsruhe. *Educ.* Karlsruhe. Hon. M.D.

Books.—"Nat. Selectn. of Humanity," 1893; "Grouping of Society," 1896; "Anthrop. of Baden," 1899.

Ammon's Law (dolichoceph. immigrants professional, others commercial).

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B. 1872, Borge. Ph.D.

Book.—"Passage of the North-West."

South Pole, Dec. 14, 1911.

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Investigation in grains, starch, etc.

ANDERSON, CHARLES, Miner. and Chem., Australian Mus., Sydney, since 1901.

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Contrib. on physiol.

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Educ. Queen's Coll., Belfast. M.D. (R.U.I.) 1869; L.R.C.S. (Edin.); L.M. 1871.

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Arts.—"Anaphylaxis," 1908; "Tropical Diseases," 1911; "Typhus Fever," 1911. *Contrib.*—"Further studies upon hypersusceptibility and immunity" (*J. Med. Research*, 1907, p. 381); "Anaphylaxis" (Harvey Lect., 1908, *Arch. internat. Med.*, June, 1909); "On etiology of tabardillo or Mexican typhus" (*J. Med. Res.*, Vol. 22, 1910, p. 469); "Experimental measles in Monkey" (*Pub. Health Rep.*, Vol. 26, 1911, p. 887).

Serum-therapy and san. sciences.

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Books.—"Refrigeration, an Elementary Text

book." *Contrib.*—"Refrigerating Efficiency," "Ice and Refrigeration," U.S.A., 1897—98; "Mechanical Refrigeration" (*Liverp. Engrng. Soc.*, 1897—1901); "Insulation" (*Cold Stor. and Ice Assoc.*, Vol. 2, 1901—02); "Cold Storages" (*J. Roy. Inst. Pub. Health*, April, 1911).

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Books.—"Whales and Dolphins; Elephants; Heredity"; "Ger. Influence: Intellectual and Moral." *Contrib.*—"An Astragal Scaphoid bone in Man" (*J. Anat.*, 1883); "Parietal bone" (*Internat. Monatschr. f. Anat.*, 1904); "Effects of contracting heart on muscle," 1906; "Apnoea and dyspnoea," 1908 *et seq.*, and 300 others.

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Contrib.—"Case of Myxœdema successfully treated by Thyroid Juice" (*J. Laryng.* 1893); "Replacement of Severed Portion of Nose" (*Lancet*, 1899); "Foreign Bodies in Rectum" (*Brit. Med. J.*, 1901).

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Contrib. numerous, on plant geog., bot. and geog.

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Books.—"Motion of Sun through Space," 1901, 1910; "Bessel Tables to Six Figures," 1911; "Astron.-Geod. Work of Bav. Comm.," Vols. 6 and 7, 1904, 1912. *Art.*—"Co-ordinates and Time," in *Encyc. d. Math.*, Wiss.

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Books.—"Higher Anal. Geom."; "Cosmography"; "Celestial Mechs."; "Course of Astron."; "The Moon."
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- Books.*—"Memoir on Actiniae," etc. *Contrib.* on Physiol. Micro-org. of thermal waters, etc.
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 British Museum (Natural History) London.
 B. 1866, London. B.A.; D.Sc. (Lond.); F.Z.S.; F.G.S.
- Books.*—"Monograph of Christmas Island"; "Catalogue of Tertiary Vertebrata of the Fayum"; "A Catalogue of Marine Reptiles of Oxford Clay," 2 pts. *Contrib.*—Many papers on fossil vertebrates.
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 M.D. (Lond.), 1896; B.S. 1899; M.R.C.P. (Lond.) 1900; M.R.C.S., L.R.C.P. (Lond.) 1894. *Soc.*—Roy. Med.; Hunt.; Brit. Med.
- Book.*—"Midwifery for Nurses," 1906. *Arts.* in "Hutchison and Collier's Index Treatment," 1907; "Disease of Ovaries, and Affections of Breasts and Nipples during Pregnancy, and the Puerperium," in *Latham and English System Treatment. Contrib.*—"Anat. of Pregnant Tube" (*J. Obstet. and Gynaecol.*); "Internal secretion of Ovary" (*ib.*, 1904); "Effect of Ventral Fixation Uterus in subsequent Pregnancy, and Labour" (*ib.*, 1905); "Chorea in Pregnancy" (with C. Wall) (*Med. Soc. Trans.*, 1903).
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- Univ. Iowa, 1885—1904; Research Chem., Mallinckrodt Chem. Works, St. Louis, 1904—10. P.P. St. Louis Sect., Iowa Sect., Amer. Chem. Soc.
Book.—"Intro. to Qual. Anal." *Contrib.* on Volum. Determ. of combined Sulphuric Acid; Sep. of Chlorides and Bromides; Refract. Indices of Alcohol-Water Mixtures; Determ. of Minute Amounts of Arsenic, to *Amer. Chem. J.* and *J. Amer. Chem. Soc.*
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- Books.*—"List of [his] Sci. Works," 1909; "Terrasses of the Sudan," 1912. *Contrib.* on geol. of Crimea, Caucasus, Trans-Caspia; Oceanog. of Black Sea, Marmora; Palaeont. of Crustacea, Molluscs.
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- Contrib.*—"Decomposition of cupric acetate by heat" (*J. Chem. Soc.*, 1902); "On cuprous formate" (*ib.*, 1906); "Isomeric change of hal. subst. diacylanilides into acylamino-ketones" (*ib.*, 1912).
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- Books.*—"Oxygen Comps. of Nitrogen," 1908; "Studies in Indol and Pyrrol Series," 1911.
 Nitrohydroxylamine, Dihydroxylamine, etc.
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Contrib.—"Magnetic Field of Earth" and "Polar Light" to *Handworkkrb. d. Nat.-Wiss.*;

"Earth magnet. records at Samoa" (*Göttingen Ges. Wiss.*), 1911; "Atmospheric elec. observs. Samoa" (*ib.*, 1911); "Earthquake observs. at Göttingen in '05" (*ib.*, 1906); "Iceland Exped. Spring, 1910" (*ib.*, 1911).

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Books.—"Resorption of Blood Extravasat."; "Ferment Intoxic. in Septicaemia"; "Surg. of Laryng. Dis."; "Dis. of Lymph Vessels"; "Dis. of Mammary and Thoracic Glands."

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Books.—"Treatise on Phys."; "Elec. Batteries"; "Elem. Meteorol."; "Meteorol. Instructions."

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Books.—"The Faeroes and Iceland: Studies in Island Life"; "Fascienti Malayenses—Zool. and Anthropol." (in part); "Freshwater Sponges, Polyps and Polyzoa" in the "Fauna of British India." *Contrib.*—Many on zool. and anthropol. in J. and Memoirs of Asiatic Soc. Bengal, Records and Memoirs of Ind. Museums, J. Roy. Anthropol. Inst., etc.

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Contrib.—"Changes during Ensilage" (*J. Agric. Sci.*, 1909); "Nature of colour of black cotton soils" (*Mem. Dept. Agric. India*, 1909); "Amount of copper in tea sprayed with Bordeaux mixture" (*J. Agric. Sci.*, 1910); "Indian Palm Sugar Industry" (*Mem. Dept. Agric. India*, 1912); etc.

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Books.—"On Rauschbrand, Malignant Oedema and Bradost"; "Report of Malaria Expedition to West Afr., 1899" (jointly); "Report of Malaria Expedition to Nigeria, (1) Malaria (jointly), (2) Filariasis (jointly)." *Contrib.*—"Tubercle Bacilli in Milk, Butter and Margarine" (*Lancet*, 1900); "Boric Acid and Formaldehyde as Milk Preservatives" (*Lancet*, 1899); "Tubercular expectoration in public Thoroughfares" (*Thompson-Yates Lab. Reports*, 1902).

A bacterial virus for extermination of rats and mice.

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Books.—Ed. "Richter's Org. Chem."

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Books.—"Mechanical Drawing"; "Machine Drawing"; "Descriptive Geom."; "Essentials of Gearing." *Contrib.*—"Pressure Recording Indicator for Punching Machinery." (*As. M.E. J.*, 1911); "The correlation of Courses in Engrng. Colls." (*S. P. E. E. Proc.* 1908).

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Books.—"Organs of Flight in Nature," 1911; "Sternum in Mammals," 1898; Ed. Aeronaut Library; Chapter on Phys. Anthropol. de Brouandel and Mosny's "Treatise on Hygiene." *Contrib.* on Brain of Mammals and Man, Adaptation, Exper. Morphogenesis, Anat. Mammals, Pisciculture, etc., to *Ann. des Sci. Nat.*, *Bull. Soc. Anthropol.*, *Comptes Rendus*, etc.

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Books.—"Anthropol. and Nat. Hist. of Man," 1903; "Anthrop., Geol. and Miner. of Philippines," 1887; "Tribe of Manneros," 1903; "Nations of Europe," 1895; "Anthrop. of Early American Peoples," 1895. *Contrib.*—"Ancient Skulls of Ciempozuelo" (*Bol. R. Acad. Hist.*, 1897); "Quaternary skull in Spain" (*xiv. Cong. Anthropol. et Archéol. Préhist.*, Geneva, 1912).

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Books.—"Congenit. Dis. of Cent. Nerv. Syst.," 1890; "Struc., Functions and Dis. of Frontal Lobes," jtly., 1902; "Derangement and Arrest of Mental Growth," 1910. *Contrib.*—"Trabec. Degener. in Human Cerebrum" (*Jahrb. f. Psychol.*, 1894); "Brain Opern. by Cerebral Puncture" (*Med. Klin.*, 1909); "Nerv. and Mental. Dis. during Puberty" (*Wien Klin. Woch.*, 1904).

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Books.—"Memoirs of Maths.," "Treatise on Mech.," "Theory of Algebraic Functions and their Integrals" (with E. Goursat); "Elliptic Functions" (with Lacour).

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Books.—"Freshwater Plankton"; "Anima world." *Contrib.* on plankton, algae, crustacea, etc.

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Books.—"Ethnol.," 1899; "Anthropometry," 1903; "Anthrop. and Ethnol. of Basques," 1911. *Contrib.*—"Origin of Zortziko (Basque dance)" (*Rev. intern. d. Estud. Vascos*, 1911); "Baden and Basque conical heads as ethnog. parallel" (*Petermann's Mitt.*, 1912); "Anthrop. données of Basque language" (*Bull. Soc. d'Anthropol. Paris*, 1911); "American Metal in Spain" (*Bol. R. Soc. Espan. de Hist. Nat.*, 1910).

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Books.—"Compend. of Ital. Flora," 1882, 2nd edn. 1894; "Compend. of Bot.," 1882, 5th edn. 1910. *Contrib.*—Over 100 on Medicago Blanchiani Bonovotiana near Florence; Habitat of trifol. obscurum; Fecundation in *Dranunc. vulg.*, etc.

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Contrib.—"Basic properties of oxygen," jtly. (*J. Lond. Chem. Soc.*, 1904); "Atomic weight of platinum" (*Z. anorg. Chem.*, 1909); "Atomic weight of rubidium" (*J. Lond. Chem. Soc.*, 1904); "Elec. conductiv. of org. acids and alcohols in liquefied halogen hydrides" (*J. Amer. Chem. Soc.*, 1907).

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Book.—“Report of Krakatoa Eruption by Roy. Soc.” (in part), 1888; “The Rainfall of World in connection with Sun-spots,” 1878; “Monograph on Climate of Calcutta” (*Ind. Met. Memoirs*).

First resuscitation of Kites for Scientific Research, 1883—88; Invention of captive kite balloon, 1887; First use of Kite photography, 1887.

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Contrib. to Trans. Roy. Soc. Can., Bull. Amer. Math. Soc., Ann. of Math., Educ. Times.

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Books.—“Reviews of Recent Advances in Trop. Med.,” Supplem. to Repts. Wellcome Trop. Research Labs., Khartum (with Dr. Andrew Balfour). *Contrib.*—“Alkalinity of Blood Serum in Kala Azar” (*R. A. M. C. J.*, 1910); “Human Botryomycosis” (*Brit. Med. J.*, 1910); “Acid fast bacilli in camel's lung” (*J. Comp. Path. and Therap.*, 1910); “Four cases of pyrexia due to infect. with Bacillus of *B. cloacae* type” (*4th Rep. Wellc. Trop. Lab.*, 1911).

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Contrib. on Met. to Ann. d. Phys. u. Chem., Zeitschr. f. Phys. d. Atmosph., Met. Zeitschr., etc.

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Books.—“Struc. of Teleostean and Selachian Brain,” 1906; “Res. on Brain of *Amia Calva* and *Lepidosteus osseus*,” 1907; “Migrations of Culbar V, VI and VII Nucleus,” 1910. *Contrib.*—“Cerebral localis.” (*Internat. Cong. London*, 1913); and numerous to *Folia Neurobiol.* on Phylogenetic studies of forebrain and displacements of nerve-cells towards source of stimulation.

Neurobiotaxis.

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Books.—“Manual of Cattle Feeding”; “Princ. of Animal Nutrition”; “Princ. of Stock Feeding” (*Bailey's Cyc. Amer. Agr.*). *Contrib.*—“Available Energy of Timothy Hay” (*Bull.* 51, *Bur. Animal Indust., U.S. Dept. Agr.*, 1903); “Energy Values Red Clover, Hay and Maize Meal” (*Bull.* 74, *Id.*, 1903); “Available Energy of Red Clover Hay” (*Bull.* 101, 1908); “Influence of Type and Age upon Utilization of Feed by Cattle” (*Bull.* 128, 1911).

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Books.—“Transitional Eras in Thought,” 1904; Eng. transl. “Falckenberg's Hist. of Modern Phil.,” 1893. *Arts.* in Baldwin's *Dict. Phil. and Psych.*, 1901—2. *Contrib.*—“Phil. in U.S.” (*Educ. Rev.*, 1895); “Herder and Fiske on Prolongation of Infancy” (*Phil. Rev.*, 1906); “Evolution of Pragmatism” (*Ber., 3rd Internat. Kong. f. Phil.*, 1909); “Idea of Feeling in Rousseau's Relig. Phil. (*Arch. f. Gesch. d. Phil.*, 1911).

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Book.—“Simple Carbohydrates and the Glucosides.” *Arts.* on Carbohydrates, Glucosides and Enzymes in *Thorpe's Dict. of Chem.* and Allen's *Commercial Organic Analysis*. *Contrib.*—Numerous on Enzymes, Hormones and Carbohydr. in *Proc. Roy. Soc.*, etc.

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Contrib.—"Action of slightly Alkaline waters on iron" (*Analyst*, 1905); "Method for determination of Boric Acid" (*Analyst*, 1906); "Fat standard for Milk" (*VII. Internat. Chem. Cong.*, 1909); "Diabetic Foods" (*Pharmaceut. Conf.*, 1911).

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Books.—"Repert. of Chem.," 14th edn. 1913; "Qual. Anal.," 6th edn. 1907.

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Books.—"Anchor construction," 1899; "Tables for construction of dynamos," 1897—1902; "Electrotechnics," 6 vols., 1902—11. *Contrib.*—Karlsruhe Inst. publiens.

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Contrib.—"Ovigenesis and spermatogen. of Planaria" (*Arch. f. Zellforsch.*, 1909); "Intracellular and general digestive processes in Planariae" (*Q.J.M.S.*, 1909); "Rôle of chondriosomes in cells of guinea-pig's pancreas" (*Arch. f. Zellforsch.*, 1912); "Condition of epidermal fibrils in Epithelioma" (*Q.J.M.S.*, 1912).

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Books.—"Paleont. of San Pedro, Cal.," (*Mems. Cal. Acad. Sci.*, vol. 3); "Recent Fossil Peents of Cal." and 8 Bulls. on Geol. and Paleont. and Oil Resources of Cal. Oil Fields (*U.S. Geol., Survey*). *Contrib.*—"Fossil Mollusks from Oil-bearing Tertiary Formns. of S. Cal." (*Proc. U.S. Nat. Mus.*, 1907); "Geol. of Coast of Olympic Peninsula, Wash." (*Bull. Geol. Soc. Amer.*, 1906); "Miocene diabase of Santa Cruz Mountains, Cal." jtly. (*Proc. Amer. Phil. Soc.*, 1904); "Marine Plioc. and Pleistoc. Stratig. of Coast of S. Cal.," jtly. (*J. Geol.*, 1902).

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Book.—"Therapeut.," 2 vols. *Contrib.*—"Albuminuria" (*Cong. Fr. de Med.*, 1896); "Diuretic regions" (*Ib.*, 1911); "Rôle of leucocytes in absorp. of medicaments" (*Internat. Cong., Budapest*).

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Books.—"Derivs. of Terpenes" (Inaug. Dissertation, Gött., 1896); "Principles of Pharmacy," 1909. *Contrib.* to *Proc. Amer. Pharm. Assoc.*, *Amer. J. Pharm.*, *J. Amer. Med. Assoc.*

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Books.—"Textb. of Electrochem.," 1902; "Textb. of Cosmic Phys.," 1903; "Theories of Chem.," 1907; "Immuno-chem.," 1907; "Worlds in the Making," 1908; "Life of the Universe," 1909.

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Books.—"Rôle of Elasticity of Lungs"; "Treat. on Biol. Phys."

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Books.—"Handbook Plant Dissection" (with Barner and Coulter); "Living Plants and their Properties" (with MacDougal). *Contrib.*—"Culture of Uredineae" (*Bot. Gaz.*, J. Myc., *Mycologia*, 1890—1911); *Ed. Trans. Madison Bot. Congr.*, 1893; "Movement of Protoplasm in Cornocytic Hyphae" (*Annals Bot.*, 1897); "Physiologic Aspect of Species Question" (*Amer. Nat.*, 1908).

Formalin for prevention of potato scab, 1895; disc. in relationship of heterocorous rusts, 1899—1911.

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Books.—Transl. Roscoe and Schorlemmer's "Org. Chem."

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Books.—"Tables of Hist. of Med."; "Course of Path. Histol." (with Gaylord); "Path. Anat. of Heart Dis." (with Tawara); "Textbk. of Path. Anat."; "Gallstone" (with Baumeister); "Appendicitis"; "Thrombosis"; "Pyelitis"; "Ehrlich's Sidechain Theory."

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Books.—"Anal. Geom."; "Algebra"; "Trigonometry."

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"Arenicola," Memoir XI, in *Liverpool Marine Biol. Comm. Memoirs*, 1904; "Catalogue of Chaetopoda in Brit. Mus., Part I, Arenicolidae," 1912. *Contrib.*—"Giant Nerve Cells and Fibres of Halla" (*Phil. Trans.*, 1909); "Structure of Xenia" (*Q. J. Micr. Sci.*, 1899); "Anatomy of Scalibregma" (*ib.*, 1901); Papers on Arenicola and other invertebr. in *Q. J. Micr. Sci.*, and other J., since 1898.

Struct., histol., budding, etc., of Alcyonarian Xenia; struct. and nature of giant cells and fibres of Annelids.

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Contrib. to Inst. C.E., Inst. Mech. E. and the International Ry. Congress.

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Public. on Aspiration Psychrometer (1887); Rubber sounding balloons; Isothermal layer (disc. simult. with Teisserende Bort, 1902); Influence of Mountains on Climate of Central Ger.; Sci. Air Voyages (with Berson); Wind in Ger.

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Contrib.—"Tutu, Pt. I., Tutin and Coriamyrtin," *jtly.* (*Trans. Chem. Soc.*, 1901); "Researches on Soils" (*Govt. Repts., N.Z.*, 1900—13); "Alkaloids of Pukatea" (*Trans. Chem. Soc.*, 1910); and on Bot., in *Trans. N.Z. Inst.*, 1898—1912.

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Books.—"Pract. Solid Geom.," "Manual of Drawing."

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Book.—"Alumni Record of Coll. Liberal Arts, Northwestern Univ." 1902.

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Books.—"Interpretn. of Topog. Maps"; "Geol. and Mineral Resources of Alaskan Penins.," "Phys. Geog. of Evanston-Waukegan Region"; "Glaciation of Wasatch Mount." *Contrib.*—Geog. Study of Mesa Verde, *Ann. Assoc. Amer. Geog.*, vol. 1.; Physiog. Studies in San Juan District of Colo., *J. Geol.*, 1911; Alaska and its Wealth, *World To-day*, 1908; First Year Sci. Course in High Sch., *Sch. Rev.*, 1911.

Patent Sidereal Sphere.

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Contrib.—*Proc. Acad. Sci., Vienna*, "Earths of Gadolinum and Ytterbium," 1883; "Rare Earths," 1885; "Decomp. of Didymium into its Elements," 1885, 1903; "Elements of Ytter. Group," 1906; "Decomposition of Ytterbium into its Elements, (a) Cassiopeium, (2) Aldebaranium," 1909; "Residues containing Actinium obtained by Extract. of Radium," 1910; "Notice on Elements of Thulium," 1911; "Communic. on Decomp. of Terbium into its Elements," 1911.

Inv. incand. gaslight, called Welsbach or Auer Light, 1885; 1st elec. incandes. lamp, having metal filament, the Osmium Lamp, 1898; Pyrophoric Alloys, 1903.

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Contrib.—Numerous on physiol. and pharmacol. of respiration, gastro-intestinal tract, acute types of death in exper. anaphylaxis, etc., in *Amer. J. Physiol.*, *J. Exper. Med.*, etc., since 1906.

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- Books.*—"Metal. of the Common Metals"; "Fire Assay." *Contrib.*—"Metal. of Copper" (*Mineral Indus.*, 1903—11); "Washoe plant of Anaconda Copper Mining Co." (*Trans. Amer. Inst. Min. Engrs.*, 37).
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- Contrib.*—"Meas. of Elec. Oscillns. in Receiving Antenna" (*Bull. Bur. Stand.*, 1911); "Quant. Expts. in Long-Dist. Teleg." (*Id.*); "Resist. of Radio-Teleg. Antennas" (*J. Wash. Acad.*, 1911); "Condenser Losses at High Frequencies" (*Id.*).
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- Book.*—"Evolution of Stereochemistry." *Contrib.*—Numerous to *Annalen der Chem., Berichte der Chem. Gesell.*, etc., 1884—1911.
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- Constitution Paris green; action of benzyl cyanide on cinnamic ether; aromatic succinic acids; aromatic glutaric acids.
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- Book.*—"Elect. Arc." *Contrib.*—"Elect. Arc" (12 papers) (*Electrician*, 1895—96); "Mechanism of Elec. Arc" (*Phil. Trans.*, 1902); "Origin and Growth of Ripple-mark" (*Proc. Roy. Soc.*, 1910); "Non-periodic or residual motion of water moving in stationary waves" (*Id.*, 1908, 1911).
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- Book.*—"Elem. Sch. Agric." *Contrib.*—"The walnut-oak hybrids" (*Jepson's "Silva of Cal."*, 1911); "Walnut-oak hybrid expts." (*Amer. Breeders Assoc. Rept.*, 1911). "Developm. of secondary sch. agric. in Cal." (*Circ.* 67, *Agric. Exp. Station*, 1911); "Studies in Juglans" (*Univ. Cal. Publ., Agric. Ser.*, 1913).
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Books.—"Bacteria," 2 vols. in Fr., 3 edns., and in Hung.; "Atlas of Path., Anat. and Histol. of Nerv. Syst.," in Ger., 6 vols., and in Roum.; "Insanity," 1913; "Pellagra," 1890. *Arts.*—Numerous in Kolle-Wassermann's Microorg.

Disc.—Metachrom. corpusc. of bacteria; penetration of microbes thro' intact flesh; specific nature of pellagra; bacterial associations; intermediate series between *B. typh.* and coli; etc.

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Books.—"Path. of Heart"; "Malaria"; etc.

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Books.—"Elem. of Machine Design," 1887, 11th edn., 1913; "Elasticity and Resistance," 1889, 6th edn., 1910; "Water Wheels," 1886; "Fire Engines," 1883; "Pumps," 1883; "Concrete and Reinforced Concrete." *Contrib.*, numerous on Boring, Steam-boilers, Auto-genous Welding, Engrng. Educ., etc.

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Contrib. to *Trans. A.I.E.E.*, *Elektrotech. Zsch.*, *Elektrotech. u. Maschinenbau*, *Elec. World*, *Elec. J.*, etc.

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F.R.S.; Ord. Acad., since 1883; Hon. D.Sc. Christiania, Cantab., Cape). *Soc.*—F.M. Acads. Sweden, Christiania, Finland, Wash.; Hon. Mem.: Russ. Astron., Norweg. Phys. and Astron.; Antonio Alzate, Swiss Naturf., Mexican Astron.; Corresp. Mem.: Upsala Sci., Finn. Geog., Swed. Anthropol. and Geog., Lund Physiog.; Gold Medal, Lond. R.A.S.; V.-P. Ger. Astron. Soc.; Pres. Russ. Seismol. Commis.

BACON, GORHAM, Prof. of Otol., Columbia Univ., New York, U.S.A.

BACON, RAYMOND F., Assoc. Direc., Dept. of Indust. Research; Prof. of Chem., Univ. of Pittsburgh.

5845, Nicholson Street, Pittsburgh, Pa., U.S.A.

B. 1880, Muncie, Ind. B.S. 1899, A.M. 1900 (De Pauw); Ph.D. (Chic.) 1904. *Soc.*—Amer. Chem.; F.A.A.; Philippine Sci. Club. *Late* Chem., Bur. of Sci., Manila, P.I., 1905—10; Assist. Chem., Bur. of Chem., Washington, 1910—11; Collab. Ed., *Philippine J. Sci.*

Contrib. on Philippine terpenes and essential oils; Trop. sunlight; Philippine Medicinal Plants; Sodium benzhydrol.

BACON, Rear-Admiral REGINALD HUGH SPENCER, C.V.O., D.S.O., R.N.; Mem. Gen. Board, Nat. Phys. Lab., Teddington, Eng.

Ordnance Works, Coventry, Eng.

BADAL, Prof. of Ophthalm., Univ. Bordeaux, France.

BADEN-POWELL, B. F. S., Major.

32, Princes Gate, London, S.W.

B. 1860, London. *Educ.* Charterhouse. *Soc.*—F.R.A.S.; F.R.Met.Soc.; Aeronaut (P.P.). *Late* Served 22 years, Scots Guards; Proprietor of "Knowledge."

Books.—"In Savage Isles and Settled Lands," 1892; "War in Practice," 1903; "Ballooning as a Sport," 1907; "Practical Aerodynamics"; Ed. "Sci. Year Book," 1905—09. *Arts.* in *Encyc. Brit.*, *Chambers' Encyc.*

Inv. Man-lifting Kites, Simplex Range-finder, "Knowledge Calculator," etc.

BÄCKLUND, ALBERT VICTOR, Fell. Swedish Acad. Sci.; Prof. of Physiog., Lund Univ., Sweden.

BÄCKSTRÖM, HELGE, Prof. of Miner. and Petrol., Stockholm Univ., Sweden.

Djursholm, Sweden.

B. 1865, Örebro. *Educ.* Örebro, Stockholm, Upsala, Heidelberg, Paris. Ph.D. (Heidel.) 1891.

BAEKELAND, LEO HENDRIK, Chemist. "Snug Rock," Harmony Park, Yonkers-on-Hudson, U.S.A.

B. 1863, Ghent, Belgium. *Educ.* Ghent Univ.; Polytech. Charlottenburg. D.Sc. (Ghent) 1884; Nichols Medal, Amer. Chem. Soc. 1909; John Scott Medal, Franklin Inst., 1910. *Late* Assoc. Prof. Ghent Univ., 1889; Prof. Chem. and Physics, Normal Sch., Bruges. P.P. Amer. Electrochem. Soc.; P. Chairman, N.Y. Section, Amer. Chem. Soc.; Mem. Chem. Ind. Amer. Assoc. Adv. Sci.

Book.—"Science and Industry," Presidential Address (Amer. Electrochem. Soc. *Trans.*, 1910). *Contrib.*—"Oxidation of Hydrochloric Acid by Sunlight" (*Bull. R. Acad. Belgium*, 1886); "Dissociation of Lead Nitrate" (*J. Amer. Chem. Soc.*, 1904); "Photochemical Research" (Report 5th Internat. Congress of Chem., Berlin, 1903); "Researches on Phenol-formaldehyde

condensation products" (*J. Ind. and Engin. Chem.*, 1909).

Improvements in Commercial Production of Alkalies and Chlorine by Electrolysis; New photographic papers—Velox; Bakelite, a synthetic plastic, used for amber substitute, moulded goods, lacquers, varnishes, electric insulation.

BAELZ, ERWIN v., Geh. Hofrat; Prof. of Med.; Mem. Leop. Carol. Acad.

Neue Weinsteige 33, Stuttgart, Ger.

BAER, HERBERT, Prof. and Direc. of Engrn. Lab., Technical Sch., Breslau, Ger.

B. 1881, Munich. *Educ.* Munich and Berlin. Dr.-Ing. (Munich) 1908. *Late* Engrn. Masch.-Gesell., Nuremberg; Tester of Steam Turbines, Allgem. Elek.-Ges., Berlin.

Book.—"Elements of Kinematics." *Contrib.*—Numerous on hydraulics, dynamics, gas-engines and steam turbines to *Zeitschr. d. Ver. deut. Ing., Dingler's*, etc.

BÄRTLING, RICHARD, Field Geologist, Roy. Geol. Survey of Prussia, and Sec. of Ger. Geol. Soc.

Berlin N. 4, Invalidenstr. 44.

B. 1878, Hildesheim. *Educ.* Hildesheim, Munich, Clausthal. Ph.D., 1903; Priv.-doz. app. geol., 1910. *Soc.*—Ger. Geol.; Anthropol. and Ethnol.; Niederrheinisch Geol.; Nat. Hist. of Pruss., Rhineland, and Westph.

Book.—"German Beds of Heavyspar," 1911. *Contrib.*—Numerous, and to Geol. map of Prussia and neighbouring federal States.

BAESCHLIN, F., Prof. of Topog. and Geod., Polytech. Zurich.

Dammstr. 812, Zollikon, Switz.

BÄUMLER, CHRISTIAN G. H., Exc., Privy Coun.; Emer. Prof. of Clin. Med., Freiburg Univ., Ger.

Josefstr. 7, Freiburg i. Br., Baden, Ger.

B. 1836, Buchau, Bavaria. *Educ.* Nuremberg; Univs. Erlangen, Tübingen, Berlin, Prague, Vienna, Paris. M.D. (Erlang.) 1860; F.R.C.P. (Lond.) 1878. *Late* Assist. Physician to German and Victoria Park Hosps. London.

Arts.—"Syph.," in *v. Ziemessen's Handb. d. spec. Path. u. Therap.*, vol. III., 3rd. edn.; "Thermom." and "Temperature," in *Quain's Dict. Med.*; "Dis. of Pericardium" and "Bloodvessels," in *Penzoldt and Stintzing's "Handb. d. spec. Therap."* 4th edn. 1910. *Contrib.*—"Coloboma Oculi" (*Würzb. Med. Zeitschr.*, 1862); "Tymp. reson. in pneumonia" (*Deutsch Arch. f. Klin. Med.*, 1865); "Clin. Observ. on Typhoid in Eng." (*Ib.*, 1867); "Clin. exp. on treatm. of Perityphlitis" (*Ib.*, 1902).

BAEYER, ADOLF Ritter v., F.R.S., Geh. Rath, Nobel Laureate; Ord. Prof. of Chem., Munich Univ., Ger.

1 Arcisstr., Munich, Ger.

B. 1835, Berlin. *Educ.* Univs. Berlin and Heidelberg. Ph.D.; D.Sc. (Vic.); Hon. Dr. Ing.; Hon. Mem. Roy. Inst. G.B.; Mem. Inst. Fr.; Hon. Mem. Manc. Lit. and Phil. *Late* Extraod. Prof., Berlin.

Book.—"Collected Works."
Synthetic indigo.

BAGINSKY, ADOLF, Geh. Med. Rat; Prof. since 1891, of Children's Dis., Univ. of Berlin; Direc. since 1890 of K. u. K. Friedrich's Children's Hosp., Berlin, Ger.; Founder and Ed. of *Arch. f. Kinderheilk.*, 58 vols.

Kurfürstenstr. 98, Berlin, W., Ger.

B. Ratibor. Educ. Ratibor; Univs. Berlin Vienna. M.D. 1866. *Soc.*—Hon. Mem. Pediat. of Paris, Budapest, Constantinople, Athens, Moscow, Petersburg, Amer.; Leop. Carol. Acad. etc.

Books.—"Treatise of Children's Dis.," 8th edn.; "Handb. of Sch. Hygiene," 2 vols., 3rd edn.; "Diphtheria," 2nd edn.; "Sero-therapy of Diphth." *Arts.*—Dis. of Children, in *Eulenburg's Encyc.*; about 100 others.

Inv. Instruments for Children's Dis. practice.

BAGLEY, WILLIAM CHANDLER, Prof. of Educ., Univ. Illinois, Urbana, Ill., U.S.A.

B. 1874, Detroit, Mich. B.Sc. (Mich. Agric. Coll.) 1895; M.Sc. (Wis.) 1898; Ph.D. (Cornell) 1900. *Soc.*—F.A.A.; Amer. Psych. Assoc.; Nat. Study of Educ. (Pres., 1911—12); Nat. Educ. Assoc.; etc. *Late* Assist. in Psych., Cornell Univ., 1900—01; Pub. Sch. Princ., St. Louis, Mo., 1901—02; Prof. of Psych. and Educ., Montana State Norm. Coll., 1902—06; Supt., Training Dept., Oswego (N.Y.) State Norm. Sch., 1906—08.

Books.—"Educ. Process," 1905; "Class-room Management," 1907; "Educ. Values," 1911. *Contrib.*—"Apperception of Spoken Sentence" (*Amer. J. Psych.*, 1900).

BAIL, C. A. E. T., Prof.; Chief Lect. on Bot., Real Gymn., Danzig; Mem. Leop. Carol. Acad.

Weidengasse 49, Danzig, Ger.

BAIL, OSKAR, Prof. of Hyg., Ger. Univ., Prague, Bohemia; Mem. Leop. Carol. Acad.

BAILEY, BENJAMIN F., Junr. Prof. of Elec. Engrng., Univ. Michigan, Ann Arbor, Mich., U.S.A.; Cons. Engrn., Fairbanks Morse and Co.

B. 1875, Sheridan, Mich. *Educ.* Univ. Michigan. B.S. 1898, G.M. 1900, Ph.D. 1907 (Mich.). *Soc.*—Assoc. Amer. Inst. E. E. *Late* Chief Engrn., Fairbanks Morse and Co.

Books.—"Induction Motors"; "Induction Coil." *Contrib.*—"Wehnelt Interrupter" (*Amer. X-ray J.*, 1899); "Electrolytic Interrupters" (*Elec. World and Engrn.*, 1900); "Efficiency of Touch Spark Coil" (*Horseless Age*, 1906); "New variable speed motor" (*Elec. World*, 1907).

BAILEY, EDGAR HENRY SUMMERFIELD, Prof. of Chem. and Direc. of Chem. Lab., Kansas Univ., Lawrence, Kansas.

B. 1848, Middlefield, Conn. *Educ.* Univs. Yale, Illinois Wesleyan, Strassburg, Leipzig. Ph.B. (Yale) 1873; Ph.D. (Ill. Wes.) 1883. *Soc.*—F.A.A.; Amer. Chem.; Hon. Mem. Amer. Inst. Homocop.; Mem. Kansas Acad. Sci. *Late* Instr. in Chem., Yale Univ., 1873—74; Lehigh Univ., 1874—83.

Book.—"Qual. Anal.," jtly., 6th edn.

BAILEY, GILBERT ELLIS, Prof. of Geol., S. California Univ., Los Angeles, Cal., U.S.A.

9798, Figueroa St., Los Angeles, Cal., U.S.A. B. 1852, Pekin, Ill. *Educ.* Univs. Chicago, Michigan. A.M. (Chicago) 1876; Ph.D. (Franklin) 1881. *Soc.*—Amer. Chem.; Acad. Sci., S. Cal. *Late* Prof. of Anal. Chem., State Univ., Nebraska, 1874—79; Prof. of Metall., State Sch. Mines, S. Dakota, 1888—90; State Geol., Wyoming, 1882—87.

Books.—"Saline Deposits of California" (*State Min. Bur. California*); "Water Supply Arid Portions of Cal.," "Mines and minerals San Bernardino Co., Cal." *Contrib.*—"Geol. formations of Cal." (*Cal. Acad. Sci. Bull.*); "Map of arid portion of Cal." (*Los Angeles*

Times); and on borax, salt, soda, nitre, explosives.

Inv. Pressure gauge for testing explosives; Instrument for measuring radio-activity of mineral spring emanations.

BAILEY, HERBERT S., Chief of Oil, Fat and Wax Lab., Bureau of Chem., U.S. Dept. of Agric. Washington, D.C., U.S.A.

B. 1880, Bethlehem, Pa. B.A. (Kan.) 1902; B.Sc. (Mass. Inst. Tech.) 1906. *Late* Chemist, Armour & Co., K.C.Mo. 1903—04; Instr. Mich. Agric. Coll., 1907. *Soc.*—Amer. Chem. Soc.; Soc. Cotton Products Analysts.

Contrib.—"An electrically heated vacuum fraction apparatus" (*J. Amer. Chem. Soc.*, 1911); "Automatic Pipette" (*Ib.*, 1908); "Automatic filter funnel" (*Ib.*, 1909).

BAILEY, IRVING WIDMER, Assist. Prof. of Forestry, Harvard Univ.

80, Buckingham Street, Cambridge, U.S.A.

B. 1884, Tilton, N.H. A.B., 1907, M.F. 1909 (Harv.). *Soc.*—Bot. Amer.

Contrib. on penetration of gases and preservatives into seasoned wood; on struc. of pit membranes in tracheids of conifers.

BAILEY, LIBERTY HYDE B., *late* Direc. of New York State Coll. of Agric. at Cornell Univ., and Dean of the Fac. (resigned 1913).

Ithaca, N.Y., U.S.A.

B. 1858, South Haven, Mich., U.S.A. *Educ.* Mich. Agric. Coll. M.S. (Mich. Agric. Coll.) 1886; LL.D. (Wis.) 1907; LL.D. (Alfred) 1908. *Late* Chairman, Roosevelt Comm. on Country Life. *Soc.*—Fell. Amer. Acad. Arts and Sciences; Amer. Phil.; Corresp. Mem. Roy. Hort. Soc. (Veitchian Medallist).

Books.—"Principles of Fruit Growing"; "Cyc. of Amer. Hortic.," 4 vols.; "Cyc. of Amer. Agric.," 4 vols.; "State and Farmer," etc.; Ed. of Rural Science Series, Rural Text-book Series, Rural Manuals, Text-books of Bot.

BAILEY, SOLON IRVING, Phillips' Prof. of Astron. since 1912, Harvard Univ., Cambridge, Mass., U.S.A.

B. 1854, Lisbon, N.H. A.M. (Boston) 1884, (Harv.) 1888. *Socs.*—F.A.A.; Fell. Amer. Acad.; Geog. Lima; Internat. Solar Union; Ger. Astron. *Late* 12 years astron. and met. travels in S. Af. and S. Amer. for Harvard Observ.

Books.—Numerous Harvard Annals.

BAILEY, VERNON, Biol., U.S. Biol. Survey, Dept. of Agric., Washington, D.C., U.S.A.

1834, Kalorama Rd., Washington, D.C., U.S.A.

B. 1864, Manchester, Mich. *Educ.* Univs. Michigan, George Washington. *Soc.*—F.A.A.; Amer. Ornithol. Union; Cooper Ornithol. Club; Amer. Forestry; Nat. Geog.; Wash. Acad. Sci.; Wash. Biol.

BAILLAUD, EDOUARD BENJAMIN, Direc. of Paris Observ.; Mem. Inst. Fr. and Pres. of Bur. of Longitudes.

Avenue de l'Observatoire, Paris.

B. 1848, Chalons-sur-Saône. *Educ.* Chalons; Lyons; Paris. D.Sc. *Soc.*—Ger. Astron.; Fr. Astron. (P.P.); Hon. Mem. Acad. Toulouse; Assoc. R.A.S. *Late* Hon. Dean, Fac. Sci., Toulouse; Direc., Toulouse Observ.

Books.—"Course of Astron.," Memoirs on Theory, Pract. and Maths. of Astron.

BAILLAUD, JULES, Assist. Astronomer, Observ., Paris.

148, Boulevard Montparnasse, Paris.

B. 1876, Paris.

BAILY, FRANCIS GIBSON, Prof. of Elec. Engrng., Heriot-Watt Coll., Edinburgh.

Newbury, Colinton, Midlothian, Scotland. B. 1868, London. *Educ.* Univ. Coll. Sch. Lond.; Mining Coll. Clausthal, Ger.; St. John's Coll. Cambridge. M.A., 1889. *Late* Lect. in Electrotechnol., Univ. Coll., Liverpool. *Soc.*—M.I.E.E., F.R.S.E.

Contrib.—"Hysteresis of Iron in alternating magnetic field" (*Electrician*, 1895); "Hysteresis of Iron in rotating magnetic field" (*Phil. Trans.*, 1896); "Some Phenomena of Commutation" (*J. Inst. Elec. Engrns.*, 1906); "Apprenticeship and Education" (*Ib.*, 1907); Electrical subjects to "Harmworth's Encyclo."

Inv. Sensitive bifilar seismograph, permeameter, and varnish tester.

BAILY, WALTER, *late* Sec. and V.-P. of Physical Soc.

4, Rosslyn Hill, London, N.W.

B. 1835. *Educ.* Harrow; King's Coll. Lond.; St. John's Coll. Cambridge. M.A. 1863. F.Z.S.

Contrib.—"Mode of producing Arago's rotation" (*Phil. Mag.*, 1879); "Integrating Anemometer" (*Ib.*, 1882); On the Spectra formed by Curved Diffraction Gratings" (*Ib.*, 1883); "On the Construction of a Colour Map" (*Ib.*, 1892).

Inv. Two-phase electric motor; integrating anemometer.

BAIN, HARRY FOSTER, *late* Direc., Geol. Survey, Illinois, 1905—09; Ed. of *Mining and Sci. Press.*

687, Howard St., San Francisco, Cal., U.S.A.

B., Seymour, Ind. *Educ.* Moore's Hill Coll.; Univs. Chicago, Johns Hopkins. B.Sc. (Moore's Hill) 1890; Ph.D. (Chicago) 1897. *Soc.*—Amer. Geol.; Mem. A.A.; Amer. Inst. Min. Engrns., etc. *Late* Assist., Geol. Survey Iowa, 1894—1900.

BAIRD, JOHN WALLACE, Prof. of Psychol., Clark Univ., Worcester, Mass., U.S.A.

B. 1873, St. Marys, Ont. *Educ.* Univs. Toronto, Leipzig, Wisconsin, and Cornell. A.B. (Tor.); Ph.D. (Corn.). *Soc.*—Amer. Psychol. Assoc.; S. Phil. and Psychol.; Amer. Assoc.

Contrib. on space perception, colour vision, and higher mental processes.

BAKER, ALFRED, F.R.S. Can.; Prof. of Maths., Toronto Univ., Canada.

81, Madison Avenue, Toronto, Ont., Can.

B. Toronto. *Educ.* Gram. Sch. and Univ., Toronto. M.A. 1878. *Soc.*—Fr. Math.; Amer. Math.; P.P.; Ont. Educ. Assoc., 1895; P.P. Sect. III., Roy. Soc. Can., 1905.

Books on Synthet. and Analyt. Geom., Trig. and Mech. *Contrib.* on quaternions, geom. of position, and foundations of geom. (transl. into Jap.) to *Proc. Roy. Soc. Can.*

BAKER, CHARLES WHITING, Ed., *Engineering News.*

505, Pear St., New York City, U.S.A.

B. 1865, Johnson, Vt., U.S.A. *Educ.* Vt. Univ., Burlington. C.E. *Late* Delegate of U.S. Govt. to Internat. Cong. Mining and Metallurgy, Düsseldorf, 1910. *Soc.*—Amer. Economic Assoc.; Amer. Soc. Mech. Engin. (V.-P., 1910—11).

Books.—"Monopolies and the People," 1889, 3rd edn., 1899.

BAKER, EDMUND GILBERT, 1st Assist., Bot. Dept., Nat. Hist. Mus., S. Kensington, London.

3, Cumberland Road, Kew, Eng.

B. 1864, Thirsk. *Educ.* Friends Sch., York.

Pereira Med. and Bot. Med. (Pharmacut. Soc.) Soc.—F.L.S.; Hon. Mem. Dumfries Nat. Hist.

Contrib.—Bot. of Mt. Milanyi (Polypetalae); Flora of Gazaland (Polypet.); Flora of Mt. Ruwenzori (Polypet.); Tropical African Species of Indigofera, etc., in *J. of Bot.* and *J. Linn. Soc.*; Cat. of Plants from Oban District, S. Nigeria (Polypetalae).

BAKER, FRANK, Prof. of Anat., Georgetown Univ., and Supt., Nat. Zool. Park.

B. 1841, Pulaski, N.Y. *Educ.* Univs. George Washington, Georgetown. M.D. (G. Wash.) 1880; A.M. 1888; Ph.D. 1890 (Georgetown). *Soc.*—F.A.A.; Mem. Amer. Nat.; Amer. Anat.; Wash. Acad. Sci.; Wash. Biol.; Wash. Anthropol.; Phila. Zool. P.P. Amer. Anat. Soc., 1897; P.V.-P. Amer. Assoc. Adv. Sci., 1890.

BAKER, FREDERICK, Pres., Mar. Biol. Assoc. of San Diego.

Point Loma, San Diego, Cal., U.S.A.

B. 1854, Norwalk, O. *Educ.* Univs. Michigan, Cornell. B.S. (Cor.) 1878; M.D. (Mich.) 1880. *Soc.*—Amer. Med. Assoc.; Cal. Med.; S. Cal. Med.; San Diego. Co. Med.; Cal. Acad. Sci.

Contrib.—Various, on med. and conchol.

BAKER, HENRY FREDERICK, F.R.S.; Fell. and Lect., St. John's Coll., and Univ. Lect. in Maths., Cambridge.

Sc.D.; Sylvester Medal. *Soc.*—Lond. Math. (P.P.); Camb. Phil. (P.P.); Brit. Assoc., Pres., Sect. A., 1913; Ger. Math.

BAKER, HERBERT BRERETON, F.R.S.; Prof. since 1912, of Chem., Imper. Coll. Sci. and Technol., London.

Educ. Grammar Sch., Manchester; Balliol Coll. Oxford. M.A. (Oxon.); D.Sc. (Oxon.); F.C.S.; Longstaff Med., 1912. *Late* Senior Science Master, Dulwich Coll., Head Master, Alleyn's Sch., Dulwich; Dr. Lee's Reader, Oxford Univ.; Student and Tutor of Christ Church, Oxford.

Contrib.—Chiefly on Effect of Purity of Substances on Chemical Action (*Phil. Trans.*, *J. Chem. Soc.*, etc.).

BAKER, HUGH POTTER, Dean and Prof. of Sylvic., N.Y. State Coll. of Forestry at Syracuse Univ.

Syracuse, N.Y., U.S.A.

B. 1878, St. Croix Falls, Wis. *Educ.* State Coll. Mich.; Yale Univ.; Munich Univ. B.S. (Mich. State Coll. 1901); M.F. (Yale, 1904); D.Oec. (Munich) 1910. *Late* Forester with U.S. Forest Service, 1901—11; Assoc. Prof. of Forestry, Iowa State Coll. 1904—07; Prof., State Coll. of Penna., 1907—12. *Soc.*—Amer. Foresters; Amer. Forestry Assoc.; F.A.A.; Amer. Breeders'; Iowa Acad. Sci.; Nat. Geog.; Geog. Munich; Pa. Forestry Assoc.; Nat. Conserv. Assoc.; F.R.G.S.; Geog. Munich.

Contrib.—"Holding and Reclamation of Sand Dunes and Sand Wastes by Tree-planting" (*Proc. Iowa Acad. Sci.*, 1906); "Prairies of Central America and their value for forest culture" (Munich, 1911).

BAKER, I. O., Prof. of Civil Engrng., Univ. Illinois, Urbana, Ill., U.S.A.

B. 1853. D Eng.

BAKER, JAMES HUTCHINS, Pres., Colorado Univ., Boulder, Colo., U.S.A.

B. 1848, Harmony, Me. *Educ.* Bates Coll. M.A. 1876; LL.D. (Bates) 1892. *Soc.*—A.A.A.S. *Late* Pres., National Council of

Educ., 1892, and for National Assoc. of State Univs., 1907.

Books.—"Elementary Psychol.;" *Educ. and Life*;" "Amer. Problems."

BAKER, JOHN GILBERT, F.R.S. *Late* Keeper of Herbarium, Royal Kew Gardens.

3, Cumberland Rd., Kew, Eng.

B. 1834, Guisborough, Yorks. *Educ.* Friends' Schools, Ackworth and York. Vict. Medallist of the R.H.S., 1897; Gold Medallist of the Linnæan Soc., 1899; Veitch Medal, 1908. *Late* Lect. on Botany, Apoth. Soc. *Soc.*—F.L.S., V.M.H., M.R.I.A.; Bot. Edin.; Hon. Mem. Manc. Lit. and Phil.

Books.—"North Yorkshire: Synopsis Filicum"; "Flora English Lake District"; "Monograph of Liliaceae"; Handbooks of Iridiæ, Amaryllideæ, etc. *Contrib.*—*J. of Botany and J. Linn. Soc.*

Descriptions of 2,000 new plants.

BAKER, JULIAN LEVETT, Chemist; Ed., *J. Soc. Public Analysts*; Hon. Sec., Inst. of Brewing.

Stainesbury Holt, Kingston Rd., Staines, Middlesex, Eng.

B. 1873, London. *Educ.* City of Lond. Sch.; Finsbury Tech. Coll. F.I.C. Soc.—F.C.S.; Ger. Chem.; Pub. Anal.; Inst. Brewing; Chem. Ind. (Mem. Council).

Books.—"Brewing Industry"; "Fermentation" (*Encyc. Brit.*); "Malt and Malt Liquors" (Allen's "Commercial Org. Anal."). *Contrib.*—"Action of Diastase on Starch" (*J. Chem. Soc.*, 1895—97); "Action of Barley Diastase on Starch" (*ib.*, 1902); "Utilisation of Waste Yeast in Breweries" (*J. Inst. Brewing*, 1903); "Toxins in Cereals" (*ib.*, 1910).

BALBIANO, LUIGI, Fell. Acad. Lincei; Prof. of Org. Chem., Turin Polytech.

Via Po 20, Turin, Italy.

BALDONI, ALESSANDRO, Prof. of Mat. Med. and Exper. Pharmacol., Sch. Pharm., Univ. Rome, Italy.

BALDWIN, JAMES MARK, Prof., National Univ. of Mexico; Pres. Internat. Congress of Psychol., 1909—13.

Care Harris Forbes & Co., Pine Street, New York City, U.S.A.

B. Columbia, S. Carolina. *Educ.* Univs. Princeton, Leipzig, Berlin. M.A., Ph.D. (Prince.); Hon. D.Sc. (Oxon.; Geneva); Hon. LL.D. (Glas.; S. Car.); Gold Medal, Roy. Acad. Denmark, 1896. *Soc.*—Corresp. Mem. Inst. Fr.; Hon. Mem. Sociol. Ital. and Eng.; Pedago. Belg. and Dutch; Aristotelian, Lond.; Internat. Inst. Sociol. Fr.; Amer. Phil. *Late* Prof., Toronto Univ., 1890—93, Princeton Univ., 1893—1903, Johns Hopkins Univ., 1903—09; P.P. Amer. Psychol. Soc.; Internat. Congress of Crim. Anthropol., 1897; P.V.-P. Internat. Inst. Sociol., 1910.

Books.—"Handb. of Psychol.," 2 vols., 1891; "Mental Development," 2 vols., 4th edn., 1907; "Darwin and the Humanities," 1909; "Developm. and Evol.," 1902; "Genetic Logic," 3 vols., 1906—11; Ed., Dic. of Phil. and Psych., 3 vols., 1901—05. *Contrib.* in *Psychol. Review*, since 1893, etc.

Disc.—"Baldwin's Illusion" (optical); founder "genetic logic."

BALFOUR, ANDREW, C.M.G., Direc. in Chief, Wellcome Bur. Sci. Research; *late* Direc., Wellcome Trop. Research Lab., Gordon Memorial Coll., Khartoum, Africa.

"Woodcote," Churt, Surrey, Eng.

B. 1873, Edinburgh. *Educ.* George Watson's Coll. Edin.; Univ. Edin.; Cambridge; Strassburg.; Lond. Sch. Trop. Med. M.D. (Edin.) 1898; B.Sc. (Edin.) 1900; D.P.H. (Cantab.) 1897; F.R.C.P. (Edin.) 1906. *Soc.*—Fell. Roy. Inst. Pub. Health; Trop. Med. and Hyg.; Incorp. M.O.H.; Roy. Med.; Corresp. Path. Paris and Amer. Trop. Med.

Books.—"Pub. Health and Prev. Med." (jtly.); "Reports—and Review Supplements—W.T.R.L." *Contrib.*—"Trypanosomiasis in Anglo-Egyptian Sudan" (*Edin. Med. J.*, 1905); "Herpetomonas parasites in Fleas" (*J. Hyg.*, 1906); "Protozoal Infections" (*Brit. Med. J.*, 1911).

Mosquito prevention work in Khartoum. *Disc.* Granule shedding in Spirochaetes, Mammalian haemogregarina, etc.

BALFOUR, Rt. Hon. ARTHUR JAMES, M.P., F.R.S.; P.P. British Assoc.; Gifford Lect. 4, Carlton Gardens, London, S.W., and Whittingehame, Prestonkirk, Scotl.

B. 1848, Scotl. *Educ.* Eton; Trin. Coll. Cambridge. M.A. (Cantab.); Hon. LL.D. (Edin.) 1881, (St. And.) 1885, (Cantab.) 1888, (Dubl.) and (Glas.) 1891, (Manc.) 1908, (Liv.) 1909, (Birm.) 1909, (Sheff., Bristol) 1912; Hon. D.C.L. (Oxon.), 1891. *Soc.*—S.P.R. (P.P.). *Late* Prime Minister, 1902—5; Lord Rector, St. And. Univ., 1886; Mem. of Senate, London Univ., 1887; Lord Rector, Glasgow Univ., 1890; Chanc., Edin. Univ., since 1891.

Publ.—"Reflections suggested by New Theory of Matter," 1904; and num. on Phil.

BALFOUR, Rt. Hon. GERALD WILLIAM, Psychol.

Fisher's Hill, Woking, Surrey, Eng.

B. 1853. *Educ.* Eton; Trin. Coll. Cambridge, M.A. (Cantab.). *Soc.*—S.P.R. (P.P.). *Late* M.P. and Cabinet Minister; Chief Sec. for Ireland; Pres. of Brit. Bd. of Trade; Pres. of Local Govt. Bd.

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Books and contrib., various.

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(Zürich) 1896; A.R.S.M. 1894; Off. Mejedie. *Soc.*—M. Inst. C.E., F.G.S.; Geol. Fr.; Mem. Egypt. Inst.

Books.—"Serpentine and Associated Rocks of Davos," 1896; "Kharga Oasis," 1900; "Gebel Garra and Oasis of Kurkur," 1902; "Baharia Oasis," 1903; "First or Aswan Cataract," 1907; "New Method of Coast Surveying," 1911; "Meteorite of el Nakhla el Baharia," 1912; "Geog. and Geol. of S.E. Egypt," (in press); "Phosphate District of Safaya" (in press). *Contrib.* numerous, in *J. of Geol. Chem.*, and *Roy. Meteorol. Soc.*, *Geol. Mag.*, *Min. J.*, *Cairo Sci. J.* and official rept.

Explored and mapped extensive tracts in Egypt and Sudan; underpinned temples of Philae, 1901—02.

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Books.—"Cat. of 8468 Stars," 1904; "Refract. Tables," 1906; "Textb. of Spher. Astron." 1912. *Contrib.* to *Mem. Acad. Brussels* and *Vienna, Astron. Nachr.*, *Bull. Astron.*, *Monthly Notices R.A.S.*

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Books.—"Theory of Screws"; "Treatise on Spherical Astron."; "Great Astronomers"; "Atlas of Astron."; and numerous others.

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Contrib.—"Metastatic Sarcoma of Optic Nerve and Retina" (*Trans. Ophthalm. Soc. U.K.*, 1906); "Ocular Symptoms in Cerebro-Spinal Meningitis" (*Brit. Med. J.*, 1907); "Diagn. Signif. of Pupil and its Reflexes" (*Ophthalmoscope*, 1909); "Pulsation of Retinal Arteries" (*ib.*, 1913).

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Book.—"Cotton Plant in Egypt," 1912. *Contrib.*—"Mech. of nuclear division" (*Ann. Bot.*, 1910); "Temp. and growth" (*ib.*, 1908); "Causes affecting Egyptian cotton crop" (*Bruss. Confer. Internat. Inst. Agric.*, 1909); "Seed breeding" (*Egypt. Confer. Internat. Fed. Cotton Spinners*, 1912).

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Book.—"Spectroscopy" *Contrib.*—Many papers in *Trans. Chem. Soc.*, *Astrophysical J.*, etc.

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Book.—"Moving Loads on Railway Under-bridges," 1907. *Arts.* on Motive Power in Agric., Gas and Oil Engines, Turbines, etc., in *Cyc. of Modern Agric.*

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Contrib. on muscular contraction, etc., to *Brit. J. Physiol.*, etc.

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Study of phase rule.

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Authority on archaeol. of Mexico, etc.

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Univ. and Vet. Coll. M.D. 1880. Soc.—Med., Copenhagen and Paris.

Book.—"Studies on mortal embolism of arteria pulmonalis," 1880. *Contrib.* to Danish *Vet. J.*, *Zeitsch. f. Tiermed.*

B. necrophorus; B. of abortion; Method for combating tuberculosis.

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Books.—"Insects of Cacao," 1903; "Principal Insects attacking Coconut Palm," 1906; "Manual of Philippine Silk Culture," 1911. *Art.*—"Fauna of Philippines" in "Offic. Handbk. of Philippines," 1903. *Contrib.*—"List of Philippine Culicidae" (*Phil. J. Sci.*, 1906); "Biol. of Philippine Culicidae"; "Rhynchota Palawanica" (*ib.*, 1909); "Med. Surv. of town of Taytay (Mosquitoes, etc.)" (*ib.*, 1909).

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Contrib.—"Scrum-therapy of plague in India" (*Sci. Memoirs Govt. India*); "Production of alkali in liquid media by bacillus pestis" (*ib.*); "Spread of plague in India," etc., in *J. of Hyg.*, etc.

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Contrib.—"Assay of auriferous tin-stone" (*Trans. I.M.M.*, 1905—06); "Relation between type of fracture and micro-structure of steel" (*J. Iron and Steel Inst.*, 1906); "Cupellation Exper." (jty.) (*Trans. I.M.M.*, 1908—09); "Theory of Blast Roasting of Galena" (*ib.*, 1911—12).

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Book.—"Fauna of Mayfield's Cave," Pub. 67, Carnegie Inst. Wash. *Contrib.*—"Life hist. of cave salamander, *Speleperes maculicandus*" (jtly.) (*Proc. U.S. Nat. Mus.*, 1906); "Observ. on behaviour of beach flea, *Orchestia agilis*" (*Sci. N.S.*, 1910); "Comparison of reactions of species of surface isopod with those of a subterranean species" (*J. Exper. Zool.*, 1910); "Effect of CO₂ and O on developm. of amphibian larvæ" (*Proc. Soc. Exper. Biol. and Med.*, 1912).

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Contrib. to *Ann. of Bot.*, *Mem. Agric. Dept. India*, etc.

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Books.—"Thesis on Elec. Dispersion," 1899; "Production and Use of Altern. Current," 1900, 2nd edn. 1912; "Elec. Traction," 2 vols.; "Munic. Course of Industr. Elec.," 3 vols.

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Contrib. to *J. Anat. and Physiol.*; *J. Physiol.*; *J. Cambridge Phil. Soc.*

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Contrib. to *J. of Physiol.*, etc., since 1900.

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Exper. morphology, etc.

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Books.—"Handbook of Anat."; "Atlas of Topograph. Anat." *Arts.* in "Eulenburg's Encyc." *Contrib.*—"Praepollex and praehallux" (*Proc. Zool. Soc. Lond.*, 1889); "Bones and Muscles of Mammalian Hand and Foot" (*ib.*, 1894); and 200 others.

Praepollex, praehallux, mentale.

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Contrib.—Numerous to Archives of Ophth. and Otol.; Report on Blind Asylum, Cal.

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Book.—"Manual of Surgical Operations."

Arts.—"Hernia," Burghard's "Operative Surgery"; "Kidneys," Heath's "Dic. of Surgery"; "Tongue," "Holmes' System of Surgery."

Contrib.—"Reports on Spinal Analgesia" (*Brit. Med. J.*, 1907, 1908, and 1912); "Acute Intestinal Obstruction" (*Lancet*, 1904); "Treatment of Gangrenous Hornia by Enterectomy" (*ib.*, Feb., 1903); "Darminvagination."

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Books.—"Lab. Man. of Gen. Zool."; "Lab. Man. of Med. Zool." *Contrib.*—"Variation in Opisthorchis" (*Amer. Micros. Soc.*, 1907); "Trematode Genus Opisthorchis" (*Arch. de Parasit.*, 1911); "Sexual Amphitypic in Tre-

matodes," Univ. Studies, 1911; and various on Animal Parasites.

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Book.—"Anat. Nomencl."

Researches on nervous system, etc.

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Publ. on wireless teleg.

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Contrib. on Röntgen radiation, secondary radiation, etc., in *Phil. Trans. and Proc. Roy. Soc.*, *Phil. Mag.*, *Jahrb. d. Radioakt. u. Elektron.*, etc.

Disc.—Polarisation in Röntgen radiation; homogenous Röntgen radiations (with Sadler); fluorescent line spectra in Röntgen-rays, and many laws of transmission of Röntgen radiation through matter.

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Books.—"Ingleby Lectures on Appendicitis and Perforated Gastric Ulcer." *Contrib.*—"Address in Surgery" (*Brit. Med. J.*, 1910); "A Series of Nephrectomies" (*Brit. Med. J.*, 1907); "A year's experience of Gastric Ulcer" (*Birm. Med. Review*, 1907); "Note on Sarcoma of Bone" (*Surgery, Gynaecol. and Obstetrics*, 1910).

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Books.—"Nickel and Copper Deposits of

Sudbury, Ont.;" "Geol. and Nat. Resources of Nipissing and Timiskaming Areas," and of Chibougamau Region, Quebec, Canada; "Geol. of Haliburton and Bancroft Areas, Ont.;" (with F.D. Adams).

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Contrib.—"Infantile Scoury" (Bradshawe Lecture), 1895; "Cases described as Acute Rickets" (*Trans. Med. Chir. Soc.*, 1883); "Fatal Myelitis in Exanthem stage of Measles" (*Trans. Med. Chir. Soc.*, 1887); "On Tubercular Meningitis," "Raynaud's Disease," "Erythromelalgia," "Posterior Basic Meningitis" (with D. B. Lees), in Allbutt's *System of Medicine*; "Subcutaneous Nodules in Rheumatism of Childhood."

Anat. determ. of nature of bone and other lesions of infantile scurvy.

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Contrib.—"Chem. Valency and Crystal Struc.," jty. with Pope (*Trans. Chem. Soc.*); and numerous others.

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Contrib.—"Ann. Reports, N.H. St. Bd. of Health, and Ind. St. Bd. of Health," 1900—11; "San. Condition of Lake Michigan," 1908; "Sanitary Surv. of Calumet River" (*Ind. St. Bd. of Health Rep.*, 1910).

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Book.—"Elements of Heat-Power Engrng." (jointly).

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Contrib. on Gamma Functions, Integral Functions, Linear Difference Equations, in *Trans. Roy. Soc., Camb. Phil. Soc., Lond. Math. Soc.*, etc.

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B. 1878, Halifax, Can. M.A. (Dalhousie) 1900; Ph. D. (Hopkins) 1904.

Contrib.—"Depress. of freez. pt. in solns. containing HCl and H₂SO₄" (*Trans. Roy. Soc. Can.*, 1900); "Anal. of bright spectrum lines" (*Phil. Mag.*, 1904); "New lines in spectrum of calcium" (*Astrophys. J.*, 1909); "Spectra of Al, Cu and Mg in arc under reduced pressure" (*ib.*, 1911).

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Book.—"Elements of Electromag. Theory," 1903. *Contrib.*—Numerous, on Exper. and Theor. Elec. and Mag., in *Phys. Rev.* etc., since 1897.

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M.Inst.M.E. (Mem. Counc.); Scottish Aero. (P.P.); Engrns. and Shipbldrs. Scotl. (P.P.); Brit. Assoc. (P.P. Sect. G); Glasgow Phil. (P.P.). *Late Prof.* Civ. and Mech. Engin., Yorkshire Coll., Leeds.

Contrib.—"Range Finders and Telometers" (*Proc. Inst. M.E.*, 1896); "Comparison of Similar Structures" (*Proc. Inst. Eng. and Shipb. in Scot.*, 1899); "Centenary Pres. Address" (*Proc. Roy. Phil. Soc., Glas.*, 1902); "Pres. Address" (*Proc. Inst. of Engrns. and Shipb. in Scot.*, 1910), etc.

Joint inv. of Barr and Stroud Range Finders, Fire Control Instruments, etc.

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Books.—"Causes and Mechanism of Cardiac Impulse," 1884; "Post-Scarlatinal Nephritis," 1887; "Alcoholic Asthenia," 1888; "Treatment of Typhoid Fever," 1892; "Meningitis," 1899; "Preventive Med.; the Med. of the Future"; etc. *Contrib.*—"Effects of overwork on heart and aorta" (*Edin. Med. J.*, 1876); "Path. and treatment of Tubal Nephritis" (*Liverp. Med.-Chir. J.*, 1883); "Lunacy Act" (*ib.*, 1890); "Treatment of Meningitis" (*ib.*, 1891).

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Book.—"Mental Defectives."

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Contrib.—"Action of Radium Bromide upon skin of Ear of Rabbit" (*Q. J. Exper. Physiol.*, 1910); "Complement Deviation in Mouse Carcinoma" (*Proc. Roy. Soc.*, 1911, B); "Modelling of Mitotic Forms" (*J. Path. and Bacteriol.*, 1911); "Constants of 1st and 2nd Dissoen. of Quinine" (*Zeitschr. f. Elektrochem.*, 1910).

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Books.—"Elec. and Magnetism"; "Elem. Geom."

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Book.—"Geol. of Marysville Min. District, Montana," U.S. Geol. Surv., 1907. *Contrib.*—"Phys. effects of contact metamorphism" (*Amer. J. Sci.*, 1902); "Relative geol. import. of continental, littoral and marine sedimentation" (*J. Geol.*, 1906); "Origin and signif. of Mouch Chunk Shale" (*Geol. Soc. Amer. Bull.* 1907); "Relat. between climate and terrestrial deposits" (*J. Geol.*, 1908).

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Contrib.—"Disseminated Syphilitic Encephalitis" (*Amer. J. Med. Sci.*, 1905); "Ment. Dis. assoc. with Cerebral Arterio-Sclerosis" (*Amer. J. Insanity*, 1905); "Case of Pure Word Deafness with Autopsy" (*J. Nerv. and Ment. Dis.*, 1910); "Degenerations of Intracellular Neurofibrils with Miliary Gliosis in Psychoses of Senile Period" (*Amer. J. Insanity*, 1910).

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Books.—"Ethno-Geog. of Pomo and Neighboring Indians"; "Geog. and Dialects of Miwok Indians"; "Pomo Indian Basketry"; "Material Culture of Klamath Lake and Modoc Indians of N.E. Calif. and S. Oregon." (All in *Univ. Calif. Publ., Amer. Arch. Ethnol.*) *Contrib.*—"Composite Myth of the Pomo Indians" (*J. Amer. Folk-lore*, 1906); "Basket Designs of Pomo Indians" (*Amer. Anthrop.*, 1905).

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Books.—"Life and Letters of C. C. Massey"; "Textb. on Pract. Phys." (jtly.); "On the Threshold of a New World of Thought"; "Psych. Research"; Ed. of various handb. on Phys. *Contrib.* on Phys. to *Phil. Mag.*, *Trans. and Proc. Roy. Dub. Soc.*, *Proc. Soc. Psych. Research*, etc.

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Rue Pascal, No. 41, Lille, France. Hon. LL.D. (St. And.) 1912.

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Books.—"Terpenes and camphors," 1908; *Chaps. in Handb. d. biochem. Arbeitsmethoden*, 1910, and *Biochem. Handlex.*, 1910.

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Books.—Survey Atlases of England and Scotland; "Atlas of Meteorol."; "Atlas of Zoogeog."; "Gazetteer of Brit. Isles"; "Atlas of World's Commerce"; and numerous other maps and atlases.

Introd. contour colouring on topog. maps.

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Contrib.—"Abnormal Gynæceum in *Stachys Silvatica*, Linn." (*New Phytol.*, 1909); "Two dis. of gooseberry bushes" (*Ann. Mycol.*, 1910).

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Book.—"Gen. Princ. of Method of Least Squares."

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Books.—"Med. and Pharm. Chem." 7th edn.; "Physiol. and Clin. Chem." 3rd edn.

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Contrib.—"High Speed Pumps" (*Queensl. Inst. Engrs.*, 1903); "Weather and its causes" *Roy. Geog. Soc. Austr.*, 1911).

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Books.—"Textb. of Sound," 1908; "Anal. Mech.," 1911; etc. *Contrib. to Proc. Roy. Soc.*, *Phil. Mag.*, etc.

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Contrib. to J. Amer. Chem. Soc., on analysis, apparatus, glycerine, etc.

Improvements in manfr. of dynamite; new glasses, including "Nonsol."

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Books.—"Bulls. of State Water Survey." *Contrib. on Organic Chem.*, petroleum, water, etc.

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Books.—"Uses of Water in Mod. Med." and in Ger.; "Princ. and Pract. of Hydrotherapy." *Contrib.*—"Rept. on vaccination" (*State Bd. of Health, S. Carolina*, 1882); "Plea for pub. baths and a new method for their utilisation" (*Ib.*, 1890); "Amer. contrib. to hist. of med" (*Carlsbad Cong.*, 1902); "Management of Sunstroke: lesson in hydrotherapy" (*Internat. Clin.*, 1911).

Introd. pub. baths and established hydrotherapy in U. S. A.

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Surv.; U. S. Weather Bur.; Smithsonian Inst.; Hon. Mem. Internat. Cong. of Radiol.

Books.—"Memoirs on Phys. Geol.," U. S. Geol. Surv.; "Memoirs on Atmos. Conditions," Smithsonian. Inst. and Carnegie Inst. of Washington; "Memoirs on Phys. Optics," Carnegie Inst. *Contrib. to Phil. Mag. Lond.*; *Amer. J. Sci.*, etc.

Phys. properties of iron carbide; high temp. and press. measurement; colloids; ionisation and nuclei; interferometry.

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Books.—*U. S. Geol. Surv. Bull.* 136, 1896; *U. S. Water-Supply Bull.* 106, 1904.

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Book.—"Repts. of Imper. Cancer Research." *Contrib.*—"Toxic and antitoxic action" (*J. Path. and Bact.*, 1902); "Problems of Cancer" (*Brit. Med. J.*, 1903); "Qual. and Quant. relations of Toxine and Antitoxine" (*Lancet*, 1903); etc.

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Books.—"Radium and Radio-active Substances"; "Gen. Inorg. Chem."; "Qual. Analysis"; "Progressive Problems in Chem."; "Municipal Chem."; "Lab. Exercises." *Contrib.* over 125 to *J. Amer. Chem. Soc.*; *Amer. J. Sci.*; *Engrng. and Min. J.*, etc.

Complexity of thorium and praseodymium; new rare-earth salts; lanthanates, neodymates, praseodymates, and lanthanals; Chem. of anaesthetics; oil shales of Amer.; chlorides of carbon.

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Book.—Ed. "Luxfer Prism Handb.," 1897. *Contrib.*—"Arc spectrum of hydrogen" (*Astrophys. J.*, 1901); "Circ. diagram of stress with applic. to theory of intern. friction" (*J. Western Soc. Engrs.*, 1912); "Columns" (*ib.*, 1913).

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Contrib.—"Fossil fishes of Lesina (Dalmazia)"; *Denkschr. Akad. Wiss.*, Vienna, 1882; "Fossil molluscs of Triassic Dolomites of Severino," Naples Acad. Sci., 1892; "Ichthyofauna of principal Dolomites of Giffoni," Pisa, 1895.

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Books.—"Hydrodynamics"; "Physical Optics"; "Cubic and Quartic Curves"; "Geometry of Surfaces."

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Contrib.—"Tetrabasic or Orthocarbonate of Ethyl" (*J. Chem. Soc.*, 1864); "Julin's Chloride of Carbon" (*ib.*, 1867); "Eulyte and Dyslyte" (*ib.*, 1872 and 1891); "Interaction of Iodine, Water, and Potassium Chlorate" (*ib.*, 1890).

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Contrib.—Various on Chem., Geol., and Hydrog.

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Books.—"Cement Resources of Virginia" (*Bull. Qa. Va. Geol. Surv.*); "Synopsis of American Fossil Bryozoa" (july.) (*Bull.* 173, U.S. Geol. Surv.); "Early Paleozoic Bryozoa of the Baltic Provinces" (*Bull.* 77, U.S. Nat. Mus.). *Contrib.* on stratigraphy and paleont.

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Books.—"Modes of Origin of Lowest Organisms"; "Beginnings of Life"; "Brain as an Organ of Mind"; "Evolution and Origin of Life"; "Paralysis, Cerebral, Bulbar and Spinal"; "Various Forms of Hysterical or Functional Paralysis"; "Treatise on Aphasia and other Speech Defects"; "Studies in Heterogenesis"; "Nature and Origin of Living Matter"; "Evolution of Life"; "Origin of Life." *Contrib.*—"Monograph on Anguillulidae" (*Trans. Linn. Soc.*, 1864); "Memoir on Anat. and Physiol. of Nematoids, Parasitic and Free" (*Phil. Trans.*, 1866); "Muscular Sense: its Nature and Cortical Localisation" (*Brain*, 1887); "Symptomatology of Total Transverse Lesions of Spinal Cord" (*Trans. Med. Chir. Soc.*, 1890).

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Books.—"Rockland, Me."; "Peat deposits of Me."; "Pegmatite deposits of Me."; "Feldspar deposits of U.S." *Contrib.*—"Chem. composition as criterion in identifying metamorphosed sediments" (*J. Geol.*, 1909); "Origin of certain Adirondack Graphite deposits" (*Econ. Geol.*, 1910).

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Books.—"Theory of Electrol," 1897; "Quant. Anal.," 1908; etc.

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Books.—"Materials for Study of Variation," 1894; "Mendel's Principles of Heredity," 1902 and 1909.

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Books.—"Genera and Species of Blastozoa," 1899; "The Echinoderma" (Part III. of A Treatise on Zool.), 1900; "Echinodermata" in *Encyc. Brit.*, 1902 and 1911; Index to Desor's "Synopsis of Fossil Echin.," 1910. *Contrib.*—"British Fossil Crinoids" (*Annals and Mag. Nat. Hist. Lond.*, 1890—92); "Crinoidea of Gotland" (*Kgl. Svenska Vet.-Akad. Handl.*, 1893); "Triassic Echinoderms of Bakony" (*Result. wiss. Erforsch. Balatoncses, Budapest, 1909*); "Caradocian Cystidea from Girvan" (*Trans. R.S.E.*, 1913).

Echinoderm nature and classification.

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Books.—"Nat. Hist. Biog. Essays," 1911; "Austrian Alchemists," 1893; and on Gasillum in Austria.

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Books.—"U.S. Magnetic Tables and Charts for 1905"; "Principal Facts of Earth's Magnetism." *Contrib.*—"Reports of U.S. Coast

and Geodetic Survey" (1899—1907). Ed. J. Terrest. Mag. and Atmosph. Elec.

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Books.—"Lymph. Syst. of Ox," 1912; and others on Anat. with Ellenberger. *Contrib.* 70.

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Books.—"Architect. terms for Engineers," 1866; "Regulations in Building, etc.," 1876; "Building Construction," 1880; "City streeting and cleaning," 1890. *Contrib. to Handb. d. Ing.-wesens*, 1904, and numerous J.

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Books.—"Handb. of Path. Mycol." 1890, 2nd edn. 1911; "Yearbook of Path. Organisms," since 1885; "Reports on Path. Anat. and Bact., Tübingen," since 1890, 7 vols.; "Org. of Thrombus," 1877; "Tubercle and Tuberculosis," 1885. *Contrib.* numerous to *Virchow's Archiv*, 1876—89, and *Berlin Klin. Wochenschr.*, *Deut. Med. Wochenschr.*

Disc. specific tuberc. B independently of, and simultaneously with, Koch.

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Books.—"Relation between Atomic Weight and Nature of Chemical Elements," 1870; "Realm of Crystals," 1889; "Etching in Crystallography," 1894; "Mineralogy," 3rd edn., 1906; "New Developments in Crystallog." 1905; "Handb. of Inorg. and Org. Chem.," 4th edn., 1911.

Etching to exhibit symmetry; twin crystals; optical properties of crystals; Minerals of the Binnenthal.

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Books.—"Chem. Cosmography" (in Ital.), 1908; "Ex. in Phys. Chem.," 1910. *Arts.*—"Spectrosc." and "Colorim." in Bredig's *Angew. Phys. Chem.*, 1907. *Contrib.*—"CO₂ assimilation models" (*Zsch. Phys. Chem.*, 1908); "Hydrothermal silicates" (*Zsch. anorg. Chem.*, 1911); etc.

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Book.—"Manipulation of Microscope."

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Books.—"Elem. Crystallog.;" "Iron Mines and Mining in N.J." *Contrib.* on pre-Cambrian geol. of Highlands of N.J., eruptive and sedim. rocks in Pigeon Pt., Minn., etc.

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Books.—"Nature of Enzyme Action," 1908, 3rd edn. 1913; "Regulation of Blood-supply,"

1906 (in Ger.). *Contrib.*—Numerous to *J. Physiol.* and *Proc. Roy. Soc.*

Nature of vaso-dilator nerves, and of vaso-motor reflexes; Action of enzymes; Osmotic pressure of colloids.

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Books.—"Lessons on Thermodynamics," 1878; "Book of Heat," 1878. *Contrib.*—"Saturation Specific Heats" (*Trans. Phys. Soc.* and *Phil. Mag.*, 1910).

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Books.—"Grasses of N. Amer.;" "Seed Dispersal"; "The New Bot."

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F.R.C.S. (Eng.) 1890; L.R.C.P. (Lond.) 1889; L.S.A. 1888; Fell. King's Coll., Lond. *Soc.*—Lond. Med.; Roy. Micros.; Roy. Med. (Surg. Section); Harveian, Lond.; Med. Phonog. *Late House Surg.*, Surg., Teacher of Pract. Surg., and Dean, King's Coll. Hosp.; Examr. in Surg., Glasgow Univ.; Examr. in Biol., Roy. Coll. Surg., Eng., and Conj. Bd., and in Surg. and Physiol., Soc. of Apothecaries.

Books.—"Physiol.," 1903; "Pract. Lessons in Elementary Biol. for Junr. Students," 1894. *Contrib.*—"Distribution of nerves in synovial membranes" (*Proc. Physiol. Soc.*); "Prospects of London Hosps. in present century" (*Lancet*, 1902); "A new film dressing for wounds" (*Ib.*, 1903); "Lysoform in surg. pract." (*Med. Press Circ.*, 1903).

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Contrib.—"Ether and its Relation to the Aurora" (*Amer. J. Met.*, 1892); "Psychic Influence of Weather" (*Ib.*, 1893); "Rainfall and Irrigation" (*Year Book*, 1902); "Story of Western Avalanches" (*Monthly Weather Review*, 1910).

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Contrib.—Jt. author of: "Progressive Exercises in Pract. Chem."; "Anal. of Water for Sanitary and Tech. Purposes"; "Anal. of Milk and Milk Products"; "Select Methods in Food Analysis" (*Chem. Sect.* of 2nd, 3rd, and 4th *Rep. of Wellcome Research Lab., Khartoum*).

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Report of Magnetic Surv. of S. Africa, and various articles in *Phil. Mag., Trans. R.S.E.*, etc.

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Books.—"Les Matières grasses," 1891; "Genera of plants collected by Montrouzier in New Caledonia," 1901; "Method of obsvcr. founded on concrete arith. and geom.," 3rd edn., 1904; "Guide to students of Lyons Bot. Gard.," 1889, 5th edn. 1909. *Contrib.*—"Pharaonic woods" (*Rec. d. trav. archéol. égypt.*, 1896—97); and numerous on geog., bot., and educ., especially of backward children.

Disc. Inuline in Iodidium; *tubes criblés* in wood of Belladonna; Taxus wood in Egypt. coffins.

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Books.—"Henry the Navigator," 1895; "Azurara's Disc. of Guinea," 2 vols, 1896, 1899; "John and Sebastian Cabot," 1898;

"Dawn of Mod. Geog.," 3 vols, 1897, 1901, 1906; "Voyages and Travels, 16th—17th Centuries," 2 vols., 1902; "Voyages of Elizabethan Seamen," 1907; etc. *Contrib.* to *Geog. J., Amer. Hist. Rev., Atlantic Monthly*, etc.

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Books.—"Wandering in Great Forests of Borneo" (in Eng., 1904); "Asiatic Palms" (in Eng., 1908); "Amer. Corypheae Palms," 1907. *Contrib.*—"Illustrn. of Berneris," (*Nuov. J. Bot. Ital.*, 1869—71); "Amblyornis inornata" (*Annal. Mus. di Genoa*, 1877); "Reliquiae Schefferianae" (*Annal. Jard. Bot. Buitenzorg*, 1885); "New Palms of Africa, Indo-China and Papua" (*Webbia di U. Martelli*, 1905—10).

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Books.—"Urban Salubrity and Water Distribn.," 1888—99, 2 vols.; "Water Service of Paris," 1906; "Field and City Hydraulics," 1905; "Aqueduct and Park of Achères" (with Launay), 1897; "Sources of Loing and Lunain" (with Babinet), 1905. *Contrib.*—"Study on public domain of sea" (*Ann. des Ponts et Chauss.*, 1883); "Sources of water for Paris" (*ib.*, 1885); "New mode of drain constructu." (*ib.*, 1897); "Statistics of water and purification in French towns" (*Rev. d'Hyg.*), 1892.

Luminous fountains.

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Books.—Transl. Bôcher's "Intro. to Higher Alg.," 1910; "Intro. to Mod. Geom." (in press).

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Infect. Dis.; Mem. of Bd. of Health; Mem. of Sleeping Sickness Exped., 1906—07.

Publ. on Influenza, Diphtheria, Tetanus, Malaria, Sleeping Sickness, Tuberc., Swine Fever, etc.

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Publ.—Various on Geol. and Miner.

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Contrib.—"Design of Engine Parts" (Power), 1910; "Concrete Construction" (*N.D. Soc. of Engrs.*, 1911).

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Books.—"New Lab. of App. Chem. at Leipzig," 1899, 1908; "Reports," 4 vols., 1907—10.

Contrib.—On aluminate of barium; isomerism of oximes; menthol, camphor; estim. of fusel oil; flame colors, and spectroscopy; freezing and boiling apparatus; thermometer

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Educ. Cambridge Univ., Guy's Hosp. M.A. 1896; M.D. (Cantab.) 1899; F.R.C.P. (Lond.) 1903. *Soc.*—Fell. Roy. Med.; Physiol. *Late Demonstr.* of Physiol. and Morb. Anat., and Cur. of Mus., Guy's Hosp.

Books.—"Pract. Physiol." (jty.), 2nd ed., 1905; "Recent Advances in Physiol. and Bio-Chem." (jty.), 1906. *Arts.*—"Acute Lobal Pneumonia and Broncho Pneumonia," "Lobar Pneumonia," in "Allbutt and Rolleston's Syst. Med." *Contrib.*—"Quantity and pressure of Carbon Dioxide in venous blood and in alveolar air in cases of diabetes and diabetic Coma" (*Proc. Physiol. Soc.*, 1904); "Secretion by the renal tubules" (*Ib.*, 1906); "Secretin in diabetes" (*Bio-Chem. J.*, 1906); "Relation of kidneys to metabolism" (*Proc. Roy. Soc.*, 1907).

BEDDARD, FRANK EVERS, F.R.S.; Professor to Zool. Soc., London.

Zool. Society, Regent's Park, London. B. 1858, Dudley. *Educ.* Harrow; New Coll., Oxford, M.A., D.Sc. (Oxon.). *Soc.*—F.R.S.E.; Phys. Edin.; F.Z.S.; Corresp. Mem. Roy. Bohem.; Hon. Mem. N.Z. Inst., Christiania Acad. *Late Lect.* on Biol., Guy's Hosp., Lond.; Examr. in Univs. of London, Oxford and N.Z.

Books.—"Monograph of Oligochaeta"; "Animal Coloration"; "Structure and Classification of Birds"; "Textbook of Zoogeography"; *Arts.* in 9th, 10th and 11th eds., *Encyc. Brit.*

Disc.—Many new anatomical facts concerning Oligochaeta, Cestoidea, Reptiles, Birds, Mammals, etc.; Description of over 200 new species of Crustacea, Cestoidea, and Oligochaeta.

BEDELL, FREDERICK, Prof. of Applied Elec., Cornell Univ., Ithaca, N.Y.

B. 1868, Brooklyn. *Educ.* Univs. Yale, Cornell. A.B. (Yale) 1890; Ph.D. (Cornell), 1892. *Soc.*—Amer. Inst. E.E.; Amer. Phys. *Late Gen. Sec.* Amer. Assoc. Adv. Sci., 1899; Jury of Awards, Louisiana Purchase Expos., 1904.

Books.—"Treatise on Alternat. Currents," 1892; "Principles of Transformer," 1896; "Lab. Man. of Phys. and Applied Elec.," 1894; "Direct and Alternat. Current Testing," 1909; Definitions on Elec. in *Webster's Dic. Contrib.*—Many, on alternating current research in elec. journals and trans. *Ed. Physical Review.*

Inv.—Polycyclic systems of power transmission.

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Book.—"Hist. of a Great Agric. Estate."

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Books.—Rept. to Govt. of India on "Quality, Manufac. and Excise Control of Alcoholic Liquors in India," 1906; "Denat. of Alcohol in India," 1907; "Standards of Qual. for Beer in India, etc.," "Symptoms and Treatm. of Poisoning," 2nd edn. 1913; "Hist., Causation and Prev. of Enteric Fever of India," 1892; "Prac. Chem. Inorg. and Org.," 2nd edn., 1902; "Elem. Hyg. for India," 3rd edn., 1913; "Clin. Handb. Urine Anal.," 2nd edn., 1904 (transl. into Fr., Ger. and Ital.); Corrected, "Sikes's Tables"; "Reduction Tables for Spirits"; "Tech. Excise Man. for India." *Contrib.*—"Path. and Treatm. of Furunculosis" (*Trans. Edin. Med.-Chir. Soc.*, Vol. 10); "Toxicol. Experiences in Bengal and Punjab" (*Indian Med. Gaz.*, 1902); "New method for estim. of higher alcohols (Ester-Iodine Method)" (*J. Soc. Chem. Ind.*, 1907).

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Books.—Co-transl. of Lothar Meyer's "Modern Theories of Chem." and "Outlines of Theoretical Chem.," "Lead" in Thorpe's "Dic. of App. Chem." *Contrib.*—"Derivatives of Phenylacetic acid" (*J. Chem. Soc.*, 1880); "Gases enclosed in Coal Dust" (*Trans. Inst. Min. Engrs.*); "Expts. Illustr. of Inflammability of Coal Dust and Air" (*Ib.*, 1906-07, 1910); "Proximate Constituents of Coal" (*J. Soc. Chem. Ind.*).

BEEBE, M. C., Prof. of Elec. Engrng., Univ. Wisconsin, Madison, Wis., U.S.A.

B. 1876, Racine, Wis. B.S. (Wis.) 1897. Soc.—F.A.I.E.E.; Assoc. M.A.Mech.E.; S.P.E.E. *Late* Chem., Nernst Lamp Co., Pittsburgh, 1900-4; Assoc. Prof., Wis., 1905-7.

BEECHER, C. H., Prof. of Med., Univ. Vermont and State Agric. Coll., Burlington, Vt., U.S.A.

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Books.—"Modern Theories of Org. Chem.," 3rd edn.; Ed. Wurtz's "Dict. of Pure and App. Chem.," "Nitrogen Derivs. and their Indust. Applic.," 1889.

Research on acetylene carbide, malonic derivs. croosote from wood, chloral, camphor, acid anhydrides, phenolic ethers, etc.

BEHR, ARNO, Chemist; Perkin Research Medal, 1909.

Arlington Court, Pasadena, Cal., U.S.A.

B. 1846, Ger. *Educ.* Tübingen, Berlin, Heidelberg. Ph.D. (Heid.). Soc.—Chem. Ind.; Amer. Chem.; Ger. Chem. *Late* Emigrant, 1878; Chem., Matthiessen and Wiechers' Sugar Refin. Co., Jersey City, Supt., Chicago Sugar Refin. Co., 1881-83, 1883-91; Injured in starch explosion, 1890.

Bye-products of corn; Refining grape sugar, 1881; Confectioners' glucose, 1889.

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B. 1850, Edinburgh. *Educ.* Privately, and Edinburgh Univ. LL.D. Soc.—F. (and P.P.) I.C.; F.C.S.; Assoc. Inst. C.E.; Chem. Ind. (P.P.); P.P. Sect. B., Brit. Assoc.

Contrib.—Numerous, in *Proc. Roy. Soc.*, *Proc. Chem. Soc.*, *J. Soc. Chem. Ind.*, and *Brit. Assoc.*

Shale Oil Industry; synthetic produco. of alkali cyanides (founder of this indust. in G.B.); true nature of flow in solids; polishing, and hard and soft states in pure metals.

BEILLE, Prof. of Mat. Med., Univ. Bordeaux, France.

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BEKTEREV, VLADIMIR MICHALOVIC, Emer. Ord. Prof. of Psychiat. and Nerv. Dis., Roy. Milit.-Med. Acad., St. Petersburg, Russia.

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B. 1876, Kiev, Russ. *Educ.* 2nd Gymn. and Univ., Kiev. Soc.—Math., Kiev and Kazan. *Late* Extraord. Prof., Univ., and Instr., Polytech. Inst., Kiev.

Contrib.—Numerous.

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B. 1868. *Educ.* Felstead, Uppingham. *Soc.*—M. Inst. C.E.; Concrete Inst. *Late* Colonial Civ. Engrn., Brit. Guiana, 1901—07. *Art.*—"Brit. Guiana" in "Encyc. Brit.," 11th edn.

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Books.—"The Elec. Rail." (with O. T. Crosby); "Power Transmission for Elec. Rails."; "Elec. Power Transmission." *Arts.* on "Illum." in "Standard Handb. for Elec. Engrng.," "Power Houses" in *Encyc. Amer.*; "Elec. power transmission" in 10th *Encyc. Brit.*; "Art of illumination." *Contrib.*—"Absolute wave length of light" (*Phil. Mag.*, 1888); "Practical properties of polyphase apparatus" (*Trans. A.I.E.E.*, 1894); "Physiol. basis of illumination" (*Proc. Amer. Acad. A.S.*, 1907); "Star colours, a study in physiol. optics" (*Astrophys. J.*, 1910).

BELL, ROBERT, I.S.O., F.R.S.; late Chief Geol. of Geol. Surv. of Canada, Ottawa, Canada. D.Sc., M.D., LL.D., F.G.S., F.R.S. Can.

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B. Genoa. *Soc.*—Anthrop. Ethnog. and Psych., Italy; Corresp. Ital. Acad. Med.-Phys.; Ital. Neurol. (Pres.).

BELOWSOV, NICOLAS THEODORE, Prof. of Comp. Histol. and Physiol., and Direc. of Lab., Karkov Univ., Russia.

B. 1863, Kupievaha, Karkov Dept. *Educ.* Ahtirka Negin Coll., Karkov Univ. M.Sc. (Kark.) 1897; D.Sc. (Kiev) 1909. *Soc.*—Karkov Nat. (V.-P.).

Contrib.—"Physiol. studies on Actinias" (*Trans. Karkov Soc. Nat.*); "Pigments of Aphids" (*Ib.*); "Respiratory movements of fishes" (*Ib.*); "Struct. of alimentary tube of Myriapoda" (*Ib.*). (Since 1889.)

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Books.—"Plane and Solid Geom.," 1895 (jty.); "Higher Arith.," 1897; *Transl.* Klein's "Famous Probs. of Elem. Geom.," 1897; "New Plane and Solid Geom.," 1899; "Elem. of Algebra," 1900; "Brief Hist. of Math.," *transl.* from Fink, 1900; Revised Sundara Row's "Geom. Exercises in Paper Folding," 1901; "Acad. Algebra," 1902; *Transl.* Dedekind's "Continuity and Irrational Numbers: Nature and Meaning of Numbers," 1901.

BEMENT, ALBURTO, Engineer.

206, So. La Salle St.; 116, So. Homan Av., Chicago, Ill., U.S.A.

B. 1862, Appleton, Wis., U.S.A. Chanute Medal (thrice), Western Soc. Engrs., U.S.A. *Soc.*—Amer. Assoc.; N. of Eng. Inst. Min. and Mech. Engrs.; Amer. Insts. of Chem., Elec., Min. and Mech. Engrs.; Western Engrs. (V.-P.).

Contrib. over 100, including, "Illinois Coal Field" (*Bull.* 16, Ill. State Geol. Surv.); "Chicago Harbour Problem" (*J. West. Soc. Engrs.*, Vol. 15); "Efficiency of Steam Generating App." (*Trans. Amer. Soc. Mech. Engrs.*, Vol. 26); "Sampling of coal and classific. of anal. data" (*J. Amer. Chem. Soc.*, Vol. 28).

BEMMELEN, W. van, Direc., Roy. Magnet. and Met. Observ., Batavia, Java.

B. 1868. *Educ.* Leyden. Ph.D. (Leyd.) 1893. *Soc.*—Corresp. Acad. Sci. Amsterdam; Ned.-Indies Nat. Sci. (Pres.); Hon. Mem. Swiss Nat. Sci. *Late* Assist., Roy. Dutch Met. Inst., 1892—98.

Contrib. on terrest. magnetism and meteorol. Magnet. survey of Malay Archip.

BENDIXSON, IVAR OTTO, Fell. Swedish Acad. Sci.; Prof. of Maths., Stockholm Univ. Drottningg. 87, Stockholm, Sweden.

BENDZ, H., Prof. of Path. Anat. and Med., Lund Univ., Sweden.

BENECKE, ERNST WILHELM, Ord. Prof. of Geol. and Palaeont., Univ. Strassburg, Ger.

B. 1838, Berlin. *Educ.* Halle, Würzburg, Berlin, Heidelberg.

BENEDICKS, CARL (AXEL FREDRIK), Prof. of Phys., Stockholm Högskola (Univ.).

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B. 1875, Stockholm. *Educ.* Stockholm. Ph.D. (Upsala) 1904. Edlund Reward, 1904; Carnegie Gold Med. for Met. Research, 1908. *Late* Lect. in Phys. Chem., Upsala.

Books.—"Researches on Carbon Steel," 1904; "Equilibrium, etc., of system Fe-C," 1907. *Contrib.*—"Atomic Vols. of rare Earths and import. on Periodic System" (*Zeitschr. f. anorg. Chem.*, 1904); "Acetic copper (allotrop.)" (*Metallurgie*, 1906); "Cooling Power of Liquids" (*J. Iron and Steel Inst.*, 1908); "Metallography and Colloidal Chem." (*Kolloidzeitschr.*, 1911).

First artificial production of meteoric iron, 1910.

BENEDICT, HARRIS MILLER, Prof. of Bot. and Head, Dept. of Biol., Univ. Cincinnati, O., U.S.A.

B. 1873, Buda, Ill. A.B. (Doane Coll.) 1894; B.S. 1896, A.M. 1897 (Neb.). *Soc.*—

Amer. Assoc.; Centr. Bot.; Cincinnati Nat. Hist.; Ohio Acad. Sci. *Late* Head, Biol. Dept., Lincoln High Sch., 1897, Omaha High Sch., 1899; Instr. in Biol., 1902, Assist. Prof. 1905; Assoc. Prof. 1909—11, Cincinnati.

Book.—"Animal Adaptations," 1905. *Contrib.*—"Municipal Bird Reserves" (*Bird Lore*, 1910); "Effects of age on venation of leaves" (*Sci., N.S.*, 1909); "Senility in meristematic tissue" (*Ib.*, 1912); "Relation of plasma-grown tissue to senility" (*Ib.*, 1912).

BENEDICT, HARRY YANDELL, Prof. of App. Math., Dean, Coll. of Arts, Univ. Texas, Austin, Tex., U.S.A.

B. 1869, Louisville, Ky. *Educ.* Univ. Texas, Harvard. B.S. 1892, M.A. 1893 (Tex.); Ph.D. (Harv.) 1898. *Soc.*—F.A.A.; S.P.E.E.; Amer. Math.; Tex. Acad. Sci. *Late* Assist., Leander McCormick Observ., Univ. Virginia 1893—95; In charge, *ad. int.*, Maths. and Astron., Vanderbilt Univ. 1899; Fell., Instr., Adj. Prof., Assoc. Prof. of App. Math., Univ. Texas.

Contrib.—"Teaching of Plane Geom." (*Bull. Univ. Tex.*, 1912); "Spherical trigonometry and astron." (*Ib.*, 1902); "Teaching of calculus" (*Bull. S.P.E.E.*, 1910); "Regular pentagon" (*Trans. Tex. Acad. Sci.*, 1903).

BENEDIKT, MORITZ, Emer. Prof. of Electrotherap. and Nerve Path., Vienna Univ.; Hon. Fell. Roy. Anthropol. Inst., G.B. and I. Mariannengasse 1, Vienna IX./12, Aust.

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B. 1876, Chislehurst, Kent. *Educ.* Malvern Coll.; Selwyn Coll., Cambridge; Royal Sch. of Mines, Lond. M.A. (Cantab.); M.Sc. (Liv.). *Soc.*—Mem. Iron and Steel Inst.; Inst. of Metals; Chem. Ind.; F.C.S. *Late* Research Assist., to Roberts-Austen; Assist. Lect., Birmingham Univ.

Contrib.—Report to Corrosion Committee (*J. Inst. Metals*, 1911); "Props. and Const. of Copper-Arsenic Alloys" (*Ib.*, 1910), etc.

BENHAM, WILLIAM BLAXLAND, F.R.S., Prof. of Biol., Otago Univ., Dunedin, New Zealand; Cur. Univ. Mus.

B. 1860, Isleworth, Eng. *Educ.* Marlborough Coll.; Univ. Coll. London. D.Sc. (Lond.), 1887; M.A. (Oxon.) 1887. F.Z.S. *Late* Demonstr. in Zool., Univ. Coll., Lond.; Aldrichian Dem. in Comp. Anat., Oxford; Lect. in Zool., Bedford Coll. for Women, Lond.

Arts.—"Archannelida," "Polychaeta," in "Camb. Nat. Hist.," and "Platyhelminia" in "Lankester's Treatise on Zool." *Contrib.*—"Studies in earthworms" (*Q. J. Micros. Sci.*, 1886); "Descrip. of cerebral convolutions of chimpanzee Sally" (*Ib.*, 1894); "Rep. on Oligochaeta, etc." (*Subantarctic*, N.Z., 1909); and 80 others on anat. of phoronis, cetaacea, etc.

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B. 1856, Patten, Me., U.S.A. *Educ.* M.E. (Maine) 1881; D. Engrng. (Case) 1908. *Soc.*—Amer. Soc. M.E.; Master Mech. Assoc.; S.P.E.E.; Master Car Builder's Assoc. *Late* Prof. of Mech. Engrng., Univ. of Maine, 1883—86; Case, 1889—1907.

Books.—"Modern Amer. Machine Tools" (and in Ger.); "Machine Design"; "Steam Engine." *Contrib.*—"Bursting of Fly-wheels" (*Trans. Amer. Soc. Mech. E.*, 1898—1901); "Smoke Abatement" (*Ib.*, 1905); "White Steam Car" (*Amer. Mechanist*, 1909); "Friction Losses" (*Trans. Amer. Soc. Mech. E.*, 1896).

BENJAMIN, HENRI MARIE, Mem. Fr. Acad. Med. (Vet. Med. Sect.); Chev. Leg. Hon. Fr. B. 1850.

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B. 1877. B.S., B.A. (Minnesota) 1902; M.S. 1906, Ph.D. 1909 (Wis.). *Soc.*—Amer. Chem.; Engrs. of W. Penna. *Late* Instr., Michigan Agric. Coll. and Univ. Wisconsin; Assist. Prof., Univ. Arizona; Chem., Wisconsin Geol. Surv.; Cons. Chem.

Book.—"Effect of Smoke on Buildings and Building Materials." *Contrib.*—"Rapid electrolytic determ. of copper" (*Engng. and Min. J.*, vol. 28); "Rapid determ. of lead in ores by means of electrol. with stationary electrodes" (*J. Industr. Engrng. Chem.*, vol. 2); "Elec. lab. furnace" (*Ib.*); "Fractionat. of yttrium earths by sod. succinate" (*J. Am. Chem. Soc.*, vol. 33).

BENNETT, GEOFFREY THOMAS, M.A., Fell. and Lect. in Maths., Emmanuel Coll., Cambridge, Eng.

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Books.—"Lects. on Varicose Veins of Lower Extremities"; "Varicocele"; "Lects. on Abdominal Hernia"; "Varix in Relation to Thrombosis"; "Injuries and Dis. of Knee Joint"; "Massage in Treatm. of Fractures"; etc. *Arts.*—"Dis. and Injuries of Arm, Elbow and Fore-arm" in "Heath's Dict. Surg."; "Injuries and Dis. of Spine," "Treves' Syst. Surg."; "Concussion of Brain," "Allbutt's Syst. Med." *Contrib.*—"Gastric Ulcer" (*Lancet*, 1898); "Dilatation of Stomach" (*Brit. Med. J.*, 1900); "Vomiting from its Surg. Aspect" (*Ib.*); "X-Rays in diagnosis" (*Practitioner*, 1910).

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BENSLEY, ROBERT R., Prof. of Anat., Univ. Chicago; Ed. *Internat. Monatschr. f. Anat. u. Physiol.*
Hull Lab. of Anat., Univ. Chicago, Ill., U.S.A.

B. 1867, Hamilton, Can. A.B. 1889, M.B. 1892 (Tor.). Soc.—Can. Inst.; Brit. Assoc.; Amer. Assoc. Anat. (P.V.-P.); Amer. Exper. Biol. and Med.; F.A.A. Late Assist. Prof. of Anat. 1901, Assoc. Prof. 1905—07, Univ. Chicago.

Art.—“Stomach” in “Wood’s Ref. Handb. of Med. Sci.” *Contrib.*—“Struct. of mammalian stomach” (*Q.J.M.S.*, 1898); “Struct. of glands of Buinnes” (*Decenn. Publ. Univ. Chicago*, vol. x.); “Studies on Pancreas of guinea-pig” (*Amer. J. Anat. Balt.*, 1911); “Format. of HCl. in foveolæ and on surface of gastric mucous membrane and non-acid character of contents of gland cells and Lumina” (*Biol. Bull.*, vol. 23).

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Contrib. numerous on tech. med.

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Educ. Newnham Coll., Cambridge; Univ. Coll., Lond. D.Sc. (Lond.). Soc.—Fell. Univ. Coll., Lond.; F.L.S.

Contrib. — “Contrib. to Embryology of Amentiferae” (*Trans. Lin. Soc.*, 1894 and 1905); “Miadesmia membranacea” (*Trans. R. S. Lond.*, 1906); “Telangium Scotii” (*Annals of Bot.*, 1904); “Root Parasitism in Exocarpus” (*Ib.*, 1910).

Synangial Theory of Seed.

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Contrib. — “Cytology of Cyanophyceae” (*Brit. Assoc. Rep.*, 1907); “Wafer Blades in the Microtome” (*Annals of Bot.*, 1911); “Photo. Studies in Biol. of Flowers” (*J. Roy. Photog. Soc.*, 1902).

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B. 1870, Clinton, Ia. *Educ.* Adelphi Acad. Brooklyn, N.Y.; Univs. Neb., Cornell. B.S. (Neb.) 1895; Ph.D. (Cornell) 1898. Soc.—F.A.A.; Amer. Psychol. Assoc. (Counc.). Late Assoc. Ed. *Psychol. Index*.

Arts. on psychol., in *Internat. Encyc.*, *Encyc. Amer.*, *United Editors’ Perpet. Encyc.*, and *Internat. Year Book. Contrib. to Amer. J. Psychol., Psychol. Bull., Mind, Zschr. f. Psychol.*, etc.

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Contrib.—“Some Nitro derivs. of Metabromtoluol” (*Proc. Am. Acad.*, 1889); “Products of Nitric acid on bromtrinitrophenyl ester” (*Ib.*, 1891); “Nitric acid on tribromacetanilide” (*Am. Chem. J.*, 1898); “Nitric acid on vanillin” (*Ib.*, 1898).

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Contrib.—“Memoirs on Embryol.” (*Rév. Suisse de Zool.*, 1893, 1896); “Parietal eye and nerve” (*Anatom. Anzeig.*, 1892—93); “A new tuberculin” (*Rév. Méd. Suisse*, 1905—07); “Béraneck’s tuberculin” (*Edin. Med. J.*, 1909).

Tuberculeuse, tuberculin.

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Book.—“Electrical Energy.” *Contrib. to A.I.E.E.*

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Books.—“Aeolian Islands,” 1899; “Ore Deposits” (with Stelzner), 1904—06. *Contrib.*—“Granodiorit of Concepcion del Oro,” 1909; “Corderitandesit of Lipari,” 1910 (*Neues Jahrb. f. Miner.*).

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Books.—"Lessons in Gen. Phys.," (jtl.), 4 vols., 2nd. edn.; "Course of Phys.," "Terrestr. Phys. and Meteorol." (dec. by Acad.) "Radium," 52nd. edn.; "Air Routes," 2nd edn., and in Eng., Hung., Russ. and Dutch; "Life and Death of the Globe"; "Colour Photog.," "Oceanog." *Contrib.* numerous on magnetic dilata. of iron, thermal conduct. of metals, electrocapillarity, gravitation, in *J. de Phys., la Nature, Rev. Sci., &c.*

Invent. Areometer, hydro-refractometer, thermobathymeter, &c.

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Late Lect. at Univs. Oxford Birmingham, London.

Books.—"Perception of Change," 1911; "Laughter," 1901, and in Eng. *Contrib.*—"Life and Consciousness" (*Hibbert J.*, 1911).

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Books.—Numerous on astrophys., astrophotog., prae. and theor. astron., etc. *Contrib.* to *Astron. Nachr., Astron. J., Comptes Rendus, Ark. f. mat. astron. o. fys., etc.*

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Book.—"Geol. of N.Y. City (Catskill) Aqueduct," N.Y. State Mus. Bull., 1911. *Arts.* on Geol., in Amer. edn., Nelson's Encyc. *Contrib.*—"Geol. of Dalles of the St. Croix" (*Amer. Geol.*, 1897—8); "Paleog. of St. Peter Time" (*Bull. Geol. Soc. Amer.*, 1906).

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Antaret. Expeds., 1898 and 1901—4; Explor., Brit. Namaqualand and Ger. S.W. Africa, Forests of Upper Amazon.

Book.—"To S. Polar Regions." *Arts* in Sci. Results of Antaret. Expeds.

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Books.—"Hydraulic Machines," 1910; "Infl. of Elec. Currents on Reinforced Concrete," 1912; and many others.

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Anat. and Biol. of Semiparasitic crustaceans; Sci. cinematog.

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Books.—"Electro-therap." 1884; "Dis. of Periph. Nerves," 1902, 1904; "Telephone Accidents," 1906. *Arts.* in Eulenburg's Realencyc., and XX. Cent. Ger. Clinic. *Contrib.* numerous.

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Contrib.—"Theory of Numbers" (*Dis.*); "Trigonomet. Series" (*Leips. Ab. Ber.*), etc.

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Book.—"Textb. of Org. Chem.," 11 edns., and in Eng.

Contrib.—"Oxidn. of Atmosph. N" (*Internat. Cong. App. Chem.*, 1909); "Synthetic Ammonia" (*ib.*, 1912); and numerous others.

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Soc.—F.R.A.S.; Camb. Phil.; Lond. Math.; Amer. Mat.; Roy. Econ.; Roy. Statist.; Ger. Math.; Palermo Math. *Late V.-P.* Lond. Math. Soc., 1908—10.

Contrib.—"On Quartic Surfaces, etc." (*Trans. Camb. Phil. Soc.*, 1900); "On Quintic Surfaces" (*Ib.*, 1904—07); "On Elliptic Modular Equations" (*Amer. J. Math.*, Vol. 30, 1908).

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Books.—"Temp. Entropy Diagram," 1905, 3rd edn., 1911; "Problems in Thermodynam. and Heat Engrng" (jtlly.), 1911; "Mech. Refrigeration" (in press). *Contrib.*—"Explos. mixtures at atmosph. press. (*Technol. Q.*, 1900); "Measur. of air with an orifice (*Ib.*, 1901).

Inv. indicators for pressure-vol., temp.-vol. and temp.-entropy diagrams.

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Books.—"Clin. Atlas of Sectional and Topog. Anat.," "Surface Anat.," "Regional Anat.," "Atlas of Drawings of Tasmanian Crania." *Contrib.*—Numerous, on anat. of vermiform appendix, and anthropol. of Austral. and Tasman. aboriginals.

Founded 1st sch. of phys. anthropol. in Melbourne.

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Soc.—Ger. Anat.; Fr. Anat. Assoc.; Corresp. Inst. Sci. Venice; Corresp. Acad. Sci. Padua.

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Contrib. to *Comptes Rendus* on neutralis. of acids and bases by elec. conductiv., 1889—93; new optical meth. for meas. of abs. temp. by interference, 1895—1903; at. wt. of gas by density and compressibil., 1898; photolysis of org. comp., photosynth. of tern. and quatern. comp. by ultra-violet light, 1910—13.

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Contrib. numerous.
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Books.—"Judicial Anthropometry"; "Judic. Photog.," etc.

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Books.—"Civil Wars of Japan"; "The Modern Navy," 1910; "Steam in War and Commerce," 1874. *Contrib.* to *Mém. Acad. Sci., Comptes Rendus, Mém. Cherbourg Sci. Soc., Trans. Inst. Naval Arch.*, etc.

Protec. of warships; ironclads (1870); cruisers (1872); theory of waves, chopping, etc. (1869—75).

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Books.—"Guide to Pract. of Biol. Chem.," 1910; "Xylose or Wood Sugar"; "Bact. of Sorbose," 1904. *Contrib.*—"Oxydases" (*Soc. Chim. Paris*, 1897); "Present state of biol. chem." (*Rev. gen. des Sci.*, 1905); "Sol. ferments or Diastases" (*Rev. Sci.*, 1909); "Catalytic Manures" (*Ib.*, 1911).

Disc. preventive vaccin. for snake bites; bact. of sorbose.

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Books.—Treatises on Dynamics, Hydro-mechanics, Elementary Hydrostatics, Roulettes and Glissettes, Geometrical Conics. *Contrib.*—Various to *Quart. J.* and to *Messenger of Math.*

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Researches on Immunity; Anti-streptococci serum; Endotoxines; Anti-endotoxic serums; Anaphylaxy and anti-anaphyl.; Typhoid fever; Sensib. vaccines.

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Books.—"Geog. of Iowa," 1876; "Essentials of Bot.," 1884; "Elementary Bot.," 1904; "Taxonomy and Phylogeny of Angiosperms," 1897; "Synopsis of Plant Phyla," 1907; all bot. arts. in "Johnson's Universal Cyclo.," 1892—97. *Contrib.*—"Evolution and Classific" (*Proc. Amer. Assoc. Adv. Sci.*, 1893); "Phyletic Idea in Taxonomy" (*Science*, 1909); "Struct. and Classific. of Lower Green Algae" (*Trans. Amer. Micros. Soc.*, 1905); "Struct. and Classific. of Phycomycetes" (*ib.*, 1903).

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Contrib. on Colouring of Fusarium; Root-knot control, etc.

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Book.—"Anat. and Physiol. of Nerv. Syst.," 1903. *Contrib.* 60, since 1894.

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Books.—"Insects affecting Fruit Trees," 1907; "Insects affecting Vegetables," 1909 *Art.*—"Canadian Entomol. in Canada, an Encyc. of the Country," Vol. 5. Ed. *Canadian Entomol.*, 1868—73, 1885—1909.

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Gynaslns. and 60 contribs. Ed. and Founder of Gynaecologia Helvetica.

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Contrib.—"Combination of Hydrogen and Chlorine" (*Phil. Trans.*, 1902); "Papers on Spectroscopy" (*Proc. Roy. Soc.*, 1910—11).

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Book.—"Handb. of Pract. Hyg.," 1912. *Contrib.*—"Pot. nitrate as food preserv.," (*J.R.A.M.C.*, 1908); "Table jellies" (*ib.*, 1911); "Determin. of tin in tins used for canning foods" (*ib.*, 1911).

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Contrib. "Vegetation of Natal" (*Ann. Natal Mus.*, 1912.)

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Disc. B. radicialcola, Azotobacter chroococco., etc.

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Books.—"Pathogen. of Choleraemia"; "Mechanism of nervous control." Chap. on gastric juice in Oppenheimer's "Handb. of Biochem." *Contrib.* numerous since 1906.

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Books.—"Birth of Worlds and Systems"; "Impact Theory of Cosmic Evolution"; "The Third Body." *Contrib.*—"Temporary Stars, etc." (*Trans. N.Z. Inst.*); "Partial Impact" (*ib.*); "Planetary Orbits and others" (*ib.*); "Cosmic Evolution" (*Phil. Mag.*, 1900).

Originator of new astron. of impact.

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Activity of magnetism; double compass for sea and balloons; automatic submarine tide-gauge.

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Books.—"Exhibn. of scientific apparatus in London"; "Techn.-Chem. Yearbook"; "Chem. of Explosives." *Contrib.* to *Ber. Chem. Ges.*, etc.

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Books.—"Outlines of Diagnostic Technique." *Contrib.*—"Remissions of Pernicious Anaemia" (*J. Amer. Assoc.*, 1908); "Diag. and Treat. of Pernicious Anaemia" (*Internat. Clinics*, 1909); "Contrib. of Path. to Med." (*J. Amer. Med. Assoc.*, 1910); "Chloroma" (*ib.*, 1912).

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Arts.—"Evol.," "Hereditry," "Variation," in "Ref. Handb. of Med. Sci." *Contrib.*—"Stomatopoda of *Albatross*," 1894; "Stomatopoda of Porto Rico," 1901; "Anat. and develop. of *Cassiopia xamachana*" (*Mem. Boston Soc. Nat. Hist.*, 1900).

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Books.—"Archaean and Cambrian in Wales and their equivalents in Massif of Brittany," 1899; "Old Massif of Lower Normandy," 1904; "Jurass. Opis of Normandy," 1895; Normandy, Maine, Anjou, Brittany in Geol. Chart of Fr.

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Books.—"Marine Steam Turbine"; "Design and Construc. of Ships." *Contrib.* numerous.

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Contrib.—"Seed evol." (*Flora*, 1901); "Study of Tillandsia Usneoides" (*Bot. Gaz.*, 1904); "Strongly corroding Fungi and their relat. to Amylotrogus Roze" (*Flora*, 1900); "Nutrition of embryosac and embryo in certain Labiatae" (*Kan. Univ. Sci. Bull.*, 1909).

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Book.—"Studies in Melody," 1909. *Contrib.*—"Role of Tympanic mechanism in audition" (*Psychol. Bull.*, 1907).

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Contrib.—Numerous on indigo, hydrosulphites, etc., in *Ber. d. Chem. Ges.*

Printing of metallic powders on textile fabrics to be subsequently mercerized, Eng. Pat., 29504. 1896.

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Books.—"Economic Vegetable Products of the Bombay Pres."; "Handb. Brit. Ind. Sect., Paris Exhib., 1878"; "The Indust. Arts of Ind.," 1888; Reports on Cultivn. of Spanish Chestnuts (1892) and of Carrots in Ind. (1897—98); "Aryan Flora and Fauna," Appendix to Max Muller's "Bog. of Words," 1888. *Contrib.*—"Genus *Boswellia*" (*Trans. Linn. Soc.*, Vol. 27); numerous to *J. Roy. Soc. Arts*, etc.

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Book.—"Inland Lakes of Wis.: Dissolved Gases of Water," 1911. *Contrib.*—"Plankton Studies on Lake Mendota" (*Trans. Wis. Acad.*, 1897); "Notes on Cladocera" (*ib.*, 1879—1910).

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Books.—"Researches on Sun-spots," 1900; "Norweg. Expedns. of 1899—1900 and 1902—03 for Study of Aurora Borealis," 1901, 1908, 1911. *Contrib.*—"General solution of Maxwell's equations" (*Archives des Sci.*, Geneva, 1895) "Oxidation of atmos. nitrogen" (*Trans. Faraday Soc.*, 1906); "Origin of worlds" (*Arch. des Sci.*, Geneva, 1913).

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Arts.—"Diphtheria," in "Hare's System of Therap.," "Syphilis of Larynx, Trachea, and

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Contrib.—"Gen. mean value and remainder theorems with applic. to mech. differentiation and quadrature" (*Trans. Amer. Math. Soc.*); and on linear diffl. eqns. (*ib.*, 1908, 1909, 1911).

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Book.—"Diluvial Man in Europe," 1910. *Arts.* on Ethnol., etc., in "Herder's Yearbook of Sci.," 1907—11; "Human Race" in "Catholic Encyc." *Contrib.* on anthrop. of Chinese, etc., in *Archiv. f. Anthrop.*

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Book.—"Exper. Geom." (with L. C. Plant). *Contrib.*—"Thermal conductivity of Lead" (*Proc. Amer. Acad. Arts and Sci.*, 1906); "Relation between Index of Refraction and Atomic Weight" (*Amer. Chem. J.*, 1905); "Heat of Dilution of Aqueous Salt Solutions" (*Phys. Review*, 1908).

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Contrib.—"Leprosy in Iceland" (*Mittheil. 2nd Leprakonferenz, Bergen*, 1909); "Hydratio cysts and lepers in Iceland" (*Lepra. Bibl. internat.*, 1905).

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Arts.—"Variola," in *Keating's Encyc.*; "Artific. Feeding of Infants"; and Chronic Hydrocephalus," *Ref. Handbk. of Med. Sci.*; "Intoxic," *Forchheimer's Syst. Therap.* (in press); "Diarrhoeas of Infancy," *Sajou's Cyc. Med. Contrib.*—"Climat. of Laurentians" (*Trans. Amer. Climat.*, 1905); "Mediastinal Cyst Producing Compression of Trachea in Infant of 9 Months" (*Archives of Pediat.*, 1911); "Gen. Infection by Colon Bacillus with Rapidly Fatal Septicaemia and Haemoglobinemia" (*N.Y. Med. J.*, 1907); "Inspiratory Stridor and Dyspnoea in Infants" (*Archives of Pediat.*, 1909).
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Art.—"Resins," in "Allen's Comm. Org. Anal.," *Manuf. of Varnish* in "Hurst's Paints, Oils, and Varnishes," 1912. *Contrib.*—"Isomerism of aromatic oxyketones" (*Ber.*, 1906); "Use and Abuse of Driers" (*Proc. Paint and Varnish Soc.*, 1908—09).
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Book.—"Chem. Anal. of Iron." *Art.*—"Assaying" *Encyc. Brit.*, XI.
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Book.—"Tables of Bond Values" ("Clow's Economics"). *Contrib.*—"Change of Phase due to Passage of Elec. Rays through thin plates, etc." (*Phys. Review*, 1908); "Exploration of Upper Air by Kites and Balloons" (*Proc. Amer. Phil. Soc.*, 1909); "Free Air Data and Discussions of same" (*Bull. of Mount Weather Observ.*).
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Books.—"Sexual reproduction of Mucorineae"; "New England Trees in Winter"; "Trees in Winter."

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Books.—"Treatise on Med. Zool.," 2 vols., 1885—9; "Mosquitoes," 1905. *Contrib.*—500 on Nat. Hist., Med., Hyg.

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Books.—"Introd. to Gen. Path.," "Ligaments, their Nature and Morph.," "Evolution and Dis.," "Surg. Dis. of Ovaries and Fallopian Tubes," "Tumours Innocent and Malign.," 5th edn.; "Dis. of Women," with A. E. Giles; "Surg. of Pregnancy and Labour complic. with Tumours," 1901; "Essays on Hysterectomy," 1904; "Gall-Stones and Dis. of Bile Ducts," 1907; "Cancer Clinically Considered," 1909; "Man and Beast in E. Ethiopia," 1911; "Present Position of Abdom. Hysterectomy for Fibroids in London," 1908; "Fibroids of the Uterus," 1913.

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Books.—"Mutation and Traumatism," 1907; "Cultivation of Barley for Beer," 1910; "Parthenogen. of higher Vegetables," 1909; "Rapid Transformations of Living Beings," 1911. *Contrib.* to *Bull. Sci.*, Fr. and Belg.; *Bibliog. Evolut.*; *Comptes Rendues*; *Progress. Rei. Bot.*; *Bull. Soc. Bot. Fr.*

Exper. evol. of maize, barley, tobacco.

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Contrib.—"Influ. of glycerine on vitality of micro-org., especially of variolus and vaccinoic material" (*Trans. Brit. Assoc.*, 1896); "Influ. of glycerine on vaccine material" (*Med. Off. Repts., Loc. Govt. Bd.*); "Bacteriol. of Rheumatoid Arthritis" (*Lancet*, 1896); "Ringworm in London," with Dr. C. Foo (*J. Dermal.*, 1896).

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Contrib.—"Blood sugar" (*Dubois' Arch.*, 1879); "Cause of death by elec. shock" (*Trans. Amer. Inst.*, 1899); "Detection and recognition of blood" (*Amer. Microsc. Soc.*, 1900); "Urine in epilepsy" (*Hosp. Rept.*, 1910).

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Contrib. on Math., mainly Groups, in *Trans. Amer. Math. Soc.*, *Amer. J. Math.*, *Math. Annalen*, since 1902.

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Book.—"Man. of Expts. in Phys." (jtl.) *Arts.*—"Constants of Nature"; "Density" in "Internat. Encyc." *Contrib.*—"Apparent forces between small submerged bodies (Flocculation)" (*Phys. Rev.*, 1894).

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Books.—"Hist. of Indian and Byzantine Med.," 1902; "Hist. of Syph.," 1901, 1911 (in Eng. 1908); "Sex and Mod. Civilisation" (in Eng.), 1908; "Skin Diseases," 1908; "Prostitution," 1912.

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Books.—"Concerning Death," 2 vols., 1903 (transl.); "Clin. Surg.," 10 vols., 1904—12 (to be contd.). *Contrib.*—Numerous on surg., in Dan. and Fr.

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Books.—"Intro. to Qual. Anal.," 1892; "Inorg. Chem. Prepns.," 1911; "Air, Water, Light and Heat," 1907.

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Books.—"Chem. for Engrs. and Manufacturers" (jtly. with Bloxam), 2 vols., 3rd edn.; etc.

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Books.—"Chem. for Engrs. and Manufacturers"; Ed. of "Bloxam's Chemistry."

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Books.—Rept. to Govt. "Account of Res. Work in Indigo, carried out at Dalsingh Serai Res. Station," jtly., 1905; Rept. to Govt. of India, "Res. Work on Indigo performed in Univ. of Leeds, 1905—07," jtly., 1908. *Contrib.* on S. comps. of Am, Na, K; on indigotin, indirubin, etc., to *J. Chem. Soc.*; on indigo estimn., tetrasulphonate process for indigotin to *J. Soc. Chem. Ind.*

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Contrib.—"Railroad Technics" to "Roll's Encyc.," "Regulator Stations" (with Oder).

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Book.—"Theory of Entire Functions of Infinite Order," in Fr. 1910.

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Books.—"Foods, their Composition and Analysis"; "Poisons, their effects and detection." *Contrib.*—Various on Chem., Hyg. and Toxicol. (*Chem. News, J. Chem. Soc., Analyst*).

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Modern Sch.; Queen's Coll., Oxford; Göttingen. Ph.D., M.A. (Gött.) 1870; M.A. 1885, D.D. 1892 (Oxon.); D.D. (Dun.) 1901; Feil. *Educ.* Inst. Scotl., 1870.

Books.—"Notes in Recreative Science"; "Metallography as a Separate Science," 1871; "Lect. Notes on Human Physiol.," 1881; "Oxford Logic Chart," 1880; "Oxford Handb. of Logic," 1880; "Quest. and Ex. in Adv. Logic," 1881; and numerous in Theol., Lit., Biog. and Topog.; Ed. "Oxford Aids to Schools" and "Oxford Sci. Primers," 1878—85.

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Schs. Saco; Priv. Sch. Portland, Me.; Harvard Univ. D.M.D. (Harv.) 1886. *Soc.*—Harv. Dental Alumni Assoc. (Sec. 15 yrs., Pres. 1910—11); Harvard Odont. (Sec. 5 yrs., Hon. Mem. and P.P.); Mass. Dental (P.P.); N.E. Dental Assoc. (Pres. 1899); Amer. Acad. Dental Sci. (Sec.); Nat. Dental Assoc. (Pres. 1905); Fed. Dent. Internat. (Mem. Exec. Council.); N.Y. Inst. Stomat.; Amer. Med. Assoc.; Nat. Geog.; etc.

Contrib.—Numerous.

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Books.—"Zoology" (in Dan., Ger., Eng., Polish); "Danish Forest Zoology," 1896—98; "The Elephant's Head" (with Paulli), 1908. *Contrib.*—Numerous on Vert. Morphol., Crustaceans, Insect Morphol. and Biol., Pteropoda, in *Morphol. Jahrb.*, *Zool. Jahrb.*, *D. Vidensk. Selsk. Skrifter*, etc.

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Books.—"Calculating Guide"; "Lectures on Astron."; "Cat. of Stars, Catania"; "Right Ascension, Turin"; "Photog. Cat."; "Stellar Cat.," 1909; "Lat. of Turin," 1911; "Course of Astron.," 2 vols., 1909—12, etc. *Contrib.*—"Decimal equation" (*Bull. Astron.*, 1903); "Stars with proper movement" (*Astron. Nachr.*, 1910), etc.

New Turin. Observ. at 2,000 ft. **BOCH, J. C.**, Ord. Prof. of Pharmacol. Univ. Copenhagen, Denmark.

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Books.—"Evol. of Potential Theory," in Ger., 1894; "Introd. to Higher Algebra," 1907, and in Ger., 1910; "Introd. to Study of Integ. Eqns.," 1909. *Contrib.*—Numerous.

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Books.—"Head Hunters of Borneo"; "Temples and Elephants." *Contrib.* to Geog. Soc., Paris and Stockholm; *Gentleman's Mag., Daheim*, etc.

First European to cross Borneo from E. to S. *Disc.* Orang Poünan and Tring Dyaks; Ethnol. and Nat. Hist. collections made in China, Siam and Laos.

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Contrib.—Various to *Zeits. phys. chem.*, *Ann. Elektrochem. Ber. Chem. Ges.*

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Book.—"The Milky Way" (Atlas). *Contrib.*—"Planet Mars (drawings, etc.)" (*Trans. Roy. Dub. Soc.*, 1882); "Lunar heat during Eclipse, 1884" (*ib.*, 1885); "Planet Jupiter (drawings, etc.)" (*ib.*, 1889); "Lunar heat during Eclipse, 1888" (*ib.*, 1891).

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Books.—"Dairying in Denmark"; "Dairying in Foreign Countries."

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Soc.—Leop.-Carol. Akad.; Corresp. Edinburgh Geol. and K.-K. Geol. Reichsanstalt. *Late Priv. Doz.*, Tech. Sch.; Assist., Roy. Nat. Hist. Hof.-Mus., Vienna; Direc. of Austrian Regional-Bur., Internat. Cat. Sci. Lit.

Books.—"Division of E. Alps," 87; "Alpine Rocks," 93; "Hist. of Moraines," 1901; "Flattening and Mountain Formation," 1910. *Art.*—"Alps" in "Brockhaus' Konvers. Lex." *Contrib.* over 100.

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Books.—"Elliptical Functions," 2 vols., 1908—10; "Reduction of Partial Diff. Eqns.," 1896; "Theory of Partial Diff. Systems," 1900. *Contrib.*—"Axioms of Arith." (*Sitz.-ber. Heid. Akad.*, 1911); etc.

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Books.—"Handbook of med. prescriptions"; "Intoxicants"; "Studies on heart disease," 1871. *Art.*—"Chem. causes of illness" ("Krehl and Marchand's Handb. d. allg. Path."). *Contrib.*—"The S. Amer. arrow-poison Curare" (*Abhandl. Sächs. Ges. Wiss.*, 1896), etc.

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Contrib.—"Embryol. of Muraenoids" (*Petrus camp.* 1904, 1905); "Motor nerve-endings of Mammals" (*Internat. Monatsch. f. Anat. u. Physiol.*, 1911); "Infundibular Organ in Brain of Amphioxus" (*Anat. Anzeig.*, 1908); "Regen. of nerves" (*Ib.*, 1912—13).

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Books.—"Phys.-chem. Tables" (with Landolt), 1883, 1894, 1905; "Guide to the Weather," 1901—06; "Visible and invisible rays" (with Marckwald), 1905—09, 1910; "Heat," 1907.

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Book.—"Transformers" (with Robertson).

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Contrib.—"Milky Way and its relations in space" (*Swed. Acad.*, 1909); on "Algeb. eqn. of 5th degree and problem of three bodies" (*Stockh. Observ.*, 1907—08); "Gen. perturbns. of asteroids" (*Ib.*, 1902).

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Contrib.—"Antral Carcinoma" (*J. Path. and Bact.*, 1898); "Cause of Death by Elec. Shock" (with Oliver) (*Brit. Med. J.*, 1898); "Arsenobenzol in Syph." (*Northld. and Durh. Med. J.*, 1911); "Trichophyton Rosaceum" (*Brit. J. Dermatol.*, 1912).

BOLAS, THOMAS, Chemist.

60, Grove Park Terrace, Chiswick, Eng.

B. 1848, Glastonbury, Somerset. *Educ.* Privately. F.C.S.; F.I.C.

Books.—"Handbook of Glass Blowing and Working," 1898, etc.

Production of sealed-in diaphragms of glass, thin to Newton's "Very black" stage (*J. Roy. Photog. Soc.*, 1899); Disc. of tetrabromide of carbon, with C. E. Groves (*J. Chem. Soc.*, 1870).

BOLAU, C. C. HEINRICH, *Late Direc.* of Zool. Gardens, Hamburg.

Isestr. 19 hp., Hamburg 37, Ger.

B. 1836, Hamburg. *Educ.* Univs. Giessen, Heidelberg, Munich, Berlin. Ph.D. *Soc.*—Leop. Carol. Acad.

BOLAU, (HEINRICH WILHELM) HERMANN, Direc. of Zool. Gardens "Scheidt-Keim-Stiftung," Düsseldorf, Ger.

B. 1871, Hamburg. *Educ.* Gymn. Hamburg; Univs. Jena, Greifswald, Berlin, Göttingen. Ph.D. 1898. *Late Sci. Assist.*, Plant Station, Hamburg, Nat. Hist. Mus., Hamburg, Roy. Biol. Inst., Heligoland.

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BOLLEY, HENRY L., Dean of Sch. of Biol., N. Dakota Agric. Coll., Fargo, N. Dak., U.S.A. since 1890; Bot. and Plant Path., N. Dak. Expt. Station; State Seed Commissioner.

B. 1865, Dearborn Co., Ind. *Educ.* Common Schs., Indiana and Mich.; Purdue Univ. M.S. (Purdue) 1889. *Soc.*—Amer. Assoc.; Prom. Agric. Sci.; Bot.; Phytopath.; Agron.

Arts. on "Plant Dis." and "Soil Sanitation," *Cyc. Amer. Agric. Contrib.*—"Disease-resistant crops" (*Soc. Prom. Agric. Sci.*, 1907); "Constancy of mutants" (*Amer. Nat.*, 1908); "Conserv. of purity of soils in cereal cropping" (*Sci.*, N.S. 1910).

Parasitic origin of potato scab, 1888; Flax-tired soil, 1900; Flax seed resistant to wilt, 1904.

BOLSIVS, Rev. HENRI J. H. M., S.J.; Prof., since 1892, of Nat. Hist., Direc. of Micros. Lab., Collegium Soc. Jes., Oudenbosch, Holland.

B. 1852, Bois-le-Duc. *Educ.* Univ. Louvain. *Soc.*—Sci. Brussels; Corresp. Acad. Nuovi Lincei; Dutch Zool.; Tit. Mem. Imper. Acad., Moscow.

Contrib. on microsc. anat. of segmentary and ciliary organs, etc. of worms to *La Cellule*, *Ann. Soc. Sci. Bruxelles*.

Inverteb., especially worms.

BOLTON, BENJAMIN MEADE, Bact., Maryland Agric. Expt. Sta. College Park, Md., U.S.A.

B. 1857, Richmond, Va. *Educ.* Univs. Heidelberg, Göttingen, Berlin. M.D. (Virginia) 1879. *Soc.*—Amer. Physicians. *Late* Assist. and Assoc. Prof. of Bact., Johns Hopkins Univ., 1886—88, 1891—94; Prof., S. Carolina, 1888—89; Direc., Bact. Lab., Houghland Lab., 1889—91; Direc. of Lab. Hyg., Bd. of Health, Phila., 1894; Prof., Univ. Mo., 1896; Expert., Bur. Animal Ind., 1898—1912.

Contrib.—"Hydrophobia"; "Bact. content of drinking water"; "Bacteriolytic power of blood serum of hogs"; etc.

BOLTON, EDWARD RICHARDS, Chem. Specialist in Oils, Fats and Fatty Foods.

46, Stamford Brook Rd., Hammersmith; and Gray's Inn Chambers, 20, High Holborn, London.

B. 1878, Blackrock, Co. Dublin. *Educ.* Bedford Co. Sch.; King's Coll., Lond. *Soc.*—F.G.S.; Chem. Ind.; Pub. Anal. (Council, 1911—12).

Books.—With C. Revis, "Fatty Foods," 1912, and sections in "Allen's Common Org. Anal." on Butter and Milk Products. *Contrib.*—"Anal. of Ghee" (*Analyst*, 1910, 1911); "Methods of estimating Coconut oil and Butter in Butter and Margarine" (with Revis), (*Analyst*, 1911).

BOLTON, HERBERT, Direc. of Bristol Mus.; Reader in Paleont., Univ. of Bristol, Eng.

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B. 1863, Bacup, Lancs. *Educ.* Roy. Coll. Sci. and Owens Coll., Manchester. M.Sc. *Soc.*—F.R.S.E.; F.G.S.; F.Z.S.; Hon. Mem. Geol. and Min. Manchester; Corresp. N.Y. Acad. Sci. *Late* Assist. Keeper, Manchester Mus., Victoria Univ., 1891—98; Lect. in Biol., Manchester Tech. School., 1897—98.

Book.—"Geol. of Rossendale," 1888. *Art.*—"Geol. of Lancs.," in "Vict. County Hist." *Contrib.*—"Paleont. of Manx slates of Isle of Man" (*Manc. Mem.*, 1899); "Paleont. of Lancs. Coal Measures" (*Trans. Manc. Geol. Soc.*); "Faunal horizons in Bristol coal field" (*Q. J. Geol. Soc.*); "Fossil insects from Midland and Kent coal measures" (*Ib.*, 1912).

BOLTON, JOSEPH SHAW, Prof. of Ment. Dis., Univ. Leeds; Med. Direc., West Riding Asylum, Wakefield, Eng.

B. 1867, Whitley, Yorks. M.D., D.Sc. (Lond.); F.R.C.P. (Lond.); Fell. Univ. Coll. London. *Late* Goulstonian Lect., R.C.P., 1910.

Arts.—"Pachymeningitis Hoemorrh.," etc. in Quain's Diet. Med.; "Cortical Locality" and "Cerebral Function" in "Further Advances in Physiol.," 1909. *Contrib.*—"Exact histol. localization of visual area" (*Phil. Trans.*, 1900); "Histol. basis of amentia and dementia" (*Archiv. of Neurol.*, 1903); "Amentia and dementia: a clin.-path. study" (*J. Ment. Sci.*, 1905—06); "Localization of cerebral function" (*Brain*, 1910).

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B. 1870, Amherst, Mass. *Educ.* Albany Acad.; Sheffield Sci. Sch., Yale Univ. Ph.D. (Yale) 1897. *Soc.*—Amer. Phil.; Amer. Acad.; Amer. Chem.; Amer. Phys. *Late* Assist. in Anal. Chem., 1894; Instr. in Phys. Chem., 1896—1900; Assist. Prof. of Phys., 1906—10, Yale Univ.; John Harling Fell., Univ. Manchester, 1909—10.

Books.—Transl. Classen's "Quant. Chem. Anal. by Electrolysis"; "Phys. Chem. for Beginners," by C. Van Deventer. *Arts.* on Radioactivity in "Cent. Encyc. and Diet." *Contrib.*—"Origin of radium" (*Phil. Mag.*, 1905); "Ultim. disintegration products of radioact. elements" (*Amer. J. Sci.*, 1907); "Radioact. of uranium minerals" (*Ib.*, 1908); "Tonium, a new radioactive element" (*Ib.*, 1908).

BOLZA, OSKAR, Non-res. Prof. of Maths. in Univ. of Chicago; Hon. Prof. of Maths. in Univ. of Freiburg.

Reichsgrafenstr. 10, Freiburg, Ger.

B. 1857, Bergzabern, Ger. *Educ.* Berlin, Heidelberg, Strassburg, Göttingen. Ph.D. (Gött.) 1886. *Soc.*—Nat. Acad. of Sci., Wash.; Ger. Math. Soc.; Amer. Math. Soc.; Palermo Math. *Late* Reader in Math., Johns Hopkins Univ., 1888—89; Assoc. in Math., Clark Univ., 1889—92; Assoc. Prof., 1893, and Prof. of Math. in the Univ. of Chicago, 1897—1910.

Book.—"Lectures on Calculus of Variations," 1904 (and in Ger., 1909).

BOMMER, C., Prof. of Bot., Brussels Univ., Belgium.

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B. 1858, Paris. *Educ.* Lycée St. Louis; École Milit. St. Cyr., 1879. Hon. D.Sc. Upsala and Cambridge.

Books.—"New Guinea," 1887; "Inhabitants of Surinam," 1884; "Corsica," 1891. *Contrib.*—"Eruption of Krakatoa" (*Rev. Geog. Internat.*,

1884); "Lapps of Finmark" (1885); "Periodic variations of French Glaciers" (1891, 92); "With the Esquimaux" 1906; and numerous others.

BONE, WILLIAM ARTHUR, F.R.S., Prof. of App. Chem., (Fuel and Refractory Materials), Imper. Coll. Sci. and Technol., S. Kensington, London.

B. 1871, Stockton-on-Tees. *Educ.* Friends' Sch., Ackworth; Stockton Gram. Sch.; Leys Sch., Cambridge; Owens Coll., Manchester; Heidelberg Univ. D.Sc. (Manc.); Ph.D. (Heid.). *Soc.*—F.R.S.; F.C.S. *Late* Bishop Berkeley Fell. of Owens Coll., and Fell. of Vict. Univ., Manchester; Head of Chem. Dept., Battersea Polytech., London, 1896—98; Lect. in Chem. and Metall., Owens Coll., Manchester, 1898—1906; Prof. of App. Chem., Leeds Univ., 1906—12.

Art.—"Fuel," in Thorpe's Dict. of App. Chem. *Contrib.* on synthetic Chem. and gaseous combustion, etc., in *Trans. Chem. Soc., Phil. Trans. J. Iron and Steel Inst.*

Disc.—Pract. applications of "flameless incandescent surface combustion"; production of methane by direct union of its elements; mech. of hydrocarbon combustion.

BONHOEFFER, KARL, Geh. Med. Rat.; Ord. Prof. of Psychiat., Direc. of Nerv. Clin., Univ. Breslau, Ger.

B. 1868, Neresheim, Würt. *Educ.* Univs. Tübingen, Berlin, Munich. M.D. (Tüb.) 1892.

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B. 1872, Trondhjem. *Educ.* Christiania, Zurich, Würzburg. Ph.D. (Chris.) 1906. *Late* Conserv., Univ. Chris.

Book.—"Hydroids" (Norweg. N. Sea Exped.) 1895. *Contrib.*—"Chromosome studies" (*Arch. f. Zellf.*, 1908—10); etc.

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9, Seroope Terrace, Cambridge, Eng.
B. 1833, Rugeley. *Educ.* Uppingham Sch.; St. John's Coll., Cambridge. D.Sc. (Cantab.) 1883; Hon. LL.D. (Montreal) 1884; D.Sc. (Dubl.) 1892; D.Sc. (Sheff.) 1910. Fell. St. John's Coll., Cambridge. *Soc.*—F.S.A., F.G.S., F.R.G.S., Hon. M.R.I.A., Hon. F.R.S., Can. *Late* Prof. of Geol., Univ. Coll. Lond.; Pres. Geol. Soc., 1884—86; Pres. Brit. Assoc., 1910—11.

Books.—"Alpine Regions of Switzerland"; "Story of our Planet"; "Ice work, past and present"; "Volcanoes"; "Building of the Alps"; Ed. "Lewis's Genesis of Diamond"; R.S. Memoir on Atoll of Funafuti." *Contrib.*—Numerous, on Petrology and glacial geol.

BONNIER, GASTON EUGENE MARIE, Mem. Instr. Fr.; Prof. of Bot., Sorbonne; Direc. of Veg. Biol. Lab., Fontainebleau; Chev. Leg. Hon. Fr.; Founder and Direc. *Revue Gén. de Bot.*

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B. 1853, Paris. *Soc.*—Fr. Bot. (P.P.); Nat. Agric. Fr.; Fr. Biol.

Bot. geog. and descrip. bot., French flora, etc.

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Soc.—Inst. Sci., Venice; Acad. Sci., Padua; Ital. Path.; Ital. Neurol.; Acad. Med. Padua (V.P.).

BONTCHEV, G., Mem. Bulg. Acad. Sci.; Prof. of Petrog. and Miner., Univ. of Sofia, Bulgaria.

B. 1866, Geravna, Bulg. *Educ.* Gabrovo; Agram. Ph.D. (Agram) 1893; Mem. Servian Geol. Soc.

Contrib.—"Petrography of S. Slope of Balkans," 1908; "Eruptive Rocks in Bulgaria," 1909; "Earthquake at Sambol," 1910; "Meteorite at Goumachnik," 1911; "Petrog. and Miner. of Rilo Mt." (*Bulg. Acad. Sci.*, 1912).

BONTE, HANS, Ord. Prof. of Machine Constr., Tech. Sch., Karlsruhe, Ger.

BOODLE, LEONARD ALFRED, Assist.-Keeper, Jodrell Lab., Roy. Bot. Gardens, Kew, Eng.

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F.L.S. (Mem. of Counc., 1907—10).

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B. 1867, Katwyk a. Zee, Holland. *Educ.* Utrecht Chem., 1890; Pharm. Dr., 1891. *Soc.*—Dutch Chem.; Dutch Bot.; Dutch Indies Nat.; Batavian.

Books.—"Saponif. Constits. of Assam Tea," 1891; "Communic. Bot. Inst. Buitenz." XIII., 1894, XVIII., 1897, XXXI., 1899, LII., 1902, "Bulls. Bot. Inst., Buitenz." XIV., 1902, XXII., 1904; "Bulls. Dept. Agric. Ned.-Ind.," VII., 1907, XVI., 1908. *Contrib.*—"Dutch-Indian Fruits" (*Yearb. Dept. Agric. Neth.-Ind.*, 1905); "Names of Javan Remedies" (*ib.*, 1906); and on Euphorbiaceae, etc.

BORCH, S. C., Prof. of App. Mech., Polytech. Inst., Copenhagen.

Asmussens Allé 2, Copenhagen, Denmark.

B. 1847. *Educ.* Polytech. Inst. Copenhagen. *Books.*—"Textb. of App. Mech.," vol. I., 4th edn. 1905, vol. II., 3rd edn. 1903, vol. III., 3rd edn. 1902.

BORCHGREVINK, CARSTEN E., S. Polar Explorer.

Christiania, Norway.

B. 1864, Christiania. *Educ.* Tharandt. *Late* Chief, S. Polar Exped., 1898—1900; Sci. Delegate (Nat. Geog. Soc. Washington) to W. Indies, 1902.

Books.—"First on the Antarctic Continent," 1901; etc.

BORCHGREVINK, OTTO JOHAN, Surg.; Direc. of Diakonhjemmet Hosp., nr. Christiania; M.D.

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B. 1871, St. Affrique, Aveyron. *Educ.* Paris. D.Sc., 1894. P.P. Math. Soc. Fr.; Mem. Soc. Phys. Fr.; Avance. Sci. *Late* Lect. at Lille.

Books.—"Monographs on Theory of Functions"; "Theory of Probabilities"; "Aviation" (with Painlevé) *Contrib.* on divergent

series, Borel's theorem, Picard's theorem, movements of spherical trajectories, probabilities and the Kinetic Theory. Ed. *Révue du Mois*.

BORELIIUS, J. L., Prof. of Surg., Lund Univ., Sweden.

BORGMANN, IVAN, Prof. of Phys., Univ. of St. Petersburg.

B. 1849. Ph.D. (St. Petersburg) 1881. *Soc.*—Russ. Physico-Chem.; Phys. Fr.

Books.—“Treatise on Elec. and Magnetism,” 2 vols.; “Magnetic Current”; and many articles in Russian Encyc., Russian, English, French and German Journals on electrical phenomena.

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B. 1882, Breslau. *Educ.* Breslau, Heidelberg, Zurich, Göttingen. Ph.D. 1906, Prof. 1909 (Gott.). *Soc.*—Math. and Phys., Göttingen; Ger. Phys.; Ger. Math.; Ger. Nat. Sci.; Mat., Palermo.

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B. 1867. Ph.D.; Prof.

BORNHARDT, WILHELM, Geh. Oberbergrat; Mem. of Council of Roy. Pruss. Ministry of Commerce and Industry.

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B. 1864, Braunschweig. *Educ.* Tübingen and Berlin. Bergassessor, 1892. *Late* travelling in Ger. E. Africa, 1895—7; Roy. Min. Inspec., Clausthal, 1900; Direc. of Sch. of Mines, Siegen, 1901; Oberbergrat, Bonn, 1905; Direc. Roy. Acad. of Mines, Berlin, 1906—12.

Books.—“Geol. and Topog. of Ger. E. Africa,” 1900. *Contrib.*—“Veins of Siegen and Environs” (*Arch. f. Lagerstättenf.*, 1910, 1912).

BORODIN, IVAN PARTHENIEVIČ, Prof. Emer.; Ord. Acad., since 1902, of Bot., Imp. Acad. Sci., St. Petersburg, Russia.

B. 1847, Novgorod. *Educ.* Univ., Petersb. Mag. Bot., 1876; Hon. D.Sc. (Odessa) 1886 (Upsala). *Soc.*—Hon., For. or Corresp. Mem.; Petersb. Univ. Nat.; Kasan Univ. Nat.; Ural. Nat., Ekaterinb.; Riga Naturf.; Russ. Geog.; Russ. Phil.; Russ. Econ.; Assoc. Internat. Bot.; Cherbourg Nat. *Late* Prof. of Bot., Petersb. Forest Inst., 1869—1904, Petersb. Univ., 1887—90; Bot. travels in Siberia, 1902, Caucasus, 1903.

Books.—“Textb. of Bot.,” 1888, 8th edn. 1904; “Course of Plant Anat.,” 1888, 3rd edn. 1905; “Fertility in Plants,” 1888, 2nd edn. 1896. *Contrib.*—“Influence of light on higher cryptograms,” 1867; “Plant respiration,” 1881; “Chlorophyll crystals,” 1882; “Epidermis of Ranunculaceae,” 1902.

Founded biol. freshwater station, Bologoje, 1897.

BORRADAILE, LANCELOT ALEXANDER, Lect. in Nat. Sci. in Selwyn Coll., Cambridge, and Univ. Lect. in Zool.

Selwyn Coll., Cambridge, Eng.

B. 1872, London. *Educ.* Felstead Sch.; Univ. Cambridge. M.A. (Cantab.) 1897; F.Z.S. *Late* Demonstr. of Animal Morph., Cambridge, 1909—10.

Book.—“Man. of Elem. Zool.” 1912. *Arts.*

—“Crustaceans” in Gardiner’s “Fauna and Geog. of Maldive and Laccadive Archipelagoes”; “Stomatopoda and Macrura”; in “Willey’s Zool. Results”; “On Young of Robber Crab” (*Ib.*). *Contrib.*—“Crustaceans from S. Pacific” (*Proc. Zool. Soc.*, 1898—1900); “Revision of Pontiidae” (*Ann. Mag. Nat. Hist.*, 1898); “Classif. of Thallasinidea” (*Ib.*, 1903); “Classif. of Decapod Crustaceans” (*Ib.*, 1907).

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BORTHEN, LYDER MÜST, Fell. Norweg. Acad. Sci.; Physician and Oculist.

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B. 1849, Trondhjem. *Educ.* Trondhjem; Christiania. M.D.; Kt. of St. Olaf; Coronation Medal, 1908; Boecks and Danielsen Prize, 1900 and 1904; Gold Medal, Paris Expos., 1900. *Soc.*—Roy. Norweg. Sci.; Internat. Ophthalm., Heidelberg; Acad. Sci., Christiania; Biol., Christiania; New Sydenham, London.

Books.—Numerous on leprosy, especially of eyes.

Inv. ophthalmoscope with 2 foci, and a prismatic apparatus.

BORZI, ANTONINO, Roy. Univ., Palermo; Fell. Acad. Lineei.

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BOSCHETTI, FEDERICO, Direc. of Vet. Sch.; Ord. Prof. of Path. and Clin. Med.; Lect. on Hyg. and Pub. Health, Univ. of Modena, Italy.

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B. 1864, Turin. *Late* Prof. and Direc. of Roy. Sup. Vet. Sch., Univ. Parma.

Books.—“Treatise of Path. and Comp. Med. Therap.,” 2 vols. (jty.), 1897; “Org. Sinergy (Man and Horse),” 1907; “Allergy of Man and Beast,” 1911; “Manual of Comp. Med. Path.,” 1912; transl. several Vet. textbooks into Ital. *Contrib.*—“Progress of Laws on Hyg. and Public Health” (*J. Med. Vet., Acad. Vet. Turin*, 1888); “Cowpox and Manpox” (*Mod. Zoojatro*, 1892); etc.

Inv. instrument for vibratory therapy.

BOSE, JAGDISH CHANDRA, Prof of Phys., Univ. Calcutta, India.

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B. 1878, Angers, Fr. *Educ.* Ec. Polytech., Paris. D.Sc. (Paris) 1912. *Soc.*—Fr. Phys.; Fr. Astron. *Late* Vol. Assist., Observ. Paris, 1905—07.

Books.—“Mod. Theories of the Sun,” 1910; “Relation of Magnetic Storms and Solar Phenomena,” 1912. *Contrib.* on comets, their spectra and brilliancy, magnetic storms, astron., math.-phys., in *Comptes Rendus*, etc.

BOSSHARD, EMIL, Prof. of Chem. Technol., Tech. Sch., Zurich, Switz.

B. 1860, Zurich.

Contrib.—Numerous.

Inv. Syst. of water purif. for boilers.

BOSTROEM, EUGEN, Geh.-Med.-Rat; Ord. Prof. of Path. Med. and Surg., Giessen Univ., Ger.

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B. 1842.

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B. 1861. D.Sc. *Soc.* Fr. Geol. (P.P.); Hon. or Corresp. Mem., Geol. Belgium, Vienna, London; Anthropol., London, Berlin, Vienna, Washington, etc.

Books.—Ed. "*Annales de Paléont. et de l'Anthrop.*"

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B. 1885. London. *Educ.* King's Coll., Cambridge. M.A. (Cantab.). *Soc.*—F.Z.S. Late Assist. Supt., Cambridge Mus., Zool.

Contrib. to *Q. J. Micr. Sci.*; *Proc. Zool. Soc.*, etc.

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Publ.—Numerous on Reptiles and Fishes.

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Books.—"Familiar Trees," 1886; "Uses of Plants," 1889; "Biog. Index of Brit. and Irish Botanists" (jtly.), 1893; "Elem. Geol.," 1896; "Wood," 1902. *Contrib.*—"British Elms" (*Trans. Roy. Scott. Arbor. Soc.*, 1879); "Econ. Forestry" (*ib.*, 1887); "Distrib. of *Thlaspi perfoliatum*," etc. (*Linn. Soc. J.*, 1877); and on *Capulus* and *Lamium*.

BOULTON, E. S., M.A., B.Sc.; Prof. of App. Math., Univ. of Bristol, Eng.

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Books.—"Mechanics applied to Machinery," 8 vols.; "The Entropy-Diagram and its applications" (in Eng.). *Contrib.*—"Study of steam-engines by the entropy diagram" (*Rev. de Méc.*, 1901); "Supersaturated steam" (*Ann. de l'Assoc. techn. maritime*, 1902), etc.

Graphical methods for thermodynamic study of engines.

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Contrib. on Leeches, Earthworms, Rotifera, etc., to *Proc. Roy. Soc.*, *Q. J. Micr. Sci.*, etc.

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Book.—"Introduction to Comp. Anat. of Animals." *Art.*—"Anthozoa and Ctenophora," in Lankester's *Treatise on Zoology*. *Contrib.*—"Postembryonic Development of Fungia" (*Trans. Roy. Dubl. Soc.*), 1893; "Structure and Affinities of Heliopora" (*Phil. Trans.*, 1895); "Calcareous Skeleton of the Anthozoa" (*Q. J. Micr. Sci.*), 1899; "The Neritidae" (*Proc. Zool. Soc.*, 1909).

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Books.—"Fermentation," 1894; "Soluble Ferments: Diastases, Enzymes," 1896; "Centenary of *J. de Pharm. et de Chem.*," 1909. *Contrib.* on sol. ferments, carbohydrates, sugars, glucosides, veg. physiol.

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Contrib.—"Guide to Sci. of Photo-micrography" in Wood's "Common Objects of the Microscope," 2nd ed.; and on bact., nat. hist., and photo-microg.

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Books.—"Submarine Photography," 1900; "Zool. Decades," 1905; "Pseudo-Language," 1913.

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Contrib.—"Distribution of Sense Organs in Microcoelix Elegans" (*U.C. Pub. Zool.*, 1904); "Movements of *Condylostoma*" (*ib.*, 1906).

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Books.—"Cell Studies," 6 vols., 1887—1907; "Problems of Fertilisation," 1901; "Constit. of Chromatic Nuclear Sub.," 1904. *Contrib.*—"Nephridia of Amphioxus" (*Munich Med. Wochenschr.*, 1890); "Developm. of enucleated egg fragments" (*ib.*, 1889); "Dev. of *Ascaris*" (*Festschr. Kupffer*, 1899); "Individ. of chromosomes" (*Arch. Zellforsch.*, 1909).

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Books.—"Course of Pract. Instruction in Bot.," "Pract. Bot. for Beginners"; "Origin of a Land Flora"; "Plant Life on Land." *Contrib.*—Numerous to *Phil. Trans.*, *Trans. Linn. Soc.*, *Ann. of Bot.*, *Naturw. Hdwb.*, etc.

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Books.—"Triang. 98th merid., Neb. to Canada," 1912; "Effect of Topog. and Isostatic Compens. on Intens. of Gravity" (jtly.), 1912. *Contrib.*—"Primary Base Lines at Stanton, Texas and Deming, New Mexico" (Appendix 4, "C. and G. S. Report," 1910); "The Texas-California Arc of Primary Triangulation" (*Science*, 1911); "Recent Gravity Work in U.S." (*Amer. J. Sci.*, 1911).

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Books.—"Wounds and other Injuries of Nerves, their Path., Symptoms and Treatment" (Jacksonian Prize Essay, R.C.S. Eng.), 1882; "Dis. and Injuries of Nerves and their Surg. Treatment," etc. (Astley Cooper Prize Essay), 1886; "Injuries and Dis. of Nerves and their Surg. Treatment," 1889; "Students' Guide to Surg. Path.," "A Civilian War Hosp.," 1901; "Lects. on Injuries of Nerves" (R.C.S. Eng.), 1887. *Arts.*—Various, in Heath's "Dict. of Surg." *Contrib.*—"On Enchondroma of the Breast" (*Trans. Path. Soc.*, 1881—82); "Develop. of Mammary Gland" (*Ann. Meeting, Brit. Med. Assoc.*, 1882); and other Papers in *Trans. Path., Clin. and Med. Chir. Soc.*

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Contrib. on mineral, and crystallog. subjects in *Miner. Mag.*, *Zeitschr. f. Kryst.*

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Books.—Bulls. Geol. Survey of Ohio, I. (1903), 8 (1906), 9 (1909); "Geol. Map of Ohio," 1909. *Contrib.*—Numerous on geol.

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Books.—"Differential Eqns. and Strength of Materials." *Contrib.*—"Resistance of human body to elec. currents" (*Phys. Rev.*, 1898); "Pitot tube" jtlly. with Judd (*Engng. News*, 1904).

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Book.—"Kinetic Theory," 1904. *Contrib.* on high frequency currents and thermodynam. potentials, to *Phys. Rev.*

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Book.—"Soap-bubbles, their Colours and the Forces which mould them," 1912.

Inv. method of making fine quartz fibres, and estab. their value as an instrument in research; Radio-micrometer; Apparatus for weighing the earth; Rainbow cup.

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Book.—"Provident Soc. and Indust. Welfare," etc. *Arts.* on Econ. in *Encycs. Contrib. on Anthrop.*

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Contrib.—Numerous, Amer. Dental Js.

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Arts.—"Disorders of Sleep" (Allbutt's "System of Medicine"). *Contrib.*—"Prognostic Value of Haemoptysis" (*Brit. Med. J.*, 1871); "Some new Vaso-dilators" (*ib.*, 1895); "Erythrol Tetranitrate in Angina Pectoris" (*ib.*, 1897).

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Book.—"Dissect. of Dog," 1912. *Contrib.*—"Develop. and homol. of mammalian cerebellar fissures" (*J. Anat.*, 1903); "Mammalian Cerebellum" (*ib.*, 1904); "Develop. of Hind-brain of Pig" (*ib.*, 1905); "Morph. and develop. of mammalian liver" (*ib.*, 1908).

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Contrib.—"Logarithm as a Direct Function" (*Ann. Math.*, 1903); "Surface density of Elce. on infinitely long cylinders" (*Thesis, Strassb.*, 1904); "An infin. product for $\frac{\pi}{4}$ derived from Gregory's Series" (*Q. J. Math.*, 1912).

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Arts.—"Monograph of British free and semi-parasitic Copepoda" (Ray Soc.); "Challenger Reports on Copepoda and Ostracoda"; "Rep. on the Harpacticidae, etc." (Ger. S. Pole Exped., 1901-03); "Post-tertiary Entomostraca of Scotland" (jtyl. (Palaeont. Soc.).

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Books.—"Tannoids," 1890; "Active Princip. of Cucurbitac.," 1893; "Atlas of Photomicrog. of Medicinal Plants," 1900. *Contrib.*—"Documents for geol. hist. of Pyrenees" (*Bull. Soc. Hist. Nat., Toulouse*, 1885-87); "Pharmacogr. meth. and classific." (*Bull. Soc. Pharm. S.O.*, 1893, 1894, 1901); "Medic. and useful plants of Africa" (*ib.*, 1895); and on sci., biog., hist., teaching, etc.

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Books.—"Theory and Pract. of Polyphase Asynchron-motors," 1902; "Theory of Alternat. Currents," 1910; "Construc. and Disposition of Elec. Railways," 1907. *Contrib.* to *Elektrotech. Zeitschr., Zeitschr. f. Elektrotech.*

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Public. on Lower Oolites in Ger. Lorraine; Volcanoes of Hernikerland in Middle Italy, Urach, Noerdlingen; Dönauworth Brecci; Volcanoes and cleavage; Influence and cause of earthquakes; Evol. Hist. of Cephalopoda; Lepidotus; Use of Röntgen rays in Paleont.; Ichthyosaurus; Human teeth in Bohnerz of Swabian Alps; Fossil Man; Cause of diminution of jaw of mammals; Fossil mammal fauna of Punin, Riobamba; Acquisition of power of flight; World and Life.

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Art.—"Hirudinea" in Zeuckart. *Contrib.* on Trematodea, Decapods, Amphib., etc.

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Contrib. on automatism of heart-muscle; weight of body-organs; development of insects; phylogeny of hares.

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Books.—"Compend. of Gyn.," 1901; "Text-bk. of Midwif." 1911. *Contrib.* to *Norsk Mag. f. Lægevidenskaben*, since 1893.

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Books.—"Ann. Repts. Madras Govt. Maternity Hosp.," 1879-98.

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Contrib.—"Structure and Development of *Grinnellia Americana* Harv." (*Annals of Bot.*, 1896); "N. Dak. Grasses and Forage Plants" (*N. D. Dept. Agric. Rep.*, 1898); "Aquatic Assets of N. Dak." (*N. D. Univ. Quart.*, 1911).

Algae and their reaction to dissolved substances in their environment.

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Contrib.—"Struc. and relationships of *Amer. Labyrinthodontidae*" (*J. Geol.*, 1905); "Devonian Fishes of Missouri" (*Bull. Univ. Missouri*, 1913); "Embar formation of Wyoming and its Fish Fauna" (*J. Geol.*, 1913).

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BRAULT, MARIE AUGUSTE PHILIPPE ALBERT, *Prof. of Med. Clin., Fac. Med., Univ. Paris*; *Mem. Fr. Acad. Med.*

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B. 1870, Biebrich a/R. *Educ. Gymn. Biebrich*; *Univs. Munich, Basel. Ph.D. (Basel) 1900. Soc.*—*Hist. and Lit. of Agric.*; *Ger. Hist. of Med. and Nat. Sci.*; *Württemberg. Nat.*; *Assoc. App. Bot.*; *Ger. Colonial.*

Public.—Numerous on *Ger. E. African rice, agaves, Vigna Sinensis, etc.*

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B. 1850, Myslowitz. *Educ. Würzburg. M.D. 1874, Ph.D. 1877 (Würz.)*. *Late Prof. of Zool., Dorpat Univ., 1886*; *Rostock Univ., 1886—91.*

Books.—"Animal Parasites of Man," 1904, 4th edn.; "Trematodes" and "Cestodes" in Bronn's "Class. and Orders of Animal Kingdom."

BRAUNER, BOHUSLAV, *Mem. Bohem. Acad.*; *Prof. of Chem. and Dirac. of Chem. Lab., Bohemian Univ., Prague, Bohemia*; *Kt. of Aust. Iron Crown of Russ. St. Stanislaus*; *For. Corresp. (Slav) of "Who's Who in Science."*

B. 1855, Prague. *Educ. Univ. and Polytech., Prague*; *Univs. Heidelberg, Manchester. Ph.D. (Prague) 1880*; *Hon. D.Sc. (Manc.) 1904. Soc.*—*Roy. Sci. Prague*; *F.M. Acad. Sci. Cracow*; *F.C.S.*; *Chem., Berlin and St. Petersburg*; *Hon. Mem. Owens Coll. Chem., Manchester*; *Life Mem. Owens Coll. Union Corresp. N.Y. Acad.*; *Hon. Mem. Bohem. Chem.*; *Internat. Atomic Wt. Comm. Late Berkeley Fell., Owens Coll.*

Arts.—"Atom. Weight Determ." in *Abegg's Handb. d. Anorg. Chem.*; "Chem. of Rare-Earth Elements," in *Mendeleeff's Chem. Contrib. on chem. of rare-earths, beryllium, tellurium, and periodic law of Mendeleeff, in J. Chem. Soc. London, Phil. Mag., Chem. News, Trans. Acads. Prague and Vienna, Zeits. f. Anorg. Chem., Ber. d. deutsch. chem. Ges., J. Russ. Chem. Soc., Comptes Rendus, Zeits. f. anal. Chem., etc., since 1877.*

Determ. of several atom. weights; *disc. of new compounds of rare-earths, and new methods of their separation, etc.*

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Books.—"Textb. of Miner. for Sch. of Engrs." 1906; "Textb. of Paleont." 1908.

Contrib.—"Paleont. of Yauli" (*Bol. 25 Cuerpo Ing. Minos*, 1905); "Minerals and rocks of Cuzco" (*Ib.*, 53, 1907); "Miwasagra" (*Informac. Soc. Ing.*, 1906); etc.

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Contrib.—"Oxyhalogen compounds" (*Z. phys. chem.*, 1906); "Syst. of quant. anal. for common elements," *Jly.* (*J. Amer. Chem. Soc.*, 1907—9); "Effect of salts on solub. of other salts," *Jly.* (*ib.*, 1911).

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Soc.—Corresp. Inst. Sci. Venice; Dermat. Fr.; Corresp. Med. Vienna; Dermat. Argentine; Roy. Med. Budapest; Hon. Fell. Dermat., Berlin and Vienna; Russian Dermat. "Tarnovskyy"; Ital. Dermat.; Acad. Sci. Padua (V.P.).

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Books.—"Chem. of extreme temperatures"; "Inorganic ferments"; Ed. "Handb. of App. Phys. Chem." *Arts.*—"Phys. Chem." and "Electromed." in *Boruttuus Handb. d. med. Anwend. d. Elek.*; "Chem. Kinetics" in *Spiro-Ashers' Ergebn. d. Physiol. Contrib.* on Catalysis, migration of ions, amphoteric electrolytes, relation betw. E.M.F. and chem. equilib., colloids in electric arc, asymmetric synth. and decomp., analogy of enzyme-action and catalysis.

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Books.—"On Inhibition," 1899; "Attention," 1913. *Contrib.*—"Binocular Rivalry" (*Psychol. Review*, 1909).

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Books.—"Bot. Researches," 15 vols.; especially on Fungus. *Arts.* in "Schöningh's Mycology."

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Publ.—Many.

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Book.—"Adv. Algeb. and Trig.," 1911.

Contrib.—"Converg. and Different. of Trig. Series" (*Ann. of Math.*, 1907); "Transform. of Series" (*ib.*, 1912).

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Woodlands, Gillingham, Kent, Eng.

B. 1852, Castlebar, Irel. *Educ.* Castlebar; Melbourne, Austral.; Hon. Mem. Roy. Engrns. Inst., Chatham. *Late* Supt. Govt. Brennan Torpedo Factory, Chatham, 1887—96; Cons. Engrn. to same, 1896—1907.

Inv. Brennan Torpedo; Brennan Monorail Gyroscopic System of Transport.

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Contrib. on *Phytopath.*, *Useful Plants*, *Peridophyta*, to *Bol. Jahresber.*, since 1892.

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Contrib. on ptomaines, toxines, light therap., hydrotherap., carcinoma, protection against cholera, typhanus, tetanus, etc.

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Contrib. on odontol. and stomat.

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B. 1883, Bradford. M.Sc. (Birm.) 1911; A.R.S.M. (Lond.) 1905. *Late* Lect. in Mine Surv., Birmingham. Soc.—M.Inst. Min. E.; F.G.S.; Edin. Geol.

Book.—"Effects of Errors in Surveying," 1912.

BRIGGS, LYMAN JAMES, Physicist, Bur. of Plant Indust., U.S. Dept. Agric., Washington, U.S.A.

B. 1874, Michigan. M.Sc. (Mich.) 1895; Ph.D. (Hopkins) 1901. Soc.—Am. Phys. Soc.; Fell. Amer. Assoc. Adv. Sci.; Treas., Wash. Phil. Soc.

Contrib.—"Mechanics of Soil Moisture" (*Bull. U.S. Dept. Agric.*, 1897); "Moisture Equivalents of Soils" (*ib.*, 1907); "Absorption of Water Vapour" (*J. Phys. Chem.*, 1903); "Dry Farming in Relation to Rainfall and Evaporation" (*Bull. U.S. Dept. Agric.*, 1910).

Principles determining movement and retention of soil moisture. Elec. methods for rapidly determining moisture content of grain and salt content of soils.

BRIGGS, WILLIAM, Gen. Ed. of Univ. Tutorial Press, and Univ. Corresp.

Burlington House, Cambridge, Eng.

B. 1861, Leeds. *Educ.* Yorks. Coll., Leeds; Jesus Coll., Cambridge. M.A.; LL.D.; D.C.L.; B.Sc. Soc.—F.R.A.S.; F.C.S.; Brit. Assoc. (*Life Mem.*); Japan.

Books on Maths. and Exper. Sci.

Founder of Univ. Correspondence Coll., 1887; Univ. Tutorial Coll., London, 1889.

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Summer Sch., Wisconsin, 1906; Assoc. Ed. *Bull. Amer. Geog. Soc.*

Books.—"Textb. of Geol.," 1900; "Geog. Influences in Amer. Hist.," 1900; "Commercial Geog.," 1911. *Contrib.* on distrib. of populn. in U.S., capacity of U.S. for popul., developm. of wheat culture in N. Amer., etc.

BRIGHAM, WILLIAM TUFTS, Dr., Direc., Bernice Pauahi Mus., Honolulu, Hawaii.

B. 1841, Boston. A.M. (Harv.), 1865. Soc.—Hon. Fell. Roy. Inst. Anthropol. G.B. and I.; Fell. Amer. Acad.

BRIGHT, CHARLES, Consulting Elec. Engr. to Commonwealth of Australia.

Leigh Grange, Kent. Eng., and Members Mansions, Victoria St., London, S.W.

B. 1863, London. *Educ.* Lancing Coll.; King's Coll. London. F.R.S.E.; Mem. Inst. C.E.; M. Inst. E.E. *Late* Constr. of numerous submarine cables; sole Austral. Rep., Internat. Radio-Teleg. Conf., 1912.

Books.—"Submarine Telegraphs"; "Sci. and Engrg. during the Victorian Era"; "Life of Sir C. T. Bright"; "Story of the Atlantic Cable"; "Engrg. Wonders of the World"; "Imper. Telegraphic Communication." *Contrib.*—"Possibilities of Wireless Telegraphy" (*Nineteenth Century*, 1902); "Imper. Telegraphs" (*Q. Review*, 1903); "Politics of Radio-Telegraphy" (*Edin. Review*, 1908); "The All-British Pacific Cable" (*J. Roy. United Serv. Inst.*), 1909.

BRIGHTMORE, A. W., M.I.C.E., D.Sc.; Engrg. Inspec., Local Govt. Board, Whitehall, London, S.W., Eng.

BRILL, ALEXANDER v., Prof. of Maths., Tübingen Univ., Ger.

B. 1842, Darmstadt. *Educ.* Karlsruhe, Giessen, Berlin. Ph.D. 1864. *Late* Prof. of Tech. Sch., Darmstadt, 1869; Tech. Sch., Munich, 1875.

Books.—"School reform in Maths.," "Graphic models, etc., for pure and app. Maths."

BRILLOUIN, LOUIS MARCEL, Prof. of Math. Phys., Coll. de France, Paris.

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B. 1854, Melle. *Educ.* Norm. Sch. Paris. *Late* Maître Conf., Univ. Nancy, 1880; Chargé, Univ. Dijon, 1881; Prof., Univ. Toulouse, 1883—87; Maître Conf., Norm. Sch. Paris, 1887—1900.

Books.—"Lects. on Elec.," 1904; "Lects. on Viscosity," *Contrib.* to *J. de Phys.*, *Ann. de Chim. et Phys.*, *Ann. du Bur. Centr. Météor.*; etc.

BRINDLEY, ALBERT EDWARD, Lect., Pub. Health Adminis., Manchester Univ.; M.O., Derby Educ. Comm.; M.O.H., Derby Borough-Vicarage Avenue, Derby, Eng.

B. 1865, Astbury, Cheshire. *Educ.* Manchester. M.D. (Lond.) 1894; M.B., Ch.B., 1889, B.Sc. 1886, D.P.H. 1898 (Manc.). Soc.—Brit. Med. Assoc.; Manchester Path.; Incorp. Soc. M.O.H. *Late* M.O.H., Bury; P.P. N.W. Branch, Incorp. Soc. M.O.H.

Contrib.—"Antifebrin poisoning" (*Brit. Med. J.*, 1896); "Carbolic acid in treatment of Smallpox" (*Lancet*, 1903); "Public abattoirs" (*Pub. Health*, 1906).

BRINDLEY, H. H., Teacher of Biol., St. John's Coll., Cambridge, Eng.; M.A.

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B. 1878, Copenhagen. Ph.D. (Copenh.) 1911. *Late* Prosect. in Anat., Vet. High Sch., Copenhagen.

Books.—"Danish Rhabdocoel. and Turbellar.," 1905; "Glands in Integuments of Ruminants," 1911. *Contrib.*—"Histol. and histogen. of Mucosa Uteri of viviparous Ray" (*Mitt. Zool. Sta. Neapel*, vol. 16); "Spinal glands of *Dicotylis*" (*Anat. Hefte*, vol. 36); "Skin glands of anthrop. apes" (*Anat. Anz.*, vol. 36); "Plankton in Danish waters" (*Midd. Komm. f. Havundersøgsur*, 1909).

BRINKMANN, THEODOR, Extraord. Prof. of Agric., Bonn Univ., Ger.

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B. 1873, Strassburg. Ph.D. 1896; Prof., 1911. *Late* Priv. Doz. and Adj., Electrotech. Labs., Tech. Sch., Dresden.

Books.—"Electrotech. Pract.," 1910; "High Tension in Elec. Installat.," 1911; "Nitrate from Air," 1912.

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B. 1873, St. Hippolyte. *Educ.* Paris. D.Sc.

Books.—"Studies on Pressure and Anti-Pressure," *Contrib.*—"Origin of Life" (*Rev. de Philos.*, 1910); various on Diastases and anti-diastases; venom of fishes and invertebrates; anaphylaxie; zool. anomalies, to *J. Phys. and Path.*, since 1903.

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Metamerism of leeches.

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Books.—"Dict. of Eng. Plant-names" (with R. Holland); "Biog. Index of Brit. Botanists" (with G. S. Boulger); "European Ferns," *Contrib.*—Numerous to *J. of Bot.*, since 1863.

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Contrib.—"Skeleton of an Aboriginal Australian" (*J. Anat. and Phys.*, 1901); "Value of Massage and Exercise Treatment" (*Liverp. Med. Chir. J.*, 1905); "Exercise Treatment in Knee Injuries" (*Liverp. Med. Chir. J.*, 1911).

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Contrib.—"Hydroida of Arctic Sea" (*Fauna arct.*, 1909); "Plankton" (*Swed. Exped. Spitzbergen*, 1908, 1910); "Aleyonaria of Trondhjem fjord" (*Kgl. Vidensk. Selsk. Skr.*, 1911—12); "Medusae" (*Michael Sars Exped.*, 1910, 1913).

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Contrib.—Reports of Geol. Surv. of Canada. Explorations in N. Canada and Brit. Columbia.

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Books.—"Gall Stones"; "Murmurs of Mitral Disease"; "Sketches of Lives and Work of Hon. Med. Staff of Manchester Infirm., 1752—1830"; "Life Insurance and General Pract." *Art.*—"Syphilis and Life Assurance," in "D'Arcy Power and Murphy's System of Syphilis." *Contrib.*—"Crescendo murmur of mitral stenosis" (*Med. Chron.*, 1897; *Brit. Med. J.*, 1909); "Merycism, or rumination in man" (*Brit. Med. J.*, 1907); "Blood Plates" (*Med. Chron.*, 1908). *Ed. Med. Chron.*

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Book.—"Essentials of Exper. Physiol." *Arts.* on Blood, Lymph, Phagocytosis, etc., in *Encyc. Brit.*; Sect. on Physiol. in Brain's "Syst. of Med." *Contrib.*—"New Concept of Glomerular Function" (Croonian Lect., Roy. Soc., 1911).

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Publications numerous.

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B. 1879, Varde. Ph.D. (Cop.).

Contrib.—"Studies in chemical affinity" (*Zeitschr. f. Phys. Chem.*, 1906—11); "Energy in chem. processes" (*Kgl. Dansk. Vid. Selsk. Skr.*).

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Books.—"Evol. Hist. of Human Eardbones," 1899; "Evol. Hist. of Bursa Omentalis in Invertebrates," 1904; "Normal and Abnormal Developments in Man," 1911. *Contrib.*—"Growth of Spermatids" (*Arch. f. Mikr. Anat.*, 1901); "Atypical sperms" (*Anat. Anzeig.*, 1902); "Embryonal origin of Pinnipedia" (*Deutsche S. Polar Exped.*, 1909—10); "Development of mesentery, aorta, etc." (*Ergeb. d. Anat. u. Entw. geschichte*, 1907, 1908, 1911).

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Books.—"Introduct. to Theory of Infinite Series," 1908; "Quadratic Forms," 1905. *Contrib.*—Various in *Proc. Lond. Math. Soc.*; *Q.J. of Math.*; *Amer. J. Math.*; *Math. Annalen*.

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Contrib.—"Radio-active measurements by constant deflection method" (*Amer. J. Sci.*, 1905); "Period of transformation of radium A, B and C" (*Phil. Mag.*, 1906); "Effect of temp. on activity of emanation and active deposit from thorium and actinium" (*Ib.*, 1908); "Clark and Weston Standard Cells" (*Brit. Assoc.*, 1909).

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Books.—"Trop. Med., Hyg. and Parasitology," 1907; "Aids to Trop. Med.," 1908; "Essentials of San. Sci.," 1908; "Marine and Port Hygiene" (in press).

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Book.—"Geog. and Geol. of Alaska," 1906. *Arts.*—"Amer. Exploration" (*Encyc. Amer.*); "Alaska" (*New Internat. Encyc.*).

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Books.—"Handb. for Surveyors," with M. Merriman, 1895; "Handb. of Street Railway Location," 1897; "Reinforced Concrete," 1911.

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Books.—"Agriculture," 3 vols.; "Manures" (Bailey's "Cyc. of Agric."). *Contrib.*—"Animal Reports" (*Mass. Agric. Exper. Sta.*, 1905—11); "Manurial Requirements of Crops" (*Ib.* 1891); "Poultry Keeping for Egg Production" (*Mass. Agric. Exper. Sta.*, 1908); "The Hay Crop" (*Mass. Agric. Exper. Sta.*, 1910).

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Arts.—"Fossil Reptiles of S.A." in *Science in S.A.* 1905: "Reptiles of Karroo Formation" in *Geol. of Cape Colony*, 1909. *Contrib.*—"Develop. and morph. of marsupial shoulder girdle" (*Trans. Roy. Soc. Edin.*, 1899); "Compar. of Permian Reptiles of N. Amer. with those of S. Africa" (*Bull. Amer. Mus. Nat. Hist.*, 1910); "Struc. of skull in Cynodont Reptiles" (*Proc. Zool. Soc.*, 1911); and about 150 to *Proc. Linn. Soc. N.S.W.*, *Proc. Zool. Soc. Lond.*, *Trans. Phil. Soc. S.A.*, etc.

Described 88 new species of fossil reptiles and amphibians, and 50 new genera.

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Book.—"Anatomy and Histology of Mouth and Teeth," 3rd edn. *Contrib.* to "Dental Brief," "Dental Cosmos," *Scientific American*. Ed. "Practical Dentistry."

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Book.—"Oral Surg."
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Books.—"Foundations of Maths." 1907; "Elements of Geom." 1909; "Intuitionism and Formalism," 1909. *Contrib.* to *Math Annalen*, *Crelle's J.*, etc.

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Books.—"Geol. of Penobscot Bay, Me." jctly; "Geol. of Mt. Desert Isl., Me." (in press). *Art.*—"Geog. of Providence, R.I." in "A Modern City," 1910. *Contrib.*—"Jamaica Earthquake" (*Pop. Sci. No.*, 1907); and numerous to U.S. Geol. Surv. Publ., etc.

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Contrib.—"Rise of Temp. in Field Coils of Dynamos" (*Inst. Elec. Engrs.*, 1901); "Tests on Reinforced Concrete Beams" (*Can. Soc. Civ. Engrs.*, 1908).

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Books.—"Treatise on Lunar Theory," 1896; "Moon" ("Encyc. Amer."); "Inequalities in Motion of Moon due to direct action of Planets," 1908. *Contrib.*—"Theory of Motion of Moon," Parts I.—V. (*Mem. R.A.S.*, 1897—1907); "Transmitted Motions" (*Trans. Amer. Math. Soc.*, 1905); "Formation of Derivatives of Lunar Coors" (*Trans. Amer. Math. Soc.*, 1903); "A new class of periodic orbits" (*Mem. R.A.S.*, 1911).

Completion of problem of Moon's Motion under Gravitation Law.

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Book.—"Voyage of *Scotia*" (jtly.) 1906. *Contrib.*—"Bot. of Gough Island" (*J. Linn. Soc.*, 37); "Echinoidea and Asteroidea from the Mergui Archip." (*Proc. Roy. Phys. Soc. Edin.*, XVIII.); "Mergui Archip." (*Scott. Geog. Mag.*, XXIII.); "Problems of Antarctic Plant Life" (*Rept. on Sci. Res. Voyage of S.Y. Scotia* III.).

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Books.—"Text-bks. of Physics" (jtly.); "Handb. of Electro-Technol." (jtly.). *Contrib.*—"Moments of Magnets" (*Phil. Mag.*, 1886—89); "Magnetic Properties of Iron Alloys" (*Trans. R.D.S.*, 1900—04); "Densities and Specific Heats of Alloys of Iron" (*ib.*, 1907); "Wiedemann effect in Iron and Nickel" (*Proc. R.D.S.*, 1909—11).

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Book.—"Mental Measurement," 1911. *Contrib.*—"Epistemol. difficulties in Psychol." (*Proc. Aristot. Soc.*, 1909—10); "Time difficulty in realist theories of perception" (*ib.*, 1911—12); "Exper. results in correlation of mental abilities" (*Brit. J. Psychol.*, 1910); "Freud's theory of dreams" (*Lancet*, 1913).

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Books.—"History of Submarine Mining in Brit. Army." *Arts.*—"Coast Defence," "Submarine Mines," in *Encyc. Brit.*, 1910. *Contrib.* on military subjects in *R.E.J.*, *United Service Mag.*, etc.

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Miner. and Crystallog. words in Standard Dict. of English Language. *Contrib.*—"A New Hydrous Sulphate" (*Amer. Chem. J.*, 1884); "Analysis of Sipyllite" (*Amer. J. Sci.*, 1877); "Water from Hinton" (*J. Amer. Chem. Soc.*, 1903); "Miley's Colour Photog." (*Pop. Sci. Monthly*, 1903); Ed. "Univ. of Missouri Studies."

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Arts. on "Inorg. and Phys. Chem.," in "Amer. Year Book," 1910—12. *Contrib.*—"New synth. of Hydronitric Acid" (*J. Amer. Chem. Soc.*, 1905); "Oxidation of Hydrazine" (jtly.) (*ib.*, 1907, 1909); "Anhydrous Hydronitric Acid" (jtly.) (*ib.*, 1909); "Behavior of Hydronitrogens and their derivs. in liq. ammonia."

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Books.—"Studies on Immunity" (with Muir); "Recent Methods in Diagnosis and Treatment of Syph." (with Ivy McKenzie). *Contrib.*—"Granular leucocytes in human foetus" (*J. Path. and Bact.*, 1905); "Chemotherapy in trypanosome infections" (*ib.*, 1908); "Wassermann syph. reaction" (jty.) (*ib.*, 1910); "Alterations in haemolytic immune body during process of immunisation" (jty.) (*J. of Hyg.*, 1911).

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Book.—"Intro. to Rarer Elements," 1903, 3rd edn. in press. *Contrib.*—"Incrasg. import. of rarer elements" (*Science*, 1908); and 35 in *Amer. J. Sci.* since 1890.

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Books.—"Textb. of Physiol.," 4th edn.; "Compend. of Physiol.," 13th edn.

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Contrib.—"Malta Fever" (*Practitioner*, 1887—88); "Nagana, or Tsetse Fly Disease" (*Roy. Soc.*, 1896); "Sleeping Sickness" (*ib.*, 1903).

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Book.—"Sci. Results of Voyage of S.Y. *Scotia.*"

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Books.—Life Hist. of Insects; Nebraska Birds; Locusts of Paraguay; Locusts of Argentina; Orthoptera of Trinidad; Saltatorial Orthoptera of Brazil, Brit. Guiana and Madagascar; Some Locusts of Peru; Acrididae, in *Biol. Cent. Amer.*, etc.

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Books.—"Solid Solutions and Isomorphism," in Ger., 1908; "Solid Sol." in Ger., 1901. *Contrib.*—"Solid Sol." (*Rendic. Accad. Lincei*, 1897—05); "Salification from phys.-chem. standpoint" (*Zeitschr. f. Elektrochem.*, 1908—10); "Racemism" (*Rendic. Accad. Lincei*, 1902—05); "Diffusion in solid metallic alloys" (*ib.*, 1911 and *Internat. Rev. of Metallog.*).

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Books.—"Ovals and Egg-surfaces," 1887; "Curves without turning-point," 1889; "Relations between Du Bois Reymond's Theorem and Theory of Ovals," 1905. *Contrib.*—"On connected series" (*Sitz.-Ber. d. Mun. Akad.*, 1892); "Theory of ovals" (*ib.*, 1894); "On

the egg-figure determined by any one finite figure" (*Boltzmannfestschr.*, 1904); "Theory of egg-figures" (*Arch. d. Math.*, III., vol. 17); etc.

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Books.—"Outlines of Chemistry," 1890; "Pharmaceutical Practice," 1891.

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Books.—"Calculus"; "Probability."

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Contrib.—"Cowenhoven Adit Level" (*Proc. Inst. C.E.*, 1898); "Aspen Mountain: its Ores and Mode of Occurrence" (*Engnrg. and Min. J.*, 1888); "Theory and Pract. of ore sampling" (*Trans. Amer. Inst. Min. Engrns.*, 1896); "Mod. Pract. in Min. and Metall. in W. U.S." (*Pres. Address. Amer. Inst. Min. Engrns.*, 1909).

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Books.—"Handb. of Pharmacol., Nat. Med. and Therap."; "Disorders of Digestion; their Consequences and Treatment"; "Collected Papers on Circulation and Respiration"; "Digestion and Secretion." *Contrib.*—"Pharmacol. and Therap." (*Gulst. Lects., R.C.P.*, 1877); "Relations of Chem. Struct. to Physiol. Action" (*Croon Lects., R.C.P.*, 1889); "Lects. on Action of Medicines"; "Disorders of Assimilation," etc.

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Books.—"Methods of Anal. for Maple Products" *Circ.* 40; "Extract. of Grains, Cattle foods, for determin. of Sugar," *Circ.* 71; also *Bulls.* 52, 134, 135, 146, 154 on sugar, honey, syrup, etc. *Contrib.*—"Report on Sugar Methods" (*Rep. of A.O.A.C.*, 1908—09); "Precipitin of Reducing Sugars with Basic Lead Acetate" (*Internal. Sugar J.*, 1909); "Estimation of Dry Substance by Refractometer" (*J. Amer. Chem. Soc.*, 1908). Assist. Ed. of "Chem. Abstracts."

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Books.—"Thermodynamics"; Textbks. in Univ. Tutorial Series; "Stability in Aviation," 1911. *Contrib.*—"Waves on Rotating Spheroid" (*Phil. Trans.*, 1889); "Report on Thermodynamics" (*Brit. Assoc. Rep.*, 1901, 1904). *Arts.*—"Thermodynamics" in *Encycl. d. Math.*; "Diffusion" in *Encyc. Brit.*

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Books.—"Quain's Anatomy," 11th edn., Vol. 1. "Embryology"; "Early Development of Human Ovum" (jty.); "Book of Arran." *Art.*—"Sepulchral Monuments." *Contrib.*—"Histology of Blood of Lepidosiren" (*Trans. Roy. Soc. Edin.*, 1904—05); "Development of Thymus Gland in Lepidosiren" (*J. Anat. and Phys.*, 1906); "Anat. and Mechanism of Wrist Joint" (*J. Anat. and Phys.*, 1896); "Cairns of Arran" (*Proc. Soc. Antiq. Scot.* 1902—04, 1908).

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Book.—"Designs for elec. works." *Contrib.* on distrib. of elec.

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- Books.*—"Manual of Anat.," 1907. *Contrib.*—"Well-marked Lobulation of Kidneys" (*J. Anal. and Physiol.*, 1892); "Peroxide of Hydrogen in Preparation of Bones" (*Ib.*, 1893); "Diverticulum of Small Intestine" (*Ib.*, 1893); "Calcareous Body from Prepatellar Bursa" (*Ib.*, 1894).
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- Books.*—"Rabies and Hydrophobia"; "Handb. of Forensic Med., Toxicol. and Publ. Health" (jointly); "Blood in Health and Dis." *Contrib.*—"Endemic malaria" (*Liverp. Med.-Chir. J.*, 1902); "Pulmonary Syphilis" (*Ib.*, 1906); "Arsenical Neuritis" (*Lancet*, 1901); "Susceptibility and Infection" (*Brit. Med. J.*, 1903).
- BUCHANAN, W.**, Prof. of Elec. Technol., S. African Sch. Mines, Johannesburg, S. Africa.
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- Books.*—"Coal-Tar Dyes"; "Pract. of Colour Chem.," jty.; "Mineral, Plant, and Coal-Tar Dyes."
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- Göttingen, 1897—1900; Priv. Doz. of Astron., Univ. Halle. *Contrib.* on theory of perturbations, etc.
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- BUCHKA, KARL v.**, Geh. Ober-Reg. Rat, Counc. in Imp. Ger. Treasury; Prof. of Food Chem. and Hist. of Chem., Berlin-Charlottenburg Tech. Hochsch.; Priv.-doz. of Chem., Berlin Univ. Keithstr. 21, Berlin W 62. B. 1856, Rostock. *Educ.* Univs. Göttingen, Greifswald, Munich. Ph.D. (Gött.) 1877. *Late* Priv. Doz. and Extraord. Prof., Göttingen, 1881—96. *Book.*—"Food Legislation in Ger. Empire," 2nd edn., 1911; "Chem. of Pyridine and Derivs.," 1889—91; "Textb. of Anal. Chem.," 1892—1902; "Phys.-Chem. Tables of Inorg. Chem.," 1895; "Food Industry," 1913.
- BUCHNER, EDUARD**, Geh. Reg.-Rat, Nobel Laureate, 1907; Prof. and Direc. of Chem. Inst., Würzburg Univ. Ger. Pleicher Ring 11, Würzburg, Ger. B. 1860, Munich. *Educ.* Univs. Munich, Erlangen. Ph.D. (Mun.), 1888. *Late* Priv. Doz., Munich, 1891; Prof., Agric. Coll., Berlin, 1898—1909; Breslau Univ., 1909—11. *Books.*—"Zymase Fermentation," 1903. *Contrib.*—"Pyrazol" (*Ann. d. Chem.*); "Polycarbonate of Trimethylene" (*Ib.*); "Pseudophenylacetic acid" and "Chem. processes by alcoholic ferment." (*Ber. d. Chem. Ges.*); "Alcoholic ferment of sugar" (*Bull. Soc. Chim. de France*).
- Cell-lease fermentation, 1897.
- BUCHNER, EDWARD FRANKLIN**, Prof. of Educ. and Phil., and Direc. of Summer Session, Johns Hopkins Univ., Baltimore, Md., U.S.A.; Co-op. Ed., *Psychol. Bull.*; Collab. Ed., *J. Educ. Psychol.*; Depl. Ed. *Cyc. of Educ.* B. 1868, Paxton, Ill. *Educ.* Leander Clark Coll., Ia.; Yale Univ. B.A. (Western) 1889; Ph.D. (Yale) 1893. *Soc.*—F.A.A.; Amer. Psychol. Assoc.; Amer. Nat.; Amer. Phil. Assoc.; N.Y. Acad. Sci. (Non-res.); S. Phil. and Psychol. (P.P.) *Late* Prof. of Psychol., N.Y. Univ., 1896—1901; Prof. of Educ. and Phil., Univ. Alabama, 1903—08. *Books.*—"Kant's Educ. Theory," 1904; "Study of Kant's Psychol. with Ref. to Critical Phil.," 1897. *Arts.*—"Fichte," in Warner's Library of World's Best Lit.; "Consciousness," "H. James," "Kant," etc., in Monroe's *Cyc. of Educ.* *Contrib.*—"Volition as a sci. datum" (*Psychol. Rev.*, 1900); "Educ. as a sci. pursuit" (*Educ.*, 1904); "Psychol. progress" (*Psychol. Bull.*, 1904 et seq.).
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Book.—"Modern Dental Mat. Med., Pharmacol. and Therap.," 3rd edn.

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Books.—"Morphol. of the Blood," *Contrib.* (with J. A. Gardner) on Chloroform Anaesthesia (*Proc. Roy. Soc.*); and "Haemoglobin" (*J. of Physiol.*).

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Books.—"Textb. of Phys.," "Gen. Mech." *Contrib.*—Numerous.

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Books.—"Building Stones of Missouri" (jly.); "Geol. of Granby Area" (jly.); "Lime and Cement Resources of Missouri."

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Darwinism, Theory of Mutation.

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Arts. in "Chem. Technol. of Azo-dyes." *Contrib.*—116 to *Ber. Chem. Ges.*

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Contrib.—Numerous on Effect of Mixtures of Drugs, Normal Agglutination, etc.

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Books.—"Otology"; "Atlas of illumin. pictures of tympanum."

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Books.—"Honeydew"; "Struc. and Life of our Forest Trees"; "German Forest,"

Art.—"Trees" in Handwörterb. d. Naturw.;

"Fagales" in Flowering Plants of Middle Europe; "Forests of Ger. Colonies" in Handb. d. Forstwiss. *Contrib.*—"Forestry in Dutch Indies" (*Zeitschr. f. Forst. u. Jagdwesen*); etc.

New plant species in Cameroons.

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Book.—"Travels in Liberia," 2 vols., 1891.

Contrib.—"Notes from Leyden Mus." on ornith., mammalogy, etc.

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Books on Med. and Pharmacy. *Contrib.*—Numerous.

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Books.—"Mechanism of the Knee"; "Articulation of Shoulder." Numerous works on the Anatomy of Insects and Termites of Ceylon.

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Books.—"Transportation and Storage of Grain and Coal," 1899; "Tech. Arrangements for Transporting and Storing Bulk Material (Mass Goods)," 3 vols., 1901—06; "Mechanical Handling of Material," 1908. *Arts. in Engrs.' Pocket Book, Iron-Works Pocket Book Costs of Engrg. Works, Illus. Tech. Dict., etc. Contrib.*—More than 150.

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Books.—"Theory of Surfaces," 1900; "Theory of Series," 1905; "Theory of Determinants," 1906; "Theory of Irrational Numbers," 1911; "Theory of Functions of Fuchs," 1889; "Applic. of Mittag-Leffler's Theorem," 1887; "Weierstrass' theory of elliptic functions," 1893; "Max. and min. of functions of 2 variables," 1893; "Distrib. of zeros of holomorphic functions," 1892; "Max. and min. of f. of 3 var.," 1897; "Theory of Eqns." 1912.

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Books.—"Coll. Algebra," jty. *Contrib.*—"Gen. Classif. of Plane Quartic Curves" (*Math. Review*, I.).

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Book.—"Researches on Fungi," 1909. *Contrib.*—"Physiol. of Spermatozoa of Ferns" (*Annals of Bot.*, 1900); "Biol. of Polyporus squamosus" (*J. Econ. Biol.*, 1906); "Function and fate of Cystidia of Coprinus atramentarius" (*Annals of Bot.*, 1910); "Number of Microorganisms in air of Winnipeg" (*Trans. Roy. Soc. Can.*, 1911).

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Contrib. on Bact. and Path. to *Trans. Path. Soc., Roy. Soc., J. Hyg.*, etc. Ed. *Studies in Path.*

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Books.—"Intro. to Econ.;" "Monetary Hist. of U.S.;" "Financial Hist. of Mass."

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Books.—"Pupillary Disturb. in Nerv. and Ment. Dis.," 2nd edn., 1911; "What are Compulsory Processes?" 1905; "Current Errors in Examn. of Ment. Dis.," 1907; "Body Phenomena in Psych. Processes," 1909; "Nerv. Degenerat.," 1912; "Forensic Psychiat.," 1912.

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Contrib.—Various.

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Book.—"Textb. of Anat. and Physiol. for Nurses," 2nd edn.

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Books.—"Human Physiol.," 1905; "Org. Chem. for Medicals," 1906; "Increasing incapability of Women to suckle," 1909. *Contrib.*—"Breathing of Worms" (*Zeitschr. f. physiol. chem.*, 1890); "Assimilation of iron" (*ib.*, 1891—92); "Salt content of cartilage" (*ib.*, 1899); "Increasing consump. of sugar" (*Zeitschr. f. Biol.*, 1901—04).

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Books.—Ed. "Muspratt's Encyc. of Tech. Chem." *Contrib.*—Numerous on heating, lighting, water-supply, etc.

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Contrib.—"Etiol. and Pathogenesis of Pernicious Anaemia" (*Hopkins Hosp. Bull.*, 1905); "Experimental Anaemias" (*J. Amer. Med. Assoc.*, 1907); "Blood-platelet and megakaryocyte reactions in Rabbit" (*J. Exper. Med.*, 1910); "Blood picture in Hodgkins Dis." (*Trans. Amer. Phys.*, 1911).

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Books.—"Electrical Science"; "Capillary Electrometer in Theory and Pract."; "Pronunciation of English by Foreigners"; "Pract. Exercises in Physiolog. Optics." *Contrib.*—Numerous in *Phil. Trans.*, *Proc. Roy. Soc.*, since 1885.

Methods of measuring rapid changes of elec. potential; capillary electrometer; artificial temporary colour blindness.

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Books.—"Lab. Phys. for Freshmen"; "Measurem. of High Temp." (with Le Chatelier), 3rd edn., 1912. *Contrib.* on Pyrometry; Primary standard of Light; Osm. Press. of Ether Sol.; etc.

Researches on gravitation constant.

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Books.—"Repts. on Archaeol. Surv. of Bombay Pres.," 9 vols.; "Cave Temples of India" (with late J. Fergusson); new edition of J. Fergusson's "Indian Architecture." *Arts.*—"Indian Architecture," in *Encyc. Brit.*, 11th edn. *Contrib.*—"On the Error Function Definite Integral" (*Trans. Roy. Soc. Edin.*, 1898); "Notes on Hindu Astron." (*J. Roy. Asiatic Soc.*, 1893). Prop. and Ed. of *Indian Antiquary*, 1872—84.

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Books.—"Hist. Sketch of Canadian Inst. for Insane"; "Insane in Canada." *Art.*—"Ophioglossaceae and Filices," "Macon's Canadian Flora." *Contrib.*—"Bot. holiday in Nova Scotia" (*Bot. Gaz.*, 1884); "Canadian Filicinial" (*Trans. Roy. Soc. Can.*, 1884); "Notes on Flora of 49th parallel" (*Trans. Hamilton Assoc.*, 1888); "Insane in Canada" (*Trans. Amer. Med.-Psych. Assoc.*, 1905).

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Books.—"Origin of Life," 1906; "Mind and Matter." *Contrib. to Phil. Trans., Phil. Mag.,* and various *Reviews.*

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Books.—"Hist. of Ohio Agric.;" "Agric. for Beginners"; "Cotton"; "Soils"; "Our Domestic Animals"; "Farm Stock"; "Farmer's Vet.;" "Farm Crops." *Ed. Country Life Educn. Series.*

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Contrib. to Annals of Bot., and Indian Govt. Publications.

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Art. in "Mech. World Pocketbk., 1912."

Contrib.—"Milling Cutters and Reamers" (*Mech. World*, 1911); "Setting Double-Angle Fluting Cutters" (*Machinery*, 1912); "Testing of a low resist." (*Elec. Engr.*, 1906).

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Books.—Numerous on Perspective; "Textb. of Kinem.," 1888. *Contrib.* on psychol. of illusions, etc.

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Contrib.—"Flagellum staining of Spirillum Obermeieri" (*Trans. Mich. Acad. Sci.*, 1907); "Bact. Studies of milk supplies of Boulder" (*Colo. Studies*, 1911); chap. on "Wassermann Reaction" in "Todd's Clin. Diagnosis."

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Book.—"Theory of Groups of Finite Order," 1897, 1911. *Art.*—"Theory of Groups" in *Encyc. Brit.*

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Book.—Transl. of Curschmann's "Handb. of Nerv. Dis."

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Books.—"Stresses in Bridge and Roof Trusses"; "Theory of Masonry Arch"; "Isthmian Canal"; "Graphic Method by Influence Lines for Bridge and Roof Computation."

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Books.—"Attraction of Himalaya Mountains on Plumb-line"; "Intensity of Gravity in India"; "Geog. and Geol. of Himalayas"; "Levelling Operations in India." *Contrib.*—"Intensity and direction of gravity" (*Phil. Trans.*, 1905).

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Book.—"Bacteria," 1882. *Contrib.*—"Parasitic Fungi of Ill. (Uredineae)" (*Bull. Ill. State Lab. Nat. Hist.*, 1885); "Blight of Pear and Apple Trees" (*Trans. Trustees Univ. Ill.*, 1880); "River Pollution and Purific." (*Trans. Amer. Micr. Soc.*, 1904); "Micro-organisms of Soil and Human Welfare" (*Sci.*, 1904).

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Contrib.—"Exper. tests of gen. intelligence" (*Brit. J. Psych.*, 1909); "Exper. tests of higher mental processes" (*J. Exper. Pedagog.*, 1911); "Ment. differences between the sexes" (*ib.*, 1912); etc.

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Books.—"Manual of Clin. Med.", 1894; "Treatise on Periph. Neuritis" (July), 1893; "Influenza as it Affects the Nerv. Syst.", 1900; "Dis. of Nerv. Syst.", 1913. *Contrib.*—"Influence of Hered. Syph. in Product. of Idiocy or Dementia" (*Braun* 1883); "Osteomalacia in a Child" (*Brit. Med. J.*, 1884); "Paralysis Agitans treated by Hyoscine" (*Lancet*, 1902); "Trauma in Relation to Dis. of Nerv. Syst." (*Trans. Manc. Med. Soc.*, 1904).

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Contrib. on Org. and Anal. Chem. **BUSHONG, FRANCIS WILLIAM**, Assoc. Prof. of Ind. Research, Univ. of Kansas.

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"Chemical Composition of Petroleum" in *Univ. Geol. Surv. of Kansas. Contrib.*—"Esters of Sulphuric Acid and of Chlorosulphonic Acid" (*Amer. Chem. J.*, 1903); and to *Trans. Kan. Acad. Sci.*

Isomeric naphthenic acids. **BUSSE, OTTO (EMIL FRANZ)**, Ord. Prof. of Gen. Path. and Path. Anat., Direc. of Path. Insts., Univ. Zurich.

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Books.—"Yeasts as Cause of Dis.," 1897; "Post-mortem Report," 1900, 4th edn. 1911; "Infectious Cerebro-spinal Meningitis," 1900. *Contrib.*—Numerous on tumours, muscle transform., etc., to *Virch. Arch.*, etc.; Ed. of Path. Anat. in *Virch.-Hirsch Jahresber.*

Saccharo- and blasto-mycoses, 1894. **BUSSY, L. P. de**, D.Sc.; Supt. of Biol. Dept., Deli-Exper. Station, Medan, Dutch Indies. Insects, plant-diseases.

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Contrib. to Groth's *Z. f. Krystall.*, *Neues Jahrb. f. Miner., Geol. Mag.*, etc.

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Books.—(Largely illustrated by himself) "Cat. of Diurnal Lepidopt. (Satyridæ) in Brit. Mus.," 1868; "Cat. of Diurnal Lepidopt. descr. by Fabricius," 1869; "Illustrns. of Typical Specimens of Lepidopt. Heterocera in Brit. Mus.," pts. I., III., V.—VIII., 1877—89; "Lepidopt. Exotica," 1869; "Brit. Birds' Eggs," 1886; "Foreign Finches in Captivity," 1895—6, 2nd edn. 1898; "Brit. Birds with their Nests and Eggs," vols. I., II. and part of III., 1897—8; "Birds Eggs of Brit. Isles," 1901; "Birds of G. B. and I.," etc. *Contrib.*—Numerous since 1865.

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Contrib.—"Account of genus *Pythium* and some *Chytridiaceæ*" (*Mem. Dept. Agric. India, Bot. Series*, 1907); "Bud-rot of Palms in

India" (*Ib.*, 1910); "New genus of Uredineaceae" (*Ann. Mycol.*, 1910); "Allomyces, a new aquatic fungus" (*Ann. of Bot.*, 1911).

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Books.—"Are Bees Reflex Machines?" 1900, and in Amer., 1907; "Man and his Forerunners," 1911, and in Eng., 1913; "Life and Habits of Honey-Bee," 1914. *Contrib.*—"Diatomum clavatum" (*Zool. Jahrb.*, 1902); "Modern animal psychol." (*Arch. Rass. u. Ges. Biol.*, 1909); "Psychol. and biol. of ants, bees and wasps" (*Naturw. Woch.*, 1907); "Atavism in bees," 1911.

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Books.—"Gas Manuf.," 2 vols. 4th edn.; "Acetylene" (with Leeds), 2nd edn.

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Book.—"Glass Sands of Okla.," 1912.

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Book.—"Outline of Quantitative Analysis." *Contrib.*—"Passive State of Metals" (*J. Amer. Chem. Soc.*, 1908); "Perchromic Acid and Perchromates" (*Amer. Chem. J.*, 1904); "Anodic process of Wolfram" (with Leblanc) *Zeitschr. f. Phys. Chem.*, 1909; "Influence of Magnetic Field on Passive State of Iron" (*J. Amer. Chem. Soc.*, 1909 and 1911).

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London, 1907; Pres., Confer. Hyg. of Childhood, Roy. San. Cong., Belfast, 1911; Pres., Sect. Obstet. and Gynaec., Brit. Med. Assoc., Cheltenham, 1901; etc.

Books.—"Pub. Health Problems," 1906; "Tuberc. in Ireland," 1908. *Art.*—"Tuberc. among Childr. in Irel." in "Tuberc. and Childhood," 1908; "Infant and the Nation" in "Infancy," 1910. *Contrib.*—"Med. Sci. and Sch. Hyg." (*Trans. 2nd Internat. Cong. Sch. Hyg.*, 1908); "Pres. position and future develop. of obstet. med." (*Brit. Med. J.*, 1909); "Hyg. of the child, with spec. reference to Irel." (*J. Roy. San. Inst.*, 1911); "Evol. of obstet. med., with illus. from some old midwif. books" (*Brit. Med. J.*, 1912).

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B. 1872, Rothera. Ph.D. *Soc.*—Geog. Hamburg; Germ. Anthropol.; N.W. Ger. Antiq.

Books.—"Nasal E in Latin Elements of Roumanian," 1896; "Old Nasal Vowels in Slav. Elements of Roum.," 1898; "Istro-Roum. Glossary," 1899; "Polar Peoples," 1909. *Arts.*—"N. M. and W. Asia," "Europe" in Buschan's *Illustr. Ethnog.*, 1909. *Contrib.*—"Some Roumanian Gypsy Words" (*J. Gypsy Lore Soc.*, 1908); and to *Globus, Geog. Anzeig., Anthropol. Zentralbl.*

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Contrib.—"Spontaneous Combust. of coal on board ship" (*J. R. United Serv.*, 1902); "Stoking and smoke abatement" (*J. Roy. San. Inst.*, 1906); and numerous to *J. Roy. Met. Soc.*

CABOT, RICHARD CLARK, Assist. Prof. since 1908, of Clin. Med., Harvard Univ., U.S.A. U.S.A., Marlborough Street, Boston, Mass., 1900.

B. 1868, Brookline, Mass. A.B. 1889, M.D. 1892 (Harv.)

Books.—"Clin. Exam. of Blood," 1896, 5th edn. 1904; "Serum Diagnosis," 1899; "Phys. Diagnosis," 1901, 4th edn. 1909; "Case Teaching in Med.," 1906, 2nd edn. 1912; "Social Service and Art of Healing," 1909; "Differential Diagn.," 1911, 2nd edn. 1912. *Contrib.*—"Diagnostic and prognostic importance of Leucocytosis" (*Boston Med. Surg. J.*, 1894); "Case of Chronic Cyanosis, ending in Cerebral hæmorrhage" (*Ib.*, 1899); "Ring bodies (nuclear remnants) in anæmic blood" (*J. Med. Research*, 1903); "Action of Alcohol in dis., espec. on circ." (*Med. News*, 1903).

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Books.—"Rept. on Mine Ventiln.;" "Rept. on Mine Rescue Apparatus." *Contrib.*—Numerous to *Trans. I. Min. E.*

Safety lamp (medal, Brussels Exp., 1910).

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Books.—"Chem. of diazo-compounds," 1908; "Synthet. Dyestuffs" (jtly.) 1905. *Arts.*—"Azo colouring-matters" in Thorpe's Dict. of App. Chem., New Edn.; "Perkin, Sir W. H.," in Dict. Nat. Biog. *Contrib.*—About 40 to *J. Chem. Soc., Ber.*, etc., since 1891.

CAIN, WILLIAM, Prof., since 1889, of Maths., Univ. N. Carolina, Chapel Hill, N.C., U.S.A.; Direc., Amer. Soc. C.E., 1912—15.

B. 1847, Hillsboro, N.C. *Educ.* N.C. Milit. and Polytech. Inst., Hillsboro. A.M. 1866. *Soc.*—Amer. C.E.; Amer. Math.; F.A.A. *Late Practising C.E.* 8 years; Prof. of Math. and Engrng., Carolina Mil. Inst., 5 years; Prof. of Math. and Engrng., S.C. Milit. Acad., 7 years.

Books.—"Theory of Voussoir Arches"; "Steel-Concrete Arches and Vaulted Structures"; "Solid and Braced Elas. Arches"; "Maxim. Stresses in Framed Bridges"; "Pract. Designing of Retaining Walls"; "Brief Course in Calculus." *Contrib.*—"Determin. of stresses in elas. systems by meth. of least work" (*Trans. Amer. Soc. C.E.*, XXIV.); "Theory of ideal culmner" (*ib.*, XXXIX.); "Stresses in masonry dams" (*ib.*, LXIV.); "Expts. on retaining walls and press. on tunnels" (*ib.*, LXXII.).

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Contrib.—"Moose Mountain District, Alberta" (*Geol. Surv. Can.*, 1907); "Portions of Conrad and Whitehorse Min. Districts, Yukon, Can." (*ib.*, 1908); "Wheaton District, Yukon, Can." (*ib.*, 1912); "Portions of Atlin Min. District, Brit. Columbia, Can." (*ib.*, 1912); etc.

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B. 1884, Presley. *Educ.* Univs. Aberdeen, Berlin; Dahlem Bot. Inst. B.Sc.

Contrib.—"Sulphur preventing Potato Disease" (*North Brit. Agric.*, 1911).

CALDWELL, FRANCIS CARY, Prof. of Elec. Engrng., Ohio State Univ., Columbus, O., U.S.A.

B. 1868, Ithaca. *Educ.* Cornell Univ.; Swiss Polytech. Inst. A.B. 1890; M.E. 1891 (Cornell). *Soc.*—F. Amer. I.E.E., Illum. Engrng.; etc.

Book.—"Elec. Engrng. Test Sheets," 1911.

CALDWELL, G. H., Prof. of Physiol. and Pharmacol., Univ. N. Dakota, U.S.A.

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Books on Bot., etc. *Contrib.* numerous.

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Books.—"Eyesight in Schools"; "Scheme for Subjective Determin. and Correct. of Errors of Refraction."

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B. 1841, Bonn, Ger. *Soc.*—Numerous.

Books.—"Groningen Univ. Miner.-Geol. Repts.," vols. 1 and 2. *Contrib.*—Numerous on Miner. and Geol.

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Researches on Protozoa.

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B. 1863, Hartford, Conn. *Educ.* Smith Coll.; Harvard Univ.; Clark Univ. A.M., LL.D. (Smith); Litt. D. (Columbia). *Soc.*—Amer. Psychol. Assoc.; Amer. Phil. Assoc.

Books.—"Introduct. to Psychol.," 1901, 2nd edn. 1905; "Double Standpoint in Psychol.," 1905; "Persistent Problems of Phil.," 1907, 3rd edn. 1912; "First Book in Psychol.," 1910, 3rd edn. 1912. *Contrib.*—"Association" (*Psychol. Rev. Monog.*, 1896); "Perception of coloured and colourless light" (*Arch. f. Anat. u. Physiol.*, 1902); "Reconciliation between structural and functional Psychol." (*Psych. Rev.*, 1906).

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Wollaston Donation Fund, 1885, and Murchison Medal, 1906, Geol. Soc., Lond. Soc.—Hon. Mem. Liverpool Geol.; Birmingham Phil. Late Assist. in N.Y. State Mus.; Cur. Sheffield Pub. Mus.; Insp. in Tech. Educ., Shropshire and Staffs. F.G.S.

Contrib.—"Age of newer Gneissic Rocks of the Northern Highlands"; "Precambrian Rocks of Shropshire"; "Crystalline Schists of Malvern Hills," in *Q. J. Geol. Soc. Lond.*, since 1879.

CALLEJA, CARLOS, Prof. of Exper. Psychol., Univ. Barcelona, Spain; Pres., Roy. Span. Nat. Hist. Soc.

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Books.—"Life of Crustacea," 1911. *Arts.* on Crustacea, etc., in *Encyc. Brit.*, 11th edn., and Lankester's Treatise on Zool., 1909. *Contrib.*—Numerous, on Crustacea.

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B. 1871, Philadelphia. *Educ.* Pub. Schs., Philadelphia; Univs. Penna., Berlin, Jena, Ph.D. (Penna.) 1895. *Soc.*—Acad. Nat. Sci. Phila.; Amer. Entomol. (Pres.); Entomol. Amer.; Amer. Zool.; Fell. Amer. Assoc. *Late* Instr. in Zool., Penna. Univ., 1892, Assist. Prof., 1907—12; Assoc. Ed. *Entomol. News*, 1893—1910.

Book.—"Biol. Central America," vol. Neuroptera, Odonata, 1901—08. *Contrib.*—About 75 papers on Taxonomy, Distrib. and Ecology of Odonata since 1890.

CALVERT, SIDNEY, Prof. of Org. Chem., Direc. of Chem. Labs., Missouri Univ., Columbia, Missouri, U.S.A.

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Contrib.—Behaviour of certain Derivs. of Benzol containing Halogens; Bromine Derivs. of Phenylene Diamine, to Amer. Acad. Arts and Sci.; "Dietary Studies," U.S. Dept. Agric.

CALVET, LOUIS, Prof. of Zool., Fac. Sci., Univ. Clermont-Ferrand.

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Contrib.—Numerous on anat., biol. and syst. of marine Bryozoa, and on biol. of water.

CAMAC, C. N. B., Assist. Prof. of Clin. Med., Coll. Physicians and Surg., Columbia Univ.; Visiting Physician, New York City Hosp., U.S.A. 108, E. 65th Street, N. Y. City, U.S.A.

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Books.—"Epoch-making *Contrib.* to Med. and Surg." *Contrib.*—"Gall-bladder complice. of Typhoid Fever" (*Hopkins Hosp. Repts.*, 1900, *Amer. J. Med. Sci.*, 1899); "Spinal Cord lesions in Pernicious Anæmia," *jtly.* (*Amer. J. Med. Sci.*, 1910); "Human Trypanosomiasis" (*ib.*, 1911, *Brit. Med. J.*, 1911); "Out-patient Clin.—its aims and possibilities" (*Can. J. Med. and Surg.*, 1912).

CAMARA, FILOMENO de, Prof. of Physiol. and Med., Univ. Coimbra, Portugal.

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Books.—"Manual of Hygiene"; "History of the R.C.S.I. and Irish Med. Institutions and Biography"; "Lectures on Pub. Health"; "Element. Chem. and Geol."; "Agric. Chem." *Contrib.*—"Selenic Acid" (*Proc. Roy. Soc.*, 1858); "12 new Comps. of Se" (*Trans. R.I.A.*, 1882); "Action of Phosphine on SeO₂" (*Proc. Roy. Dub. Soc.*); "Toxicitis of silicon fluoride" (*Dub. J. Med.*, 1882).

First showed that urea, etc., could furnish nitrogen to plants; how chlorine acts as poison; that typhoid may be contracted from oysters.

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Arts. on Learning, Exper. Pedagog., Psych. Lab., in "Munroe's Encyc. of Educ." *Contrib.*—"Poggendorff Illusion" (*Yale Psych. Studies* U.S., I.); "Tonal react." (*ib.*, II.); "Exper. Pedagog. in Amer." (*Z. f. Exper. Päd.*, X.).

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Books.—"Sanitary Progress," 1902; "Nuisances and Insanitary Conditions." *Contrib.*—"Importance of isolating Slight and Doubtful Cases of Scarlet Fever" (*Lancet*, 1884); "Diarrhoea in Relation to Fruit and Feeding Bottles" (*Ib.*, 1894); "Diseased Meat" (*Public Health*, 1891).

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B. 1880, Tennessee. *Educ.* Univ. Penna. M.D. (Penna) 1902.

Contrib.—"Path. of Paralysis Agitans; Morbid Sleepiness; Course of sensory impulses in spinal cord: Type and distrib. of sensory disturbance due to cerebral lesion.

CAMP, OSCAR de la, Ord. Prof. of Special Path. and Therapy, Univ. Freiburg i. Br., Ger.

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Books.—"Syph. and Vener. Dis.," 4th edn.; "Leprosy," 3rd edn.; "Dermatol.," 2nd edn.; "Tuberc.," 2nd edn. *Contrib.*—960.

B. of Leprosy; Sporozoa of Molluscum contag.; Psoriasis Sporozoa; Lecithin react. to Syph.; Prim. degen. of blood-vessels in progr. paralysis.

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Contrib.—"Test-room methods of alternating current meas." (*J. Inst. E. E.*, 1901); "Standard of mutual inductance" (*Proc. Roy. Soc.*, 1907); "Direct reading resistance thermometers" (*Phil. Mag.*, 1905); "Use of variable mutual inductances" (*Ib.*, 1908).

Inv. vibration galvanometers, inductometers, frequency meters, etc.

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Books.—"Struct. and Develop. of Mosses and Ferns"; "Univ. Textbk. of Bot."; "Plant Life and Evol."

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Contrib.—"Method of sterilizing blood serum by filtration" (*Bull. Johns Hopkins Hosp.*, 1894).

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Art.—"Observ. of Variable Stars," in "Annals of Harvard Coll. Observ." 1902—10.

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Contrib.—"Micr. exam. of opaque minerals" (*Econ. Geol.*, vol. 1); "Struc. of metals" (*Metall.*, Ger., vol. 4); "Heat treatm. of high carbon steels" (*Proc. Amer. Soc. Test. Matls.*, vol. 6); "Struc. of alloys" (*Trans. Am. I. Min. E.*, 1912).

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Book.—"Handb. of Pract. Astron." *Contrib.* on Stellar Motions and Spectrosc. in *Astrophys. J.*, *Lick Observ. Bull.*

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Books.—Repts. Geol. Surv. Can.

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Books.—"Intro. to Chem. Anal.;" "Man. of Chem." (with Luff); "Man. of Phys.," 1912.

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Books.—"A Labor Course in Physiol.," 1910; "Mechanical Factors of Digestion," 1911. *Contrib.*—"Movements of Stomach shewed by Means of the Röntgen Rays" (*Amer. J. Phys.*, 1898); "Passage of different Foodstuffs from Stomach" (*Ib.*, 1905); "Acid Control of Pylorus" (*Ib.*, 1908); "Emotional Stimulation of Adrenal Glands" (*Ib.*, 1911).

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Books.—"Naked Eye Anat.;" "Degeneration amongst Londoners"; "Phys. Efficiency." *Arts.*—"Veins, Ulcers, etc.," in "Quain's Dic. Med.;" "Gun-shot Wounds," in "Treves' Surg.;" "Ligature of Arteries, etc.," in "Heath's Dic. Surg.;" "Trop. Dis.," in "Allchin's Med." *Contrib.*—"Plague" (*Brit. Med. J.*, 1894); "Leprosy" (*J. Epidem.*, 1897); Trop. Reviews (*Med. Ann.*, 1890—95); and many editorial contrib. in *J. Trop. Med.*, 1899—1911; New Anat. of Liver (Internat. Med. Cong., 1896). Ed. *J. Trop. Med.*

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Books.—"Elem. Arith.," 1855; "Math. Study of Cultured People," 1863; "Roman

Surveying and its Place in Hist.," 1875; "Law of Probability," 1877; "Polit. Arith.," 2nd edn., 1903; "Lects. on Hist. of Maths.," 4 vols. (in collab.) 1908; Ed. of *Krit. Z. f. Chem. Phys. u. Math.*, 1858 and of *Z. f. Math. u. Phys.*, 1859—1900. *Arts.*—Biog. of Mathematicians in *Allgem. Deutsche Biog.*; and in *Encyc. Brit.*

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Book.—"Geol. of Wyre Forest Coal-field," 1895. *Arts.* on Geol. in Vict. Hist. of Warwickshire (1904) and Shropshire (1908). *Contrib.* on Geol. to *Geol. Mag.*, *Q. J. Geol. Soc.*; on Welsh Archaeol. to *J. Cambrian Archaeol. Assoc.*; on S. Wales Coalfield to *Mem. Geol. Surrey* (jtlv.).

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Books.—"Math. Geog.," etc.

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Books.—"Course of Higher Alg.," 1875; "Elem. Alg.," 1875, 2nd edn., 1886—96, 3 vols.; "Via Central of Peru," 1895; "Matter and Spirit," 1894; "Sociol. of Lima," 1895, 1902; "Nat. problem of pub. educ.," 1902.

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Contrib.—"Rept. on Steam-engine research" (*I. Mech. E.*), 1906; and numerous others.

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Book.—"Princip. of Kinematics." *Contrib.*—"Ellipt. conchoid" (*Arch. Teyler*, 1902);—"Plane curve of 8th degree" (*Ib.*, 1910);—"Upper surfaces of 4th degree" (*Trans. Amst. Acad.*, 1892); and to *Crelle's J.*

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Books.—"Univ. Phys.;" "Coll. Phys."

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Art. on Geol. and Geog. in "Hist. of Licking Co.," 1908. *Contrib.*—"Wave-cut terraces in Keuka Valley, N.Y." (*Amer. J. Sci.*, 1907);—"Pleistocene geol. of Moravia Quadrangle, N.Y." (*Bull. Sci. Labs. of Denison Univ.*, 1909);—"Metamorph. of glacial deposits" (*J. Geol.*, 1909);—"Geog. of Ohio" (*Bull. Sci. Labs. Denison Univ.*, 1910—12).

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Books.—"Types of Tobacco and their Analyses";—"Marls and Phosphates of N. Carolina." *Contrib.*—"Influence of Chem. on Agric." (*Amer. Fertilizer*, 1910);—"Results of Soil Investigations as affecting use of Fertilizers" (*Ib.*, 1911).

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Books.—"Insects; their Structure and Life," 1899;—"Life-Story of Insects," 1913. *Arts. on Hexapoda, Ant, Bee, etc.*, in *Encyc. Brit.*, 1910. *Contrib.*—"Relationships between Classes of Arthropoda" (*Proc. Roy. Ir. Acad.*), 1903;—"Notes on Segmentation and Phylogeny of Arthropoda" (*Q. J. Micros. Sci.*), 1905;—"Injurious Insects observed in Ireland" (*Econ. Proc. Roy. Dubl. Soc.*, 1902—11).

Structure of Insects and their Allies, especially Aptera and Pycnogonida; Life-histories of injurious Diptera.

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Books.—"Exptl. Engrng.," 7th edn.; "Heating and Ventilating Buildings," 4th edn.; "The Gas Engine." *Contrib. to Trans. Am. Soc. M.E.* on power production, manuf. of Portland cement, etc.

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Aconite Bases and Atropine in "Allen's Comm. Org. Anal." *Contrib.*—Mainly on Chem. of Alkaloids.

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Book.—"Practitioner's Guide" (jt. author), 1902. *Art.*—"Bronchial Glands, Dis. of," in Quain's "Dict. Med.," 1902; "Whooping Cough" in "Syst. of Treatm.," 1912; "Tuberc." in Garrod's "Dis. of Children," 1913. *Contrib.*—"Diagn. of Chronic Valvular Dis. of Heart" (*Pract.*, 1907); "Notes on Rheumatic Heart Dis. in Children" (*Ib.*, 1909); "Non-tuberc. Posterior Basile Meningitis in Infants" (*Trans. Med.-Chir. Soc.*, 1897).

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Books.—"Cryosecopy of blood," 1900; "Manual of Criminal Anthropology," 1907. *Contrib.*—"German Penitentiaries" (*Riv. d. Discip. Carcerarie*, 1911); "7th Internat. Cong. Crim. Anthropol., Cologne, 1911" (*Arch. Anthropol. Crim.*, 1911); etc.

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Soc.—Hon. Mem., Manc. Lit. and Phil.; F.L.S. (P.P.); F.G.S., F.R.M.S. *Late* Keeper of Bot., Brit. Mus. (Nat. Hist.) 1870—95; Cons. Bot., Roy. Agric. Soc., 1870—1909.

Arts.—"Ferns of Pacific Islands" in Secman's "Flora"; "Ferns of Central Africa" in Welwitsch's "Flora Angolensis"; "British Diatomaceae" in Gray's "British Algae"; *Geol. Arts.* in *Chambers' Encyc.* (1860 and 1868). *Contrib.*—"Fossil Cycadean Stems" (*Trans. Lin. Soc.*, 1870); "British Graptolites" (*Geol. Mag.*, 1868); "Bearing of Hist. of Fossil Plants on Recent Speculations" (*Proc. Geol. Assoc.*, 1876); "Portraits of Linnaeus" (*Proc. Lin. Soc.*).

Structure and affinities of fossil plants. Improvement in the quality and production of pastures; food-value of grasses; vitality of seeds.

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Books.—"Fourier's Series and Integrals and Math. Theory of Conduction of Heat"; Transl. Bonola's "Non-Euclidean Geom."; several math. textb. *Contrib. to Proc. London Math. Soc.*, *Proc. Edin. Math. Soc.*, *Phil. Mag.*, *Math. Gaz.*

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Books.—Ed. "Materials for Primitive Hist. of Man," 18 vols., 1869—89; Ed. *L'Anthropologie* 1889—95, and a manager since; "Prehist. France," 1889, several edns.; "Prehist. Ages in Spain and Portugal," 1886; "Primitive Monuments of Balearic Isles," 1892; "Cavern of Altamira," jtlly. with H. Breuil, 1906; "Grottoes of Grimaldi, nr. Menton," 1912.

Disc. numerous palaeolith. drawings in caves of S. France and Spain.

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Contrib.—"Inductive Disturbances in Telephone Circuit" (*Amer. Inst. Elec. Engrs.*, 1891); "Telephone Service in Amer." (*Internat. Tel. Conf. Paris*, 1910).

Bridging bell.

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Books.—"Musical Sands"; "Handbook of Geological Tables"; "Pitting of Flint Surfaces"; "Stones in Woody Tissue"; "Geology of Bournemouth"; "Concretions"; "Underground Water-Supply."

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Books.—Publ. 55, 145 and 146, Carnegie Inst. *Contrib.*—"Reptiles and Amphibians from Permian (?) of Texas" (*Bull. Am. Mus. Nat. Hist.*, 1910); "Evidence on age of certain so-called Permian beds" (*J. Geol.*, 1908); "Descrip. of verteb. fossils from Pittsburgh" (*Ann. Carneg. Mus.*, 1908).

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Books.—"Power of Thought," 1907; "Man and Monkey," 1900; "Instinct," 1910. *Contrib.*—"Cholera" (*S. Afric. Govt. J.*, 1912, 1913).

Inv. Chem. specific gravity and consistency testing machine for solutions.

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Arts. in "Text-bk. of Pharmacol. and Theraps." *Contrib.*—"Reps. on certain Chem. Disinfectants" (*Rep. Loc. Gov. Bd.*, 1885—86); "Physiolog. Action of Nitrites of the Paraffin Series" (*Phil. Trans.*, 1894); "Pharmacol. of Aconitine and some of its principal Derivs." (*ib.*, 1898); "On the Physiolog. Action of Seeds of *Garcia Nutans*, etc." (*J. Physiol.*, 1908).

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Book.—"Man. of Trop. Med.," jtly. with Chalmers. *Contrib.* numerous to *Lancet*, *Brit. Med. J.*, *J. Trop. Med.*, *Zsch. f. Hyg.*, etc., on etiol. of sleeping sickness; trop. dis.; absorption method for diagn. of closely allied bacteria; dilution meth. for grow. typhoid *b.* from blood; new species of fungi, bact. and protozoa.

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Books.—Publications Nos. 23, 49, 70, 114, 144, Carnegie Inst. of Washington; Chapter in "Fifty years of Darwinism"; "Hereditry," 1911. *Contrib.* to knowledge of Mendelian Principles of Hered., Sex-determination, and the Results of Ovarian Transplantation.

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Book.—"Protein Metabolism." *Art* on "Nutrition" (with Paton), *Encyc. Brit.*

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Books.—"Prev. of Valv. Dis. of Heart"; "Temples and Ritual of Asklepios"; "Iem-hotep and Ancient Egyptian Med." *Contrib.*—"Narcoplepsy" (*Clin. Soc.*, 1889); "Acromegaly" (*Brit. Med. J.*, 1893); "Asymmetry in structure and function" (*J. of Biol.*, 1903); "Cell-migration theory" (*J. Anat. and Phys.*, 1870).

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Books.—"Darwinism," 1880; "Morphol. of Molluscs," 1883; "Embryol. and Gen. Morphol.," 1894. *Contrib.*—"Histol. of Stomach of Birds" (*Soc. Sci. Nat. Milano*, 1884); "Histol. of Intestine of Fishes" (*ib.*, 1886); "Morphol. and physiol. of amœboid cells" (*Boll. Sci. Pavia*, 1889); "Factors in Evol." (*Ann. d. Univ. Genova*, 1896).

Physiol. phenomena in amœboid cells of echinoderms, molluscs and arthropods (1889—91).

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Measurement of psycho-phys. and mental processes; Individual differences and efficiency with special ref. to sci. productivity.

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Books.—"Flora of Mongardino," 1887; "Mycol. Lombard," 1889—94; "Cultiv. Plants," 1887—1908; "Nuclear Struc. and Cytol.," 1896—1902; "Flora of Sicily and Sardinia," 1890—1908; *Cryscop. Researches* on Vege., 1901—05; *Alpine Gards.*, 1903—10, etc.; Collab. of several Bot. J., and Ed. of *Bull. d. Orto. bot.*, Naples Univ.

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Books.—"System. Inorg. Chem. from Standpoint of Periodic Law" (jily. with Lander, 2nd edn., 1911); "System. Qualit. Anal.," 1909. *Contrib.*—"Reactions of Magnesium Zinc and Iron with Solutions of Cup. Sulphate" (*J. Soc. Chem. Ind.*, 1900); "Molecular Configuration of Phosphoryl Chloride and its Derivatives" (*J. Chem. Soc.*, 1902); "Detection and Estimation of Chloride in Presence of Bromide by use of dil. Nitric Acid, and Estimation of Iodide, Bromide and Chloride in mixed Solution" (*J. Soc. Chem. Ind.*, 1909); "Dissociation Pressures of Alkali Bicarbonates: Part I, Sodium Hydrogen Carbonate" (jily. with Sand) (*J. Chem. Soc.*, 1911).

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Contrib. on Micros. Study of Sedimentary Rocks; Precambrian organisms; Oolitic Iron; Geol. of Isle of Delos.

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Theses.—"Preserved Meats" (*Bull.* 13, Bur. Chem., jtly. with Bigelow); "The Lemon and its By-products in Italy" (*Bull.* 160, B.P.L. jtly. with Powell); "Comp. of Tropical Fruits" (jtly.) (*Bull.* 87, Bur. Chem.). *Contrib.*—"Detection of Aluminium Acetate in Sausage" (*J. Amer. Chem. Soc.*, 1904); "Determin. of Citral in Extracts" (*ib.*, 1907); "Detect. of Pinene in Lemon Oil" (*ib.*, 1908).

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Books.—"Memoirs on Echinus and Antedon" (Liverpool Mar. Biol. Comm.); "Report on Crinoidea of Gulf of Manaa" (Roy. Soc.); "Rept. on Crinoidea of Red Sea" (Linn. Soc.);

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Books.—"Pract. Physiol. Chem." 2nd edn., 1905; "Simple Med. Directions for Officials in Ceylon," 3rd edn., 1907; "First Aid for Officials of Ceylon Govt. Rys.," 1903; "Rept. on Sanit. of Colombo," 1907; "Man. of Trop. Med." jtly. *Contrib.*—"Fra-Fra Arrow Poison" (*J. R. A. M. C.*, 1905); "Pancreatitis in Ceylon" (*J. Ceylon Br., Brit. Med. Assoc.*, 1904); "Incidence of Cancer in Ceylon" (*ib.*); "Vital Statistics of Ceylon" (*ib.*, 1907).

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Books.—"Child and Childhood in Folk-Thought," 1896; "The Child: a Study in Evol. of Man," 1900. *Arts.*—"Indians, N. Amer.," in *Encyc. Brit.*, XI; "Tribes and Peoples of Asia," etc., in *New Internat. Encyc.*; Numerous, in *Handb. of N. Amer. Indians*, 1908—10. *Contrib.*—"Kootenay Indians of Brit. Columbia" (*Rept. Brit. Assoc.*, 1892).

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Books.—"Methods in Plant Histol.," 1901 and 1905; "Morph. of Gymnosperms," 1901 and 1910; "Morph. of Angiosperms," 1903. *Art.*—"Cytology," in *Encyc. Amer. Contrib.*—"Ovule and female Gametophyte of Dioon" (*Bot. Gaz.*, 1906); "Spermatogen. in Dioon edule" (*ib.*, 1909); "Fertiliz. and embryol. in Dioon edule" (*ib.*, 1910); "Morph. of Ceratogamia" (*ib.*, 1912).

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Contrib.—"Glacial Studies in Greenland" (*J. Geol.*, 1894—97); "Method of Multiple Working Hypoth." (*ib.*, 1897); "Attempt to test Nebular Hypoth. by Relations of Masses and Momenta" (*ib.*, 1900); "On a possible Function of Disruptive Approach in the Formation of Meteorites, Comets and Nebulae" (*Astrophys. J.*, 1900). Ed. *J. of Geol.*

Geol. of Wisconsin; glaciers and glacial formations; hist. of the atmos.; early hist. of earth; fundamental problems of geol.; planetesimal hypoth. of origin of earth and of solar syst.

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Book.—"Anal. of Water for San. and Munic. Purposes." *Arts.*—in "Ref. Handb. of Med. Sci.," "Amer. Year Book," etc. *Contrib.*—On San. and Microchem.

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Books.—"Artificial Respiration in Still-born Children," 1887; "Harvey Lects. on Painful Menstruation," 1891. *Contrib.*—"Muscles and Nerves of Chimpanzee and Anubis" (*J. Anat. and Physiol.*, Vol. 6); "On a Communication between the External Iliac and Portal Veins" (*ib.*); "Develop. and Deformities of Pelvis" (*Trans. Obstet. Soc.*); "Nat. Hist. of Tubal Gestation" (*J. Obstet. and Gynaec.*, 1902).

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Contrib.—"Operative Treatment of Enlarged Prostate" (*Trans. Roy. Acad. Med. I.*, 1893); "Cancer of Male Breast" (*ib.*); "Surg. Treatment of Empyema" (*ib.*, 1906); "Cholechochotomy" (*Dub. Med. J.*, 1902).

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Contrib. on water-supply, irrig., and water-power in *Repts.* of N. Dak. State Engrn., 1905, 1907, 1909, 1911, 1913, and in *U.S. Geol. Surv. Water-Supply and Irrig. Papers*, since 1904; etc.

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Books.—"The Hop and its Constituents"; "Atlas of the Saccharomycetes." *Contrib.*—Numerous since 1887 in *J. Chem. Soc.*; *J. Soc. Chem. Ind.*; *J. Inst. Brewing*; *Analyst*, etc., on metallic derivs. of dextrose; constituents of the essent. oil of hops (discovery of sesquiterpene humulene); other essential oils. With W. D. Law, influence of elec.-chem. potential on disengagement of arseniuretted hydrogen in Marsh-Berzelius test.

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Contrib. on non-converg. series to *Proc. Lond. Math. Soc.*, on kinetic theory of gases to *Phil. Trans.*

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Book.—"Med. Rep. Hosp. Serv. connected with Escort which accompanied Afghan Boundary Comm." *Contrib.*—"Influence of Function, as exemplified in Morphol. of Lower Extremity of Punjabi"; "Morphol. Peculiarities in Punjabi and their bearing on question of transmiss. of acquired characters" (*J. Anat. and Physiol.*, Vols. 26—28); "Nasal Index compared upon Head and Skull with Notes upon Nasal Bones and Anti-Nasal Aperture" (*J. Asiatic Soc. Bengal*).

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Books.—"Charleston's Report-book for Min. Engrs."; "Gold Mining and Milling in W. Austral."; "Notes on Tin Mining." *Contrib.* on Coarse and Fine Crushing Machinery and Processes of Ore Treatment, Mining Dressing, Accounts and Economics, Nickel.

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Book.—"Mechanics of the Heavens," 1907. *Contrib.*—Numerous.

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Contrib.—"Road Administration" (*Rept. Neb. State Board of Agric.*, 1911); "Six-year

cult.-tech. educ." (*Proc. S.P.E.E.*, 1909); "Cult. value of a tech. educ." (*Ia. Engr.*, 1910).

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Books.—"Measur. of High Temps." etc. *Contrib.* numerous on mining, silicates, etc.

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Contrib. numerous to *Proc. Roy. Soc.*, *Trans. Chem. Soc.*, etc., on nitrogen comp. contg. halides; isomeric change, etc.

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Books.—"Agric. and Industr. Prob. in India"; "Irrigation"; "Hydraulic Expts. in Kistna Delta"; "Industr. Evol. in India."

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Books.—"Hist. and Bibliog. Intro. to Study of Atmospheric Elec.," 1899; "Diurnal Variation of Atmospheric Elec.," 1900. *Contrib.*—"Deviation Limit of Quad. Electrom." (*J. de Phys.*, 1900); various to *Comptes Rendus*, *J. de Phys.*, *Ann. Soc. Met.*, *Le Radium*, since 1892.

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Books.—"Submar. Eruptions at Azores," 1904; "Internat. Met. Serv. at Azores," 1900; "Magnetic Studies in Africa," 1908; etc. *Contrib.*—"Exterior Form of Caehalot" (*J. d'Anat. and Physiol.*, 1891); "Magnetic Storm at Ponta Delgada" (*Terrest. Mag.*); etc.

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Books.—"Man. of N.Z. Flora," 1906; "Illustr. of N.Z. Flora," 2 vols. 1913. *Contrib.*—"Flora of Rarotonga" (*Trans. Linn. Soc.*); "Syst. bot. of islands to S. of N.Z." (1911); "Cat. of plants of N.Z." (1907); etc.

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Books.—"Gen. Laws of Chem.," 1899; "Theory and Pract. of Mineral Anal.," 1906, 1911. *Contrib.*—Numerous to *Ann. des Mines*, *Comptes Rendus*, *Rev. de Métall.*, etc., on Estim. of Phosphorus in Iron, Steels, etc.; Anal. of Tantalites, Monazite, etc.

Grisoumetric lamp.

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Books.—"Antiseptic Surgery: its Principles, Pract., Hist., and Results"; "Manual of Surg.

Treatment" (with Burghard), 7 vols., 1899—1903; "Suppuration and Septic Disease," 1889; "Treatment of Wounds, Ulcers and Abscesses," 1894. *Contrib.*—"Excision of Breast for Cancer" (*Lancet*, 1892); "Radical Cure of Hernia" (*Ib.*).

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Books.—"Path.-Anat. Sections," 1894, 1907. *Arts.*—"History of Human Path.-Anat.," 1903; "Post-mortems and Inquests," 1906. *Contrib.*—Numerous.

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Contrib.—"Atomic Weight of Japanese Tellurium" (*J. Chem. Soc. Lond.*, 1896); "Defects of Uncarburetted Water-gas as Fuel for Lab. Use" (*J. Soc. Chem. Ind.*, 1904); "Bismuth-thallium Affinity" (*Zeitschr. f. anorg. Chem.*, 1906); "Copper-tellurium" (*Ib.*, 1907).

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Art.—"Physiol. Isolation of Parts of Organisms," in *Vortr. üb. Entwickl.-mech. Contrib.*—"Studies on relation between Amitosis and Mitosis, I.-V." (*Biol. Bull.*, 1906—7); Study of Senescence and Rejuvenescence, based on expts. with Planaria (*Arch. f. Entwickl.-mech.*, 1911); "Regulatory processes in organisms" (*J. Morph.*, 1911); "Dynam. of Morphogenesis and inheritance in exper. reproduction" (*J. Exper. Zool.*, 1911—1912, *et seq.*).

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Book.—Ed. of "Subantarctic Islands of N.Z.," 1909, and *Arts.*—"Historical Introduction," "Crustacea," "Summary of Results"

in above. *Contrib.*—"Subterranean Crustacea of N.Z." (*Trans. Linn. Soc. Zool.*, 1894); "Terrestrial Isopoda of N.Z." (*Ib.*, 1901); "Amphipoda of Scott. Natl. Antarc. Exped." (*Trans. R.S.E.*, 1912).

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Contrib.—Numerous on Radiation, Magnetism, etc.

Inv. magnetometer, 1885.

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Books.—"Principles of Bot.," 1906, 1910; "Green Algae of Switzerland"; "Polymorphism of Algae" (crowned by Ger. Bot. Soc.).

Contrib.—250. Monographia Polygalacearum; oxidising enzymes; palaeozoic pteridospides.

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Book.—"Studies in Terrestr. Magn.," 1912. *Arts.*—"Atmos. Elec.," "Aurora," "Earth Currents," "Magnetism Terrest." (*Encyc. Brit.*, 11th edn.). *Contrib.*—"Equations of an Isotropic Elastic Solid in Polar and Cylind. Coordinates, etc." (*Camb. Trans.*, 1887); "On Effects of Pressure on the Magnetisation of Cobalt" (*Phil. Trans.*, 1889); "Expts. on Aneroid Barometers" (*Ib.*, 1898); "Magnetic Declination at Kew Observ., 1890—1900" (*Ib.*, 1908).

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Assoc. Paths. and Bacteriol.; Amer. Assoc. Adv. Clin. Investig.; Amer. Med. Assoc.; Mass. Med. Assoc. *Late* Assist. Path., Boston City Hosp.; Instr. in Path., Harv. Univ.; Dean, Fac. Med. Harvard.

Art.—"Diseases of the Mediastinum" in Osler's "Modern Medicine." *Contrib.*—"Dermoid Cysts and Teratomata of Ant. Mediastinum" (*J. Med. Res.*, 1902); "Observ. on Leucotoxins" (*Deutsch. Archiv. f. Klin. Med.*, 1904); "Multiple Myeloma" (*J. Exper. Med.*, 1907); "Observ. on Spirilla of Relapsing Fever" (*Archiv. Internal. Med.*, 1911).

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Books.—"Treatise on Phys.," "Theor. Phys." (Ger. transl. by Müller, Eng. transl. by Magie). *Contrib.* on Anomalous dispersion, colours of mixtures, temperature of planets, frictional electricity; Crystallog. researches (with Topsoe).

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Chapter in "Plant Life of Maryland," 1910. *Contrib.*—"Development of Central Cylinder" (*Bot. Gaz.*, 1904); "Nodes of Grasses" (*Ib.*, 1906); "Struct. of Potamogetonaceae" (*Ib.*, 1907); "Fertile Spike in Ophioglossaceae" (*Annals of Bot.*, 1910).

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Books.—"Labor Guide," 8 edns.; "Food"; "On Precious Stones"; "Eng. Earthenware"; "Eng. Porcelain"; "Chem. of Paints and Painting"; "The Food Grains of India." *Contrib.*—"Researches on Turacin" (*Phil. Trans.*, 1869, 1892); "New and Rare Cornish Minerals" (*Chem. Soc. J.*, 1865—68, 1870); "Micro-spectrographic Investigs." (*Intellectual Obs.*, 1866); "Vegetable Albinism" (*Chem. Soc. J.*, 1879—80, 1886); and 200 others.

Turacin, a bird pigment containing 7 per cent. copper; Churchite, a new cerium mineral and other new species; and processes for preserving stone-work and mural paintings.

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Books.—"Mechs. of Engrng."; "Notes and Examples in Mechs."; "Hydraul. Motors and Related Subjects"; "Diagrams for Uniform Motion of Water in Open Channels"; "Mechs. of Internal Work in Elastic Bodies." *Contrib.*—"Turbines" (*J. of Franklin Inst.*, 1887); "Water Hammer in Pipes" (*Ib.*, 1890); "Mechs. of Gyroscope" (*Corn. Civ. Engrs.*, 1910); "Stand Pipe in Water Power Plants" (*Ib.*, 1909).

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Book.—"Treatment of Hydatids of the Liver." *Art.*—"Acute Rheumatism," in "Allbutt's Syst. Med." *Contrib.* to and *late* Ed. *St. Bart. Hosp. Rep.*

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Books.—"Alternat. Current and Induct. Motors" 1910. *Contrib.*—"Inaug. Address" (*Proc. I.E.E.*, 1910 and 1911); "Notes on Alternat. Current Induct. Motors" (*Ib.*, 1905); etc.

Improvements in electrical machinery.
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Books.—"Chem. Problems of the New Century," 1903, 2nd edn. 1905; "Org. and Physiol. Chem." 1908; "Co-operation of the Sciences," 1911; "Photochem. of the Future," 1912. *Contrib.* on pyrrrols, 1880—90; plant subs., 1890—98; photochem., 1898; org. constits. of plants since 1898.

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Book.—"Lessons in Project. and Anal. Geom.," 1912. *Contrib.*—About 50 on Geom.

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Book.—"Prostatic Hypertrophy," 1900, and in Amer., 1903.

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Books.—"Bee-Keeping," 2 vols.; "Outlines of Bot."; "Influence of Gravity on Growth of Plants"; "Cause of Sex in Plants, Animals and Man" (also Latin edn.); "Sensibility of Root Vertex"; "Movement of Water in Plants."

Disc. B. Preussi cause of Foul-brood in Bees, 1878; Blood-temp. of Bees 36°C.

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Books.—"Planting-time of Pine and Silver Fir," 1892; "Lignin Content of Pinewood," 1897; "Rôle of Light in the Forest," 1904. *Contrib.*—"Hered. Transmission of Growth," 1895; "Quality of fast-growing Pine," 1902; "Forest Culture of Larch," 1904; "Import. of climatic variation on woods for forest culture." *Inv.* Germinating apparatus.

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Books.—"Association of Ideas," 1903; "Psych. of the Child," 1905, 4th edn., 1911; C. Bonnet's "Animal Psychol." 1909. *Contrib.*—"Biol. theory of sleep" (*Soc. Phys. et Hist. Nat.*, Geneva, 1904); "Expts. on value of evidence" (*Arch. de Psych.*, 1906); "Legitimacy of comp. psychol." (*Ib.*, 1905); "Expts. on psychic process in hypnosis" (*Ib.*, 1909).

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Contrib.—"Some Points in Develop. of Batrachus tau" (*J. Morph.*, 1891); "Lateral Line Syst. of Batrachus tau" (*Ib.*, Vol. 15, No. 2, 1898); "Relation of Axis of Embryo to First Line of Cleavage" (*Biol. Lect. M. B. L., Woods Hole*, 1898).

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Contrib.—"Theory of cast iron beams" (*Mem. Proc. Inst. C.E.*, Vol. 149).

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Book.—"Apodons Holothurians," 1908. *Arts.* on zool. in *New Internat. Encyc.*, 1902—04. *Contrib.*—Numerous on echinoderms, birds, reptiles, etc.

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Contrib.—Eocene deposits of U.S.A.; Mesozoic Echinodermata of U.S.A.; Phys. features of Maryland; Coastal Plain deposits of Virginia and N. Carolina; etc.

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Contrib.—"The Kuskoff Syndrome" (*Ont. Bull.*, 1909); "Aetiology of certain Psychoses" (*Lancet*, Ont., 1910); "Relation between Psychiatry and Sense" (*Med. Bull.*, 1908); "Case of Wm. B." (*J. Insanity*).

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Books.—"Recalc. of Atomic Weights"; "Data of Geochem.;" Many offic. bulls. of U.S. Geol. Surv. *Contrib.*—Over 100.

Atomic weights, constitution of silicates, average comp. of earth's crust, age of ocean, thermochem. constants, etc.

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About 200 books and pamphlets in Geol., Paleont., etc.

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Book.—"Hysteria and Neurasthenia," 1905. *Art.*—"Nystagmus" ("Quain's Diet. Med.," 1902); "Family Periodic Paralysis" and "Recurrent Paralysis" in "Allbutt's System of Medicine," 1910. *Contrib.*—Long Fox Lect. on "Cerebro-Spinal Syph." (*Bristol Med.-Chir. Jour.*, 1911). Numerous to *Brain*. *Brit. Med. Jour.*, *Lancet*, etc. Assoc. Ed. *Bristol Med. and Chir. J.*

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Books.—"Studies in Bird Migration"; "Bartholomew's Phys. Atlas," Vol. 5, Zoogeog. (Jtly.). *Arts.*—"Results of Brit. Assoc. Comm. on Bird Migration" (5 Repts.); Repts. Brit. Assoc., 1896, 1902—05; 100 on Zool., including Ornith. Results of Scott National Antarctic Exped. and Jackson-Harmsworth Arctic Exped.

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Book.—"Liquid Air, Oxygen, Nitrogen" and in Eng., 1913.

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Books.—"Results of Magn. and Met. Observns. at Mauritius, 1896—1910"; at Hong Kong, 1912; "Seismol. Observns.," 1898—1910. *Contrib.*—"Magnetic Surv. in Mauritius" (*Proc. Roy. Soc.*, 1905); "Climate of Pamplemousses" (8th Internat. Geog. Cong., 1906); several on Cyclones (*Proc. Met. Soc. Mauritius*).

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Books.—"Pract. Courses on Light"; "Treatise on Pract. Light." *Contrib.*—"Application of Maxwell's Curves to Three-colour Printing" (*Proc. Roy. Soc.*, 1900); "Graph. Construct. for Simple and Compound Lenses" (*Pearse Annual*, 1909—10).

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Art.—"Equilibrium and Equilibration" (*Ref. Handb. Med. Sci. Contrib.*). *Contrib.*—"Nerve Centres Resp." (*Montreal Med. Gaz.*, 1895); "Intern. secretion and heart muscle" (*Amer. J. Physiol.*, 1897); "Muscular relaxn." (*ib.*, 1897); "Inhib. of muscular relaxn." 1898.

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Books.—Bulls. of U.S. and Wise. Geol. Surveys; "Physical and Evol. Geol." (in press). *Contrib.*—Various.

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Books.—"Mechan. of Gubernaculum," 1856; "Animal Physiol." 1874; "Directory for Dissection," 1876; "Evolution, Expression and Sensation, Cell-life and Path.," 1881; Jt. Ed. "Quain's Anat.," 7th edn., 1867; Jt. author, "Memoirs and Memoranda in Anat.," 1889; "Human Anat." (with Mackay), 1896. *Contrib.* Numerous.

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Book.—"Essential Factors in Formation of Producer Gas," *Bull.* No. 7, U.S. Bureau of Mines. *Contrib.*—"Formation of Ozone at High Temp." (*Ann. d. Physik.*, 1904); "Minerals of Composition MgSiO₃" (*Amer. J. Sci.*, 1906); "Thermal Conductivity of Fire Clay at High Temps." (*Univ. Ill. Bull.*, 1909); "Measurement of High Temps." (*Trans. Amer. Ceram. Soc.*, 1909).

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Books.—"Phytogeog. of Neb.," 1898—1900; "Developm. and Struct. of Vegetation," 1904; "Research Methods in Ecol.," 1905; "Plant Physiol. and Ecol.," 1907; "Genera of Fungi," 1909; "Minn. Mushrooms," 1910.

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Book.—"Gas, Petrol, and Oil Engine," 1909. *Arts.*—"Gas and Oil Engines" in *Encyc. Brit.*; "Gaseous Explosions" and "Evaporation" in Thorpe's "Dic. of Tech. Chemistry." *Contrib.*—"Theory of Gas Engine" (*Proc. Inst. C.E.*, 1882); "Explosion of Gaseous Mixtures" (*Ib.*, 1886); "Internal Combustion Motors" (Forrest Lec. Inst. C.E., 1904); "On Specific Heat of Working Fluid in Inter. Combust. Engine Cylinder" (*Proc. Roy. Soc.*, 1906).

Thermodynamics of Inter. Combust. Engines; Clerk Two-cylinder Gas Engines, 1878—81.

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Contrib.—Various to Tech. J. and Trans. Engrng. Soces.

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Books.—"Childhood of the World," 1872; "Childhood of Religions," 1875; "Myths and Dreams," 1885; "Story of Creation," 1888; "Story of Primitive Man," 1895; "Primer of Evolution," 1895; "Pioneers of Evolution," 1897; "Tom Tit Tot," 1898; "Animism,"

1906. *Art.* "Weissmann," in *Chambers' Cyc.*; "Abiogenesis" and "Evol. and Ethics" in *Hastings' Encyc. Religion and Ethics. Contrib.*—"Magic and Religion" (*Q. Rev.*, 1907); "Primitive Man on his own Origin" (*Ib.*, 1911); "Pre-Animistic Stages in Religion" (*Fortnightly Rev.*, 1909).

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The Grange, College Rd., Dulwich, London, S.E. *Books.*—Numerous text-books on Analytical Chem.

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Arts.—"Actinians" in Rept. on *Southern Cross* Collections, 1902; "Discovery Actinians" in *Nat. Antarctic Exped.*, vol. IV. *Contrib.*—Numerous on biol.

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Contrib. on petroleum to *J. Am. Chem. Soc.*; on chem. of sugar to *Louisiana Planter*.

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Contrib.—"Influ. of light on Diazo reactions" (jty.) (*J. Chem. Soc.*, 1907); "Densities of liq. nitrogen and oxygen, and their mixtures," jty. (*Ib.*, 1906); "Exam. of lighter constituents of air" (*Proc. Roy. Soc.*, 1907); "Formn. of Nitric Oxide by Combust. of CO" jty. (*Zeits. f. Phys. Chem.*, 1909).

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Contrib.—"Coal ash" (*J. Soc. Chem. Ind.*, 1904); "Nat. and induced draught" (*Ib.*, 1905); "Synth. of complex silicates" (*Ib.*, 1910); "Influ. of impurities on corrosion of iron" (*J. Iron and Steel Inst.*, 1911).

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Books.—"Plants Growing Wild round Amherst," 1887; "Fungus Maladies of Sugar Canes," 2nd edn. 1906; "Nematodes, mostly Austral. and Fijian," 1893. *Arts.*—"Technol. of Sugar Cane," and "Hawaiian Agric.," in *Cyc. Amer. Agric.*, 1907. *Contrib.*—"Tape-worms of Australia" (*Agric. Gaz.*, N.S.W., 1904); "Australian Rusts" (*Ib.*, 1894); "Letters on Dis. of Plants" (*Ib.*, 1897, 1904); "Parasites of Stock" (*Ib.*, 1898).

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Contrib. on Immunity, Diphtheria, Tuberculosis; Appendices to Rept. of Roy. Comm. on Tuberc.

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Books.—"Newer Synthetic Remedies"; "Volum. Anal.,"; "Pharm. and Med. Chem." (with Sadtler). *Arts.*—"Synthet. drugs," in *Thorpe's Dict. of App. Chem.*; "Chem." and "Drugs," in *Nelson's Encyc.*, Amer. edn.

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Books.—"Exams. for Engrns., Compet. and Qualify.,"; "Educ. Work of Engrng. and Sci. Assoc. of Irel." *Contrib.*—Pres. Address to Inst. C.E. Irel. and to Roy. Soc. Antiq. I., and numerous papers on sci. and antiq. subjects.

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Book.—"Vector Anal." *Contrib.*—"Edge corrections in calcul. of absolute capacity of condensers" (*Proc. A.A.A.S.*, 1904); "Constr. and calcul. of absolute standards of self-inductance" (*Bull. Bur. of Standards*, 1906); "Influ. of frequency upon self-inductance of cylindrical evils of *m* layers" (*Phys. Rev.*, 1906).

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Books.—"Dental Annual"; "Amer. System of Dental Surg." *Contrib.*—"Primary Batteries" (*Nature*, and *Chem. News*, 1878); "Generalized Treatment of Irregularities" (*Trans. Internat. Med. Cong.*, 1881); Various contrib. to Odontol. Soc., etc.

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Books.—"Studies in Chemical Dynamics, after Van't Hoff," 1896; "Phys. Chem. for Biologists," 2nd edn., 1907, and in Eng., 1903; "Inorganic Chem. for Med. Students," 1907; "Life of Van't Hoff," 1899. *Contrib.*—"Phys.-Chem. Studies on Tin" (*Zeitschr. f. Phys. Chem.*); "Thermodynamics of Normal Elements" (*Ib.*); "Piezo-chem. studies" (*Ib.*).

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Books.—"Pract. Org. Chem."; "Theoretical Org. Chem."; "Org. Chem. for Adv. Students"; "Org. Chem."; "Smoke: A Study of Town Air" (with Ruston). *Arts.* various, in *Thorpe's Dict. of Chem. Contrib.* to *Trans. Chem. Soc., J. Soc. Chem. Ind., etc.*

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Contrib.—"The Peony" (*Cornell Univ. Agric. Bull.*, 1908); "Citrus culture in arid south-west" (*Arizona Agric. Bull.*, 1908); "Olive culture and oil manufacture" (*ib.*, 1909); "Relation of asexual or bud mutation to decadence of Cal. citrus orchards" (*Proc. 37th Cal. Fruit Growers Conv., Pomona*, 1910).

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Arts. on "Pulleys and Pulley Blocks," *Encyc. Brit. Contrib.* on Hydrodynamics, Thermo-Elasticity, Photo-Elasticity and Strength of Materials to Roy. Soc. of London, Edinburgh and Canada, Inst. of C.E. and Nav. Architects.

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Art.—"Vegetation of Bahama Is." in "Bahama Is." 1905. *Contrib.*—"Embryo of Taxodium" (*Bot. Gaz.*, 1903); "Plant life of Hartsville, S.C.," 1912; "Fertiliz. and embryol. in Cephalotaxus Fortunei" (*Bot. Gaz.*, 1907).

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Books.—"Lab. Manual of Elec."; "Lab. Course of Phys." *Contrib.*—Numerous on elec. oscillations, elec. waves, capillary electrometers, etc., in *Phys. Rev., Ann. d. Phys., etc.*

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Books.—"Aids in Pract. Geol."; "Open-air Studies in Geol."; "Changeful Earth"; "Rocks and their Origins"; "The Gypsy Road." *Arts.*—"Irish Geol." (*Encyc. Brit.* XI.); On Geol. (*Standard Cyc. of Agric.*). *Contrib.*—"Variolitic rocks of Mt. Genève," *jtly.* (*Q. J. Geol. Soc.*, 1890); "Rhyolites of Co. Antrim" (*Sci. Trans. Roy. Dub. Soc.*, 1896); "Metamorphic rocks in Tyrone and Donegal" (*Trans. R.I.A.*, 1900); "Glacial features in Spitsbergen in relation to Irish geol." (*Proc. R.I.A.*, B., 1911).

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Books.—"Pycnogonida of W. Coast of N. Amer.," 1904; "German Carp in U.S.," 1905; "Image-forming powers of various types of Eyes," 1907; "Blackheads in Turkey: A Study in Avian Coccidiosis," 1910.

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Books.—"Brain and Language"; "Civilisation and Neuritis"; "Alterations of Cortex in Mental Maladies," "Muscular Atrophy of Cerebral Origin," etc.

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Arts.—"Sudbury Nickel Field"; "Physiog. of Ont., Yukon, etc." in *Encyc. Brit. Contrib.*—Numerous.

Toronto Interglacial Formation, Lower Huronian Ice Age, etc.

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Arts.—Chap. on “Sarcoma,” “20th Century Pract. of Med.”; “Hernia,” “Dennis Syst. Surg.,” “Keen’s Syst. Surg.,” and “Text-bk. Surg.” *Contrib.*—“Treatment of Inoperable Malignant Tumours by Swine Cultures of Streptococcus of Erysip.” (*Amer. J. Med. Sci.*, 1893); “Treatment of Inoperable Malignant Tumours by Bacterial Toxins” (*Proc. Roy. Soc. Med. Lond.*, 1909); “Injury as a Causative Factor in Cancer” (*Annals Surg.*, 1911).

New method of treating inoperable Sarcoma.

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Books.—“Fraud and its Detect. in Accid. Insur. Claims”; “Observ. upon 17,000 consecutive med. exams.”; “Sidelights on Med. Technicalities from Insur. point of View”; “Medico-Legal Exams. and the Workmen’s Compens. Act”; “Med. Evidence and Laws Relating to Compens. from Injury”; “First Line of Defence in Workmen’s Compens. Act”; “Simple Remedy for a Grave Abuse”; “First Aid to Injured” (Police and L.C.C. Textb.); “Malingering,” 1913.

Expert evidence before Roy. Comm. on Phys. Deterioration, etc.; Organised Med. service of L.C.C. and Metrop. Water Board.

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Contrib.—“Dislocations occurring in Course of Acute Fevers” (*Brit. Med. J.*, 1898); “Removal of Vagus Nerve and Carotid for Sarcoma” (*Lancet*, 1899); “Treatm. of Intussuscep. by a Combined Method” (*ib.*).

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Books.—“Man. of Injurious Insects”; “Food of some British Wild Birds.”

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Contrib.—“Norwich, a Port” (*Public Works*, 1907); “Reinforced Concrete Water and Sewage Pipes” (*Concrete*, 1909); “Road Scarifying” (*Surveyor*, 1894); “Motive Power for Munic. Engrs.” (*ib.*, 1910).

Travis Hydrolytic Sewage Tanks; Pumping machinery, sewerage mechanism and constructions; Appliances for pub. safety.

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Books.—“Researches into Anat. and Path. of Eye,” 1896; “Path. and Bact. of Eye,” 1911. *Contrib.* on path. of dis. of eye, in *Trans. Ophthalm. Soc. and Roy. Lond. Ophthalm. Hosp. Repts.*

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Book.—“Handb. of Agric. Chem. for Indian Students.” *Contrib. to Trans. Roy. Soc., J. Agric. Sci.*, etc.

Spec. apparatus for estim. carbonic acid; slide rule for milk anal.

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Books.—"Specificity and Evolution in Dis.," 1884 and 1890; "Spinoza," 1889; "Life of Romilly," 1908; "Man v. the Microbe," 1903; "Phys. and Metaphys.," 1905; "Associated and Related Ocular and Dental Dis." (*Trans. Odont. Soc.*, 1891); "In what does Cancer consist?" (*Lancet*, 1888).

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Books.—"Geol. of Aix and Environs"; "Geol. Charts (1/80,000) of Aix, Dijon and Beaune"; "Geol. of Dept. Côte d'Or." *Contrib.*—"Cretac. of Lower Provence" (*Bull. Soc. Géol.*).

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Public.—Numerous on Vener. Dis., specific microbe of Vener. Ulcer, Pathog. of Vener. Buboos, Bact. researches on Blenorrhagia, Dis. of Skin, etc.

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Contrib. on Food Supply and Pub. Health.

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Books.—"Med.-Surg. Consultations," 2 vols., 1902—06; "Hered. in Alcoholism," 1888. *Contrib.*—Numerous.

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Book.—"Dict. of Chem. Solubilities," 1896. *Contrib.*—"Coeff. of Expansion of Glycerine" (*J. Ind. Eng. Chem.*, 1910); "Study of Velocity of Detonation" (7th Internat. Cong. of Appl. Chem., 1909).

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Books.—"Fossil Flora of E. Thuring. Carbonif.," 1894; "Red Sandstone of Apolda and Environs," 1904; "Sedimentary Rocks of Apolda and Environs," 1908.

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Contrib.—"Relation of mass to energy" (*Phil. Mag.*, 1908); various on elec., optics and mech.

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Contrib.—Various, to *Amer. Geol.*, etc.

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Books.—"Method of Last Squares"; "Text-bk. of Astron.," "Field Astron. for Eng'rs.," "Pubs. of Washburn Observ.," Vols. 5—12. *Contrib.*—Numerous, in *Astron. Nacht., Astron. J.*

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Books.—"The Number Concept"; "Orig. Exerc. in Plane and Solid Geom."; "Plane and Spherical Trig."; "Log. and Trig. Tables."

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Books.—"Nymphaea and Victoria" in "Bailey's Cym. Amer. Hortic."; "Waterlilies" (Carnegie Inst. Pub. No. 4); "Struc. and Life Hist. Hay-scented Fern" (Carnegie Inst.); "Waterlilies and how to grow them" (in part).

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Contrib. on triphenylmethyl and imino carbonium salts; etc.

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Books.—"Evol. of To-day," 1886; "Method of Evol.," 1900; "Pract. Dairy Bact.," 1907. Pioneer in dairy bact. in U.S.A.; first disc. oysters as means of distrib. typhoid fever.

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Contrib. to *Zsch. f. phys. Chem.*, *Ber. chem. Ges.*, *Liebigs Ann.*, on org. synth., accelerators, constit. of fulminic acid, etc.

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Contrib. to *Proc. and Trans. Lond. Math. Soc.*, *Roy. Dub. Soc.*, *R.I.A.*

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Contrib.—"Presidential Address" (*Proc. Aber. Assoc. C.E.*, Vol. 7); "Lectures on Sewer Design" (*Id.*, Vol. 4); "Girdleness Scheme, Aberdeen" (*M. P. I. C. E.*, Vol. 177); "Monterrey Waterworks and Sewerage, Monterrey (Mex.);" (*Trans. Amer. Soc. C.E.*, Vol. 72).

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Books.—"Baltic Amber Trees," 1890; "The Yew, a dying Tree," 1892; "Rare Forest Trees," 1895; "Forest Botany Notebook," 1900; "Care of Natl. Monuments," 1909 (in Eng.), 1910—11 (in Ger.). *Contrib.* in Eng. on Eng. Amber; Protected Landscapes, etc.

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Books.—"Brit. Fungi Illus.," 8 vols., 1881—91; "Study of Fungi"; "Fungoid Pests of Flower Gardens"; etc.

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Books.—"Climate of W. Austral.," "Annual Met. Repts.," "Perth Star Cats."

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Contrib.—"Measurement of dielec. constant of liquids" (*Wied. Ann.*, 1899); "Conductivity of aqueous solutions at high temp." (*Zeitschr. phys. Chem.*, 1903); "Ductile tungsten" (*Trans. Amer. I.E.E.*, 1910).

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Arts.—Road-making; Water Supply. *Contrib.*—"Hospital tents" (*Munic. & Co. Engrs.*, 1893); "Footway pavements" (*Ib.* 1895); "Ownership of underground water" (*Proc. Roy. San. Inst.*, 1897).

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Books.—"Primary Batteries"; Revised 3rd edn. McMillan's "Electro-Metall.," Ed. 2nd edn. "Electrician" Primers. *Contrib.*—"Elec. Traction on Tramways and Roads" (*Proc. Inst. C.E.*, 1902); "Alter. Current Electrol." (*Trans. Faraday Soc.*, 1906); "Investig. Dustlessness of Cars" (*Auto. Club J.*, 1909); "Benkő Primary Battery" (*Proc. Inst. E.E.*, 1911).

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Contrib.—"Some stages in spermatogenesis of honey-bee" jty. (*Proc. Amer. Acad.*, 1906); "Notes on mammals of Mt. Greylock, Mass." (*Proc. Biol. Soc. Wash.*, 1912); etc.

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Books.—"Vaccination: its Nat. Hist. and Path.," 1899; "Soil in relation to Health," in Stevenson and Shirley Murphy's "Hyg." *Arts.* on "Variola and Vaccinia," Allchin's "Medicine"; on "Clin. Exam. of Blood," "Vaccinia," etc., Clifford Allbutt's "Syst. of Medicine"; "Vaccination," *Encyc. Brit.*, 1902—11. *Contrib.*—Numerous repts. on Pub. Health matters in offic. publiens. of Loc. Govt. Bd., etc., and to *Trans. and Proc. Roy. Soc.*

Bacteriolog. purific. and preserv. of vaccine lymph by means of glycerine; blood examination, etc.

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Books.—"Man. of Path.," 5th edn.; "Man. of Hyg.," jty.

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Books.—"Handb. of Phys. and Chem.," 4th edn., 1911. *Contrib.*—"Identity and Etiol. of Rubella" (*J. Roy. Soc. Med.*, 1908); "Isolation in Isolation Hosps." (*Pub. Health*, 1908); "Smallpox from Imported Cotton"

(*Ib.*, 1909); "Present Position of Isolation Hosps." (*J. Roy. Inst. Pub. Health*, 1910); "Smallpox as an Indust. Dis. or Accident" (*Internat. Cong. on Dis. of Occupation*, 1910).

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Books.—"Tech. Educ."; "Industry and Ability"; "Healthy Homes"; "Bact. the Foes and Friends of Man." *Contrib.*—Numerous.

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Contrib. to *Annals of Bot.*, *Oxford*, and *Trans. Linn. Soc.*

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Books.—"Panama Canal and its Makers," 1909; "Waves of the Sea and other Water-waves," 1911; "A Pilgrim of Science, Ellen Cornish," 1912. *Contrib.*—"Sand-dunes bordering Nile Delta" (*Geog. J.*, 1900); "Sand-waves in Tidal Currents" (*Ib.*, 1901); "Snow-waves and Snow Drifts in Canada" (*Ib.*, 1902); "Jamaica Earthquake (1907)" (*Ib.*, 1908).

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Book.—Co-author of "Geol. of S. Africa." *Contrib.*—"Repts. of Geol. Surv. Cape of Good Hope," 1896—1902; Various in *Trans. of Geol. Soc. S. Africa*, 1903—11.

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Books.—"Field Bot.," 1908; "Pharmaceut. Bot.," 1910. *Contrib.* on Roman Orchids to *Ann. di Bot.*, 1905—10.

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Stonyhurst Coll., Blackburn, Lancs., Eng. Sun-spots and their connection with terrestrial magnetism.

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Books.—"A Nat. in Magdalen Is.," 1878; "Birds of Bahama Is.," 1880, 2nd edn. 1890; "Beautiful and Curious Birds of the World," 1883; "Birds of Haiti and San Domingo," 1885; "List of Birds of E. North Amer.," 1900; "Birds of Ill. and Wis.," 1909; "Mammals of Ill. and Wis.," 1912; etc.

Contrib.—Numerous, on birds and mammals.

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Contrib. on engrng. and sci.

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Books.—"Vegetables and the World's Producing Grounds"; "Trop. Nature"; "New Flora of the Fields"; "Atlas of Cultiv. Orchids"; "Descrip. of Cultiv. Orchids." *Contrib.* to *Ann. de Sci. Nat.*; *Rév. gen. de Bot.*; *Comptes Rendus*; *Bull. Soc. Bot.*; *Bull. Soc. Mycol.*

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Books.—"Chemistry of Pigments" (with Parry); "Calorific Power of Coal Gas." *Contrib.*—"Benzyl Derivs. of Phenylene Diamines" (with Meldola) (*J. Chem. Soc.*, 1889); "Neatsfoot Oil" (*J. S. Chem. Ind.*, 1898, 1903); "Gas Calorimetry" (*Ib.*, 1909—11); "Examn. of Turpentine" (*Analyst*, 1908—11).

Inv. gas calorimeter.

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Art.—"Brain Surgery" in *Encyc. Medica. Contrib.*—"Hallux Rigidus" (*Brit. Med. J.* 1887); "Resection of 22 inches of Transverse Colon" (*Edin. Med.-Chirurg. Trans.*, 1888); "Laminectomy for Paraplegia of 16 months standing—Cure" (*Brit. Med. J.*, 1904); "Meth. of osteoplastic trephining" (*Edin. Med.-Chirurg. Trans.*, 1894).

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110, Faub. Poissonnière, Paris, Fr.

Contrib.—Numerous on fossil-shells, etc.

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Books.—"Manual of Rocky Mt. Bot."; "Plant Relations"; "Plant Structures"; "Plant Studies"; "Textb. of Bot."; "Bot. of W. Texas"; "Morph. of Gymnosperms"; "Morph. of Angiosperms." *Contrib.*—"Life-hist. of Liliun" (*Bot. Gaz.*, 1897); "Life-hist. of Ranunculus" (*Ib.*, 1898); "Embryonic and embryo of Gnetum Gnetum" (*Ib.*, 1908); "Evolutionary tendencies among Gymnosperms" (*Ib.*, 1909).

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Books.—"Mining Industry and Parliament," 1884; "Mining Legislation," 1887; "Tunneling in Soft Ground," 1894; "Tech. Teaching in France" (jty.), 2 vols., 1901. *Contrib.* on Laws of explosions of fire damp; X-rays exam. of coal and other fuels.

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Books.—"Summary of Gen. Path."; "Sero-diagn. and -progn. in Typhoid." *Art.*—"Anaphylaxis" in Bouchard-Roger's Tr. d. Path. Gen.

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Books.—"Astron. Refraction"; "Cat. of Astron. Soc."; "Absolute Lat. of Strassburg." *Contrib.*—"Annual Refraction of Fixed Stars" (*Astron. Nachr.*, 1905).

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Books.—Numerous, on Crustacea, etc.

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Books.—"Exper. Study of Pharmacol. of Hedera Helix—the Common Ivy," 1898;

"Condensed Milks with Special Ref. to use as Infants' Foods" (Rept. to Loc. Govt. Board, 1911). *Contrib.*—"An unusual source of lead poisoning" (*Med. Chron.*, 1895); "Pseudo-tubercle bacilli in milk" (jtl.) (*Pub. Health*, 1903); "Sewer ventilation and intercepting trap" (*J. Roy. San. Inst.*, 1908); "Adminstr. control of measles and whooping cough" (*Loc. Govt. Off.*, 1908).

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Contrib.—"Yield Table for Shisham" (*Indian Forester*, 1899); "Life Hist. of the Tun Twig Borer" (*Ib.*, 1899); "Alternation of Forest Crops" (*Ib.*, 1908), etc.

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Book.—"Bot. of Death Valley Exped." *Arts.* on Bot. in *Encyc. Amer.* and *Century Dict. Contrib.*—Numerous, on geog., systematic and econ. bot.

Managem. of U.S. forest-grazing lands; estab. of Desert Bot. Lab. by Carnegie Inst.; Blueberry and other acid-soil plants.

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Book.—"Notebook of Med.," 4th edn., 1909. *Art.*—"Diet in Diseases of the Blood," in "Sutherland's System of Diet," 1908. *Contrib.*—Mainly upon dis. of heart and blood vessels.

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B. 1859. *Educ.* High Sch., Dundee; Edin. Univ. D.Sc. *Soc.*—M.Inst.C.E.; Pres. Inst. C.E. Irel.; Fell. Roy. San. Inst.; Hon. Mem. Incorp. Assoc. Munic. and County Engrns.; Mem. Kildare St. Club, Dublin. *Late Assist.* to Prof. of Engrng., Edin. Univ.; Assist. Engrng., N.Y., W. Shore and Buffalo Rail.; Assist. Engrng. in charge of construct., C.P.R.; Engrng., N.E. Sanit. Assoc., Newcastle-on-Tyne; County Surv. in Mayo, 1886; Cons. Engrng. to Piers and Roads Comm., 1886—87; County Surv., S. Down, 1889.

COWARD, HUBERT FRANK, Lect. in Chem., Munic. Sch. of Tech., Manchester.

216, Plymouth Grove, Manchester, Eng.
B. 1883, Blackburn. *Educ.* Blackburn Gram. Sch., and Manchester Univ. D.Sc. *Soc.*—F.C.S.; Chem. Ind.; Lit. and Phil., Manchester. *Late Fell.* and Dalton Scholar, Manchester Univ., and Assist. Lect. Chem.

Contrib.—"Thermal Decomposition of Hydrocarbons" *J. Chem. Soc.* 1908 "Direct Union

of Carbon and Hydrogen" (*Ib.*, 1908—10); "Ignition Temperatures of Gases" (*Ib.*, 1909).

COWELL, PHILIP HERBERT, F.R.S.; Supt. of Nautical Almanac.

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B. 1872, Moncton, N.B., Can. *Educ.* Battle Creek Coll. and Univ. Med. Coll., Michigan. M.D. (Mich.) 1896, (Heidelb.) 1908. *Soc.*—*Amer. Assoc. Path. and Bact.*; *Amer. Adv. Clin. Investig.*; *Amer. Pediat.*; *Amer. Med.*; *Mich. State Med.*

Art.—"Typhus Fever," in *Ref. Handb. of Med. Sci.*, 1900. *Contrib.*—"Exper. studies on clin. physiol. and path. of digestion" (*Archives Intern. Med.*, 1908, *Amer. J. Med. Sci.*, 1905, 1907, *Amer. J. Dis. of Children*, 1911, *Arch. of Pediat.*, 1911); "Biol. studies on structure of Opsonins"; etc. (*J. Med. Research*, 1907—09).

COWLES, EDWARD, Prof. of Psychiat., Dartmouth Coll., Hanover, N.H., U.S.A.

COWLES, HENRY CHANDLER, Assist. Prof. of Bot., Chicago Univ., Ill., U.S.A.

B. 1869, Kensington, Conn. A.B.; Ph.D. **COX, ALVIN (JOSEPH)**, Acting Direc., since 1912, Bur. of Sci., Manila, Philippine Islands.

B. 1875, Lawrence, U.S.A. *Educ.* Univs. Stanford, Leipzig, Breslau. M.A. (Stan.) 1902; Ph.D. (Breslau) 1904. *Soc.*—*Amer. Chem. Late Instr.* in Chem., Stanford Univ., 1902—06. Acting Prof. and Head of Dept. of Chem., Montana Univ., 1909—10; various positions in Bur. of Sci., 1906—09, 1910—12.

Books.—"Intro. to Quant. Anal.," "Tables of Equiv. Weights and Measures." *Contrib.*—"Basic Salts of Mercury" (*Z. f. anorg. Chem.*, 1904); "Chromates of Mercury, Bismuth and Lead" (*Ib.*, 1906); "Anal. of Lignitic and Sub-bitum. Coals" (*J. Amer. Chem. Soc.*, 1907); "Phillippine Firewood" (*Phil. J. Sci.*, 1911).

COX, HENRY JOSEPH, Prof. of Met., U.S. Weather Bur., Chicago, Ill., U.S.A.; In charge of N. Central Forecast Dist.

B. 1883, Newton, Mass. *Educ.* Harvard. A.M. 1887. *Soc.*—Chicago Acad. Sci.; Nat. Geog.; Chicago Geog.

Books.—"Use of Weather Records in Court," 1903; "Recent Advances in Met.," 1904. *Contrib.*—"Teaching of Met. by Lantern Slides" (*Geog. Soc., Chicago, Bull.* 3, 1906); "Frost and Temperature Conditions in Cranberry Marshes" (*Weather Bur.*).

COX, JOHN, late Prof. of Phys., McGill Univ., Montreal, Can.

Hindhead, Surrey, Eng.

COX, MICHAEL FRANCIS, P.C.; Physician to St. Vincent's Hosp. and Cons. Physician to Children's Hosp., Temple St., and Roy. Nat. Hosp. for Consump., Ireland; Mem. of Sen. and Chairman of Convoc., Nat. Univ. of Ireland.

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B. 1852, Kilmore, Co. Roscommon. Hon. M.D. (R.U.I.); F.R.C.P.I. *Soc.*—M.R.I.A.; F.R.S.A.I.

Book.—"Notes on Hist. of Irish Horse."

Contrib.—"Country and Kindred of Oliver Goldsmith" (*J. of Nat. Lit. Soc. Irel.*).

COX, S. H., A.R.S.M., M.I.M.M., Emer. Prof. of Mining, Imper. Coll. Sci. and Technol., London, S.W.

COYM, ARTHUR, Observer, Roy. Pruss. Aeronaut. Observ., Lindenberg, near Belskow, Ger.

B. 1875, Potsdam. *Educ.* Berlin Univ. Ph.D. (Berlin) 1902. *Soc.*—Ger. Meteorol.; Erdk. Berlin; Berlin Ballooning. *Late Assist.*, Roy. Meteorol. Inst., Berlin, 1899—1905.

Contrib.—Numerous.

COYNE, Prof. of Path. Anat., Univ. Bordeaux, France.

CRAFTS, JAMES MASON, Research Chemist; *late Pres.*, Mass. Inst., Technol.

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B. 1839, Boston. Sc.B., LL.D. (Harv.); Chev. Leg. Hon. Fr. *Soc.*—F.A.A.; Nat. Acad.; Amer. Chem.; Hon. Mem. Roy. Inst. G.B.

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B. 1859, Colchester, Conn. A.B. (Yale) 1882; M.D. (Columbia) 1886. *Soc.*—Amer. Gynaec.; Amer. Med. Assoc.; N.Y. Obstet.; N.Y. Co. Med.; N.Y. Acad. Med.; etc.

CRAIG, CHARLES F., Prof. of Path. and Bact., George Washington Univ., Washington, D.C., U.S.A.

CRAIG, JAMES IRELAND, Direc., Met. Service, Egypt. Surv. Dept.

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B. 1868, Buckhaven, Scot. *Educ.* Stewart's Coll. and Univ., Edinburgh; Emmanuel Coll., Cambridge. M.A. (Edin.) 1889; B.A. (Cantab.) 1892. *Soc.*—Fell. Roy. Met.; F.R.S.E.; Inst. Egypt.; Circ. Mat. Palermo; Cairo Sci. (Founder). *Late Assist. Mast.*, Eton Coll., 1893; Winchester Coll., 1895; Ministry Educ., Egypt, 1896—99.

Books.—"Gen. Theory of Map Projections," 1910; "Nile Flood of 1909," 1910; "Nile Flood of 1910," 1911; "Egypt. Met. Repts.," 1905—10; "Solid Geom. for Egypt. Students," 1912. *Contrib.*—"Climate of Egypt" (*Ann. Met. Rept., Egypt*, 1907); "Eng., Abyssinia, the S. Atlantic" (*Q. J. Roy. Met. Soc.*, 1910); "Notes on Cotton Stats." (*Egypte Moderne*, 1911); "Anthropometry of Mod. Egyptians" (*Biometrika*, 1911).

CRAIG, WALLACE, Prof. of Phil., Univ. Maine, Orono, Me., U.S.A.

B. 1876, Toronto. *Educ.* Geo. Watson's Coll., Edinburgh; Univs. Illinois, Chicago; Mar. Biol. Lab., Woods Hole. M.S. (Ill.) 1901; Ph.D. (Chic.) 1908. *Soc.*—Amer. Assoc.; Avicult.; Assoc., A.O.U.; Amer. Psychol. *Late Research Assist.*, Ill. Biol. Station, 1898—99; *Assist.* in Zool., Univ. Chicago, 1902—04.

Contrib.—"Voices of pigeons regarded as a means of social control" (*Amer. J. Sociol.*, 1908); "Expressions of emotion in pigeons" (*J. Comp. Neurol. and Psych.*, 1909, and *The Auk*, 1911); "Oviposition induced by the male in pigeons" (*J. Morph.*, 1911).

Develop. social psychol. of animals, especially of pigeons and other birds; Sex psychol. of birds.

CRAIG, W., Prof. of Pharmacol., Sch. of Med. of Roy. Colls., Edinburgh.

CRAM, MARSHALL PERLEY, Prof. of Chem., Bowdoin Coll., Brunswick, Me., U.S.A.

B. 1882, Brunswick, Me. A.M. (Bowd.) 1905; Ph.D. (Hopkins) 1908. *Soc.*—F.C.S.; Amer. Chem.

Contrib.—"Fractionat. of crude petroleum by capillary diffusion" (*Bull.* 365, *U.S. Geol. Surv.*, 1908); "Persistence of strychnine in a corpse" (*J. Biol. Chem.*, 1910); "Determ. of melting points with aid of microscope" (*J. Amer. Chem. Soc.*, 1912).

CRAMER, E., Ceramist; Co-Ed. of *Tonind. Z.* Dreysestr. 4, Berlin N.W. 21, Ger.

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B. 1876, Coventry. *Educ.* King Henry VIII Sch., Warwicksh.; Vict. Univ., Manchester. M.Sc. *Soc.*—Manchester Lit. and Phil.; Mem. Inst. E.E. (Mem. of Council). *Late Lect.*, Cent. Tech. Coll., S. Kensington, and Victoria Univ.

Books.—"Armature Windings"; "Vectors and Vector Diagrams"; "Continuous Current Machine Design." *Contrib.*—"Single-phase Repulse Motors" (*Brit. Assoc. Rep.*, 1900); "Testing Alternating Current Motors" (*Ib.*, 1904); "Elec. Discharge in Air" (*Ib.*, 1906); "Magnetic Leakage" (*J. Inst. E.E.*, 1907).

CRAMPTON, CHARLES ALBERT, Chief, Div. Food and Drug Products, Inst. of Indust. Research, Washington, D.C., U.S.A.

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B. 1858, Davenport, Ia. *Educ.* Univs. Iowa State, Purdue, Michigan, George Wash. B.L. 1882, Ph.C. 1882 (Mich.); A.C. (Purdue) 1882; M.D. (G. Wash.) 1884. *Soc.*—F.A.A.; Wash. Chem. (P.P.); Amer. Chem. *Late Assist. Chem.*, Bur. Chem., U.S. Dept. of Agric., 1883—90; Chief Chem., Bur. Intern. Rev., U.S. Treas. Dept., 1890—1910.

Public.—Numerous bull. from Bur. of Chem., U.S. Dept. of Agric., 1882—90. *Art.*—"Whisky" (*Internat. Encyc.*). *Contrib.*—"Denatured alcohol at home and abroad" (*Bur. Intern. Rev.*, 1909); "Chem. comp. of wheat-germ" (*Ber. d. deut. chem. Ges.*, 1886); "Boracic acid as a plant constit." (*Amer. Chem. J.*, 1889); "Changes taking place in whisky stored in wood" (*J. Amer. Chem. Soc.*, 1908).

Improvements in sugar industry; Sorghum; comp. and anal. of food products, fats and oils; ageing of distilled liquors; tax-free use of industrial alcohol in U.S.A. administr.

CRAMPTON, HENRY EDWARD, Prof. of Zool., Columbia Univ., New York, U.S.A.

B. 1875, New York. A.B., Ph.D. (Columbia). *Soc.*—F.A.A.; Amer. Nat.; Amer. Zool.; Amer. Exper. Biol.; Amer. Ethnol.; N.Y. Acad.; etc.

CRANDALL, CHARLES LEE, Prof. of Railroad Engrng., Cornell Univ., Ithaca, N.Y., U.S.A.

B. 1850, Bridgewater, N.Y. M.C.E. (Cornell). *Soc.*—S.P.E.E. (P.P.); etc.

CRANNER, BARTHOLD HANSTEEN, Fell. Norweg. Acad. Sci.; Prof. of Bot., Norweg. High Sch. Agric., Aas, Norway.

CRAPPER, E. H., Senr. Lect. in Elec. Engrng., Univ. Sheffield, Eng.

B. Eng. (Sheff.); M.I.E.E.

CRARY, L. E., Assist. Prof. of Biol. and Geol., Kansas State Norm. Coll., Emporia, Kan., U.S.A.

Book.—"Field Zool."

- CRAWFORD, ALBERT CORNELIUS**, Prof. of Pharmacol., Stanford Univ., Cal., U.S.A.
B. 1869. *Educ.* Johns Hopkins Univ. M.D. (Coll. Physic. and Surg., Baltimore) 1893. *Late Assist.* in Pharmacol., Johns Hopkins Med. Sch., 1894—1900; Pharmacol., Bureau of Plant Ind., U.S. Dept. Agric., 1904—08; *Physiol.*, *Ib.*, 1908—10.
- CRAWFORD, L.**, Prof. of Math., S. African Coll., Cape Town, S. Africa.
- CRAWFORD, MORRIS BARKER**, Prof. of Phys., Wesleyan Univ., Middletown, Conn., U.S.A., since 1884.
B. 1852, Ossining. *A.M. Soc.*—F.A.A.; *Amer. Phys.*
- CRAWLEY, EDWIN SCHOFIELD**, Prof. of Math., Univ. Pennsylvania.
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B. 1862, Philadelphia. *B.S.* 1882, *Ph.D.* 1892 (Penna.). *Soc.*—F.A.A.; *Amer. Math.* *Late Instr.* in Civ. Engrng., 1882—84; *Instr.*, 1884—89, *Assist. Prof.* of Math., 1889—99, Univ. Pennsylvania.
- CREAK, ETRICK WILLIAM**, C.B., Captain R.N.; F.R.S.
 9, Hervey Rd., Blackheath, London, S.E.
F.R.G.S. Soc.—*Mem. Inst. E.E.*; *Hon. Mem. Roy. Cornwall Polytech.*
- CREDNER, HERMANN** (*See Obituary*), Ord. Prof. of Hist. Geol. and Palcont., Direc. of Geol. Inst., Univ. Leipzig, Ger.
B. 1841, Gotha. *Educ.* Clausthal; *Univs.* Breslau, Göttingen. *Ph.D.* (Gött.) 1864; *D.Sc.*
- CREELMAN, GEORGE CHRISTIE**, Pres., Ontario Agric. Coll., Guelph, Ont., Can.
B. 1869, Collingwood, Ont. *Educ.* Collingwood Colleg. Inst. *B.S.A.* (Tor.) 1888; *M.S.* (Agric. Coll., Mississippi) 1896; *LL.D.* (McMaster) 1909. *Late Prof.* of Biol., Mississippi Agric. Coll., 1888—97.
- CREIGHTON, HENRY JERMAIN MAUDE**, *Assist. Prof.* of Chem., Swarthmore Coll. Swarthmore, Pa., U.S.A.
B. 1886, Dartmouth, N.S. *Educ.* *Univs.* Dalhousie, Birmingham, Heidelberg, Zurich Polytech. *M.A.* (Dal.) 1907; *M.Sc.* (Birm.) 1909; *D.Sc.* (Zurich Polytech.) 1911. *Soc.*—F.C.S.; *N.S. Inst. Sci.*; *Amer. Chem.*
Contrib.—"Influ. of colloids on absorp. of gases in water" (*Trans. Chem. Soc.*, 1910); "Studies on reductase of liver and kidney" (*Proc. Roy. Soc.*, 1912); etc.
- CREIGHTON, JAMES EDWIN**, Prof. of Logic and Metaphys., Cornell Univ., Ithaca, N.Y., U.S.A.; *Ed. Phil. Rev.*; *Amer. Ed. Kant Studien.*
B. 1861, Pictou, Can. *Educ.* Pictou Acad.; Dalhousie Coll.; *Univs.* Cornell, Berlin. *B.A.* (Dalh.) 1887; *Ph.D.* (Cor.) 1892; *LL.D.* (Queen's) 1904. *Soc.*—*Amer. Phil.*
Book.—"Introd. Logic," 1898, 4th edn., 1909. *Arts.*—numerous on phil. in *Encyc. Amer. Contrib.* to *Phil. Rev.*, etc.
- CREITE, OTTO**, Prof., since 1912, of Surg., Univ. Göttingen, Ger.
- CREMER, MAX**, Prof., since 1911, of Physiол., Roy. Vet. Hochsch., Berlin.
 Klopstockstr. 21 hpt., Berlin N.W. 23; and *Inst.*, Luisenstr. 56, Berlin N.W. 6.
B. 1865. *Educ.* *Univs.* Bonn, Würzburg, Munich. *M.D.* (Würz.) 1888; *Physician* 1889. *Soc.*—Leop. Carol. Acad. *Late Priv. Doz.* 1893, Extraord. Prof. 1901, Munich; Prof., Roy. Acad. Med., Cologne, 1909.
Publ.—Numerous on *Physiol.*, etc.
- CREW, HENRY**, Prof. in Physics in North Western Univ.
 Science Hall, Evanston, Ill., U.S.A.
B. 1859, Richmond, Ohio. *Educ.* Princeton Coll., and Johns Hopkins Univ. *B.A.* (Prince.); *Ph.D.* (Hopkins). *Soc.*—*Amer. Phys.* (P.P.); *Nat. Acad. Sci.*; *Ill. State Acad. Sci.* (P.P.); *Amer. Assoc.* (P.P., Sect. B).
Books.—"Principles of Mechs.," "Gen. Phys.," "Elements of Phys." *Art.*—"Spectroscopy" in *Encyc. Amer. Contrib.* on Spectroscopy (*Astro-phys. J.*, 1895 et seq.).
 Effect of gaseous atmosphere on arc spectra.
- CRICHTON-BROWNE, Sir JAMES**, F.R.S.; Lord Chancellor's Visitor in Lunacy; Lect. on Mental Dis., Leeds Sch., and Newcastle Coll. Med.; Pres. Med. Psychol. Soc., Med. Soc., London, and Neurol. Soc.
 45, Hans Place, S.W.; Royal Courts of Justice, Strand, London, W.C.; and Crindan, Dumfries, Scotl.
Educ. *Univs.* Paris, Edinburgh. *LL.D.* (St. And.) 1879; (Aberd.) 1906; *D.Sc.* (Leeds) 1909; *M.D.* 1862; *L.R.C.S.* 1861 (Edin.). *Soc.*—F.R.S.E.; *Corresp. Fell.* Acad. Med. N.Y.; *Fell. Med.*; *Hon. Mem. Roy. Med. Edin.*; *Fell. Roy. Phys. Edin.*; *Roy. Inst. G. B.* (V.-P. and Treas.); *P.P. Roy. Med. Edin.*, *Lond. Med.*, *Med.-Psychol.*, *Child Study*, *San. Insp. Assoc.*
Books.—"Dreamy Mental States," 1898; "Nemesis of Froude," 1903; "Prevention of Senility," 1905; "Parsimony in Nutrition," 1909. *Contrib.*—"Lects. on Ment. and Cereb. Dis." (*Brit. Med. J.*, 1871—72); "Antagonism of Medicines" (*Ib.*, 1876); "Rept. on Overpressure in Element. Schs.," "Educ. and Nervous Syst.," "Cassell's Book of Health."
- CRILE, GEORGE WASHINGTON**, Prof. of Clin. Surg., Western Reserve Univ., Cleveland, Ohio, U.S.A.
B. 1864, Chili, Ohio. *A.M.*; *M.D.*; *Ph.D. Soc.*—*Hon. F.R.C.S.*; *F.A.A.*; *Amer. Path.* and *Bact.*; *Amer. Phys.*, etc.
- CRISP, Sir FRANK**, Bt.; *late Treas.* and *Vice-Pres.*, *Linn. Soc.* London (1881—1906); *late Hon. Sec.*, *Roy. Micr. Soc.* (1878—89).
 Friar Park, Henley-on-Thames, Eng.
B. 1843. *Educ.* Privately and *Univ. Coll. Sch.* *LL.B.*, *B.A.* (Lond.).
- CRISTIANI, HECTOR**, Prof. of Hyg. and *Bact.*, Geneva Univ.
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- CRITCHETT, Sir ANDERSON**, Bt., C.V.O.; *Surg. Oculist* in Ord. to H.M. the King; *Cons. Ophthalm. Surg.*, St. Mary's Hosp.; *Ophthalm. Surg.*, King Edward VII. Hosp.
 21, Harley St., London, W.
Educ. Cambridge Univ.; *Middlesex Hosp. M.A.* (Cantab.) 1873; *F.R.C.S.* (Edin.) 1880. *Soc.*—*Fell. Med. Lond.*; *Fell. Roy. Med.*; *Ophthalm.*; *Fr. Ophthalm.*; *Brit. Med.* *Late Ophthalm. Surg. Roy. Free Hosp.*; *Lect.* on *Ophthalm.*, St. Mary's Hosp. *Med. Sch.* *P.P. Ophthalm. Sect.*, *Brit. Med. Assoc.*, 1889; *Ophthalm. Soc.*
Contrib.—"Inoculation in Ophthalm. Practice" (*Annales d'Oculist*, 1877); "Operative Treatment of Congen. Cataract" (*Brit. Med. Assoc.*, 1882); "Nature's Speculum in Cataract Extraction" (*Trans. Soc. Franç. d'Ophthalm.*

and *Lancet*, 1886); "Conical Cornea: its Surg. Evolution" (*Practitioner*, 1895).

CROCKER, FRANCIS BACON, Prof. of Elec. Engrng., Columbia Univ., New York City.

B. 1861, New York. M.E. 1882; Ph.D. (Columbia) 1892. *Soc.*—Brit. Inst. E.E.; Amer. Phys.; Amer. Inst. E.E. Late U.S. Delegate Internat. Elec. Chem. Comm., Lond., 1906. P.P. Amer. Inst. E.E.

Books.—"Elec. Lighting," 2 vols., 7th edn.; "Management Elec. Machinery," 7th edn.; "Elec. Motors," *Contrib.*—"Chem. Generators of Elec." (*Trans. Amer. Inst. E.E.*, 1888); "Precision of Elec. Engrng." (*Ib.*, 1897).

Elec. Motors, Electrochemistry, Regulation of Elec. Machinery, etc.

CROFT, W. B., Physiologist, Winchester Sch., Eng.

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Care of Royal Society, London.

B. 1826. *Educ.* Trin. Coll., Dublin. D.Sc.; Late Fell. R.U.I.

Art.—"Probability" in *Encyc. Brit. X. Contrib. to Phil. Trans.*

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B. 1879. B.A. 1901; M.D. (N.U.I.) 1912. *Soc. Path. G. B. and I.*; *Brit. Med. Assoc.*;

Roy. Acad. Med. Ire. Late M.O.H., Port of Wisbech and Sutton Bridge.

Contrib. on antibacterial sera, etiol. of diabetes, prev. of tuberc., etc.

CROMMELIN, ANDREW CLAUDE DE LA CHEROIS, Assist. Astron., Roy. Observ., Greenwich.

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Educ. Marlborough Coll.; Trin. Coll., Cambridge. D.Sc. *Soc.*—F.R.A.S.; *Brit. Astron. Assoc.* (P.P.).

Contrib. on Moon, Planets and Halley's Comet.

CROMPTON, ROOKES EVELYN BELL, C.B.; Civ. Engrn.

Thriplands, Kensington Court, London, W. B. 1845, Sion Hill, nr. Thirk, Yorks. *Educ.*

Harrow. *Soc.*—Mem. Counc. Inst. C.E.; Mem. Inst. Mech. E.; Mem. Inst. E.E. (twice Pres.).

Late Supt. Govt. Steam Train in India, 1871; Founder and Head of Crompton & Co., Ltd.; Mem. of Engrn. Standards Comm., of Exec. Comm. Nat. Phys. Lab.; Hon. Sec. Internat. Elec.-tech. Comm.; Cons. Engrn. to Road Bd.; P.P. Inst. Automobile Engrns.

Contrib.—"Distrib. of Elec. Energy" (*Inst. C.E.*); "Cost of Elec. Engrng." (*Inst. Elec. Engrns.*); "Modern Motor Vehicles" (*Inst. C.E.*); "Wheel and Road" (*Inst. of Automobile Engrns.*).

Inv. many features of modern dynamo. Research on deformation of steel when hardened; elec. resist. of manganin; use of manganin tubes for rheostats for measuring large powers; viscosity and rate of flow of pitches, bitumens, etc., for road purposes; specific heat and use of superheated steam, esp. at higher temperatures.

CRONSHAW, Rev. GEORGE BERNARD, Fell. and Lect. in Sci. of Queen's Coll., Oxford, Eng.

B. 1872, Pennington, Lanc. *Educ.* Manchester Gram. Sch.; Queen's Coll., Oxford. M.A. (Oxon.).

CROOK, LOUIS HENRY, Prof. of Mech., Cath. Univ. of America, Washington, D.C., U.S.A.

CROOKES, Sir WILLIAM, O.M., F.R.S.; Cons. Expert, Ordnance Bd.

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B. 1832. Hon. LL.D. (Birm.); Hon. Sc.D. (Cantab. and Dub.); Hon. D.Sc. (Oxon., Sheff.,

Dun., C. of Good Hope); *Roy. Med.*, 1875; *Davy Med.*, 1888; *Copley Med.*, 1904 (*Roy. Soc.*). *Soc.*—Hon. Mem. *Roy. Phil. Glas.*;

Roy. Soc. N.S.W.; *Pharm.*; *Chem. Metal.* and *Min.*, S. Africa; *Amer. Chem.*; *Amer. Phil.*; *Roy. Sci.*, Upsala; *Ger. Chem.*; *Psychol.*, Paris; *Antonio Alzate Sci.*, Mexico;

Sci., Bucharest; *Corresp. Inst. Fr.*; *For. Mem. Acads. Lincei, Zelanti, Romana*; *For. Assoc. Amer. Nat. Acad.*; *P.P. Sect. B.*, *Brit. Assoc.*,

1886; *Chem. Soc.*, 1887; *Inst. E.E.*, 1890; *Soc. Psych. Research*, 1897; *Brit. Assoc.*, 1898.

P.V.-P. Chem. Soc., 1875; *Soc. Teleg. Engrns. and Elec.*, 1886; *Roy. Soc.*, 1895—96, 1907—08;

Chem. Ind. (Pres.).

Books.—"Disinfectants for Cattle Plague," 1866; "Manufact. Beetroot Sugar in Eng.," 1870; "Select Methods in Chemical Analysis," 1871, 4th edn., 1905; "Handb. of Dyeing and Calico Printing," 1874; "Man. of Pract. Assaying," 1873 and 1881; "Dyeing and Tissue Printing," 1882; "London Water," 1880—96;

"Wheat Problem," 1899 and 1905; "Diamonds," 1909. Ed. of "Handb. of Aniline Colours," 1868; "Pract. Treatise on Metall.," 1870; "Chem. Technol.," 1872; "Anthracene and its Derivs.," 1877; "Ville's Artific. Manures," 1882 and 1908; *Chem. News*, since 1859.

Disc. Thallium, 1861; repulsion resulting from radiation, 1873; radiometer, 1875; illumination of lines of molec. pressure, 1878;

radiant matter, 1879; radiant matter spectroscopy, 1881; genesis of elements, 1887; spinthariscopes, 1903.

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Educ. Edinburgh, London, Paris. M.D. (Gold Medal) 1882, F.R.C.P. 1880, F.R.C.S. 1873 (Edin.). *Soc.*—F.R.S.E.; Fell. (and P.P.) Obstet. Edin.; *Corresp. Mem. Gynaec. and Obstet.*, Belgium; Hon. Fell. Amer. Assoc. Obstet. Gynaec.; Fell. Bot. Edin.; Mem. Med.-Chir. Edin.; *Roy. Med. Edin.*; *Harvey, Edin.* (P.P.); Hon. Mem. Leipzig Obstet. and Gynaec. Late Examr. in Midwif., Oxford and St. Andrews Univs.

Books.—"Minor Gynaec. Operations and Appliances," 2nd edn., 1883; "Bladder during Parturition," 1883; "Clin. Papers," 1901.

Arts.—"Extra-uterine Pregnancy" (*Encyc. Med.*); "Menstrual Dis." (*Albutt & Priestley*). *Contrib.*—"Diagnosis of Early Extra-uterine Pregnancy" (*Trans. Edin. Obstet. Soc.*, 1891); "Causation of 'Mittelschmerz'" (*Ib.*, 1897); "Vaginal Hysterectomy" (*Ib.*, 1899); "Exophthalm. Goitre in rel. to Obstet." (*Edin. Med. J.*, 1907).

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Book.—"Modern Med." (Orat. before Hunt. Soc.), 1871. *Contrib.*—"Case of Epilepsy" (*Med. Times Gaz.*, 1861).

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Books.—"Common Minerals and Rocks"; "Tables for Determ. of Common Minerals"; "Geol. of E. Massachusetts"; "Guides to Miner. and Geol."; "Notes on Chem. Geol."; "Geol. of Boston Basin." *Contrib.*—About 100 on geol.

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Books.—"Cellulose" and "Researches on Cellulose," 1—3. *Contrib.* to *J. Chem. Soc., Berl. Ber.*, and *Chem.-Zeit.*

Cellulose and collateral indust. processes includ. Cellulose Xanthogenic Ester; Viscose and Viscose processes.

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Arts.—"Telephone" (*Encyc. Brit.*); "Notes on Mechanics"; "Notes on Optics." *Contrib.*—"Telephony" (*Proc. Amer. Acad. Arts and Sci.*, 1885—93); "Inverse E.M.F. of Arc" (*ib.*, 1886); "Musical Pitch in U.S.A." (*ib.*, 1900); "Phenom. of Audition and Vowel Quality" (*ib.*, 1891—92).

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Contrib.—Numerous, on geol. of Colo.; etc.

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Book.—"Desert and Sea Gardens of the Red Sea." *Contrib.* on coral reefs to *Camb. Phil. Soc., Proc. Zool. Soc., J. Linn. Soc.*, 1902—11; "Polychaeta" (*Proc. Zool. Soc.*).

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Contrib.—Numerous to *J. Chem. Soc.*, etc.

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Contrib. on Molec. Phys. in *Chem. World.*

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Books on Plague, Serum vaccine, etc.; "Bact. Water Anal."; "Memoirs of Inst. Osw. Cruz." *Arts.*—"Malaria prophylaxy in S. Brazil" in R. Ross's book; "Sanitation of Rio" in "Campaign against Yellow Fever."

Founded Inst. Osw. Cruz. in which were *disc.*, the etiol. of Brazilian goitre (by Chagas) and the microbe of smallpox (by Aragai and v. Drowazek).

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Book.—"Matrices and Determinoids," vol. I., 1913. *Contrib.*—"Möbius Surfaces" (*Bull. Calcutta Math. Soc.*, 1910—13).

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Origin of Dolomite in the British Trias (*Trans. Roy. Soc. and Repts. Brit. Assoc.*).

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Books.—"Med. Pract. Chem.;" Ed. "Chem. Monographs."
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Contrib. to *Kew Bull.*, *Proc. Linn. Soc.*, etc.
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Books.—"Art Enamelling on Metals," 1901; and on Clocks, Patent Law, Elec., Polit. Econ., etc.
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Contrib. to astron. periodicals.
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Contrib.—"Life hist., norm. fission and reproductive organs of *Planaria maculata*" (*Boston Soc. Nat. Hist. Proc.*, 1902); "Formation of Proglothids in *Crossobothrium lociniatum*" (*Biol. Bull.*, 1906); "Studies on reprod. and artific. propn. of freshwater Mussels" (*Bull. Bur. Fish.*, 1910); etc.
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Contribs. to *Ann. Sci. Éc. Norm. Sup.*, *Math. Ann.*, and *Amer. J.*
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Contrib.—New meth. for reduction of Spectrograms; Spectrum of β Lyrae; Single-prism Spectrograph of Detroit Observ., etc.
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Contrib.—"Cause of colour in org. compounds" (*J. Amer. Chem. Soc.*, 1910); "Methyl phenyliminomalonate and its reactions," jty. (*ib.*, 1911); "Condensations in mesoxalo

ester series," with E. S. Strachan (*Ib.*, 1911); "Pseudo acid esters in mesoxalic ester synthesis," with J. A. Kostalek (*Ib.*, 1911).

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Book.—"Pituitary Body and its Disorders," 1912. *Arts.*—"Surg. of the head" (*Keen's Syst. Surg.*, 1908); and various on neurol. surg.

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Books.—"Corrosion and Preserv. of Iron and Steel," 1910; Monographs on Decompos. of feldspars, Extraction of potash from feldspar, corrosion of iron, Colloid theory of plasticity in clay, Determin. of oxygen in iron and steel; etc.

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Books.—"Text-bk. of Pharmacol. and Theraps.," 5th edn., 1910. *Art.* in "Text-bks. of Pharmacol. and Theraps." (Hale White); "Lab. Guide in Exptl. Pharmacol." (with Edmunds). *Contrib.*—"Action of Digitalis on Circulation" (*J. Exper. Med.*, 1896); "Atropine and Hyoscyamines" (*J. Physiol.*, 1903); "Paroxysmal Irregularity of Heart" (*Amer. J. Med. Sci.*, 1906); "Action of Optical isomers" (*J. Physiol.*, 1908).

Path. of paroxysmal irregularity of heart; Difference in action of optical isomers.

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Books.—"Formation and Hist. of Glac. Valleys," 1908; "Outlines of Geol. and Geog. of Macedonia and Servia," 1908, etc. *Contrib.*—"Glac. of Balkan Peninsula" (*Zeitschr. f. Erdk., Berl.*, 1898); "Glac. of Asia Minor and S. Carpathia" (*Zeitschr. f. Gletscherk., Berl.*, 1908); "Geomorphol. of A.M. and S.C." (*Petermann's Mitt.*, 1909); "Past and Present Lakes of A.M. and S.C." (*Ann. de Géog., Paris*, 1900, 1911).

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Books.—"Biochemistry of Plants," 2 vols., 1905; "Surface Tension of Plasma," 1911; "Chemical Phenomena in Life," 1911. *Contrib.*—About 80 on Plant Physiol.

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Books.—"Geometric Probabilities," 1889; "Theory of Errors," 1891; "Diffil. and Integ. Calc.," 3rd edn., 1912. *Contrib.*—"Theory of Ellipse" (*Sitz.-Ber. Akad. Wien*, 1880); "Theory of Partial Differentiation" (*Ib.*, 1895); "Symbolic Calc. of Rational Curves" (*Crelle J.*, 1893); "Report on Mil. Stats." (*Milit.-Wiss. Mitt., Vienna*, 1911).

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Contrib. on Anthrop.

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Contrib.—"Nat. Dept. of Sci." (*Sci.*, 1897); "Agric. Educ." (U.S. Educ. Exhib., Paris Expos., 1900); "Washington's Univ." (*Forum*, 1900); "Univ. and City in Co-operation" (*Outlook*, 1908).

Disc. phosphates and tin ores of N. Carolina; Reorganised Univ. of Cincinnati as a munic. inst.

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Books.—"Repts. of S. Paulo State Agric. Inst.," 1889—96; "Culture of Coffee-tree," 2nd edn., 1899; Ed. "Codex alimentarius Austriacus," 1911—13.

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Books.—"Guide to Scient. Collections," 1908; "Guide to Zool. Observ.," 1910; "Birds of Middle Europe," 1912.

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Book.—"Oxidations and Reductions in Animal Organism." *Contrib.* on org. and biol. chem., in Eng. Ger. and Amer.

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Books.—"Lects. on Dis. and Injuries of Ear"; "Educ. of Deaf and Dumb by Lip Reading and Articulation," 1872; "Educ. Treatment of Incur. Deaf Children." *Arts.*—"Dis. and Injuries of Ear," "Holmes's Syst. Surg.," "Dis. of Ear," "Quain's Dict. Med." *Contrib.*—"Non-Purulent Catarrh of Mid. Ear" *Med. Chir. Trans.*, 1873; "Dis. of Mastoid Bone" (*ib.*, 1878—79); "Cases in which Perforation of Mastoid Cells is Necessary" (*ib.*, 1885; "Contrib. to Aural Surg." (*Lancet*, 1875—95).

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Books.—"Balancing of Engines"; "Valves and Valve Gear Mech." *Arts.* on transmitting power, locomotive power, dynamometers, bearings, in *Encyc. Brit.*; revised Rankine's *Art. on App. Mechs.*

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Contrib.—"Physiol. actions of ergot" (*J. Physiol.*, 1906); "Action of extracts of the Pituitary body" (*Bio-Chem. J.*, 1909); "Chem. structure and sympatho-mimetic action of amines" (with Barger) (*J. Physiol.*, 1910); "Physiol. action of β Iminazolyethylamine" *jtly.* (*ib.*, 1910).

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Inv. apparatus for lighting and signalling at sea and on railways (Dalén light).

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Books.—"Alaska and its Resources," 1870; "Coast Pilot of Alaska," 1883; "Met. of Alaska," 1879; "Deep Sea Dredgings of U.S.S. *Blake*," 1889; "Tert. Fauna of Florida," 6 vols., 1885—1903; "Alaska" (*Encyc. Brit.*); "Land and Freshwater Shells of Alaska," 1905.

Alaska, its fauna, met., geol. and hist., includ. bibliog. and cartography; Research in recent and fossil mollusca and brachiopoda.

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Contrib.—"Position and Size of Stomach by X-Rays and a Tube filled with Bismuth" (*Trans. Chem. Soc.*, 1905); "Malignant Anaemia associated with Oral Sepsis" (*Ib.*, 1904); "Influenza and the Aliment. Canal" (*Practitioner*, 1907); "Notes on Abscesses of Liver" (*King's Coll. Hosp. Repts.*, Vol. 2).

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Books.—"Geol. of Ascuteyn Mountain, Vt."; "Geol. of N. Amer. Cordillera at 49th Parallel," 2 vols. with atlas. *Contrib.*—"Mech. of igneous intrusion" (*Amer. J. Sci.*, 1903 and 1908); "Nature of volcanic action" (*Proc. Amer. Acad. Arts and Sci.*, 1911); "Geol. of Labrador" (*Bull. Mus. Comp. Zool.*, 1902); "Origin of Coral reefs" (*Amer. J. Sci.*, 1910).

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Books.—"Pharmacopoeia of Greece," and 10 pharm. works; 65 monographs. *Contrib.* on mineral waters and tobacco of Greece.

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Books on Congo, Meteorol., etc.

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Contrib.—"Depilatory and burning effect of X-rays" (*Science*, 1896); "Polarization phenomena" (*Phil. Mag.*, 1893); and to *Wiedeman's Ann.*, 1892, and *Phys. Rev.*, 1893.

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Book.—"Animal Life of Malaysia." *Contrib.*—"Adjustment of Paramoecium to distilled water" (*Amer. J. Physiol.*, 1908); "Adapt. and immunity of lower organisms to ethyl alcohol" (*J. Exper. Zool.*, 1909); "Observ. on period of gestation in white mice" (*Ib.*, 1910); "Mice, their breeding and rearing for sci. purposes" (*Amer. Nat.*, 1912).

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Books.—"Lab. Studies in Trop. Med."; "Trop. Med. and Hyg." *Arts.* in Syst. Med., Syst. Treatm., etc.

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Books.—"Geol. of Stone-coal Deposits."
Contrib.—"Enclosures in Volcanic Rocks of Siebenbirge"; "Petrog. of Caucasus"; "Volcanoes of Mexico."

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Contrib. on bot.

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Books.—"Theory of Surfaces," 4 vols.; "Curvilinear Co-ordinates."

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Contrib. to *Phil. Mag.* and *J. Chem. Soc.*

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Books.—"Dermatology," 1909; "Skin Anat. Physiol. and Path.," in "Pratique Dermat.,"; "Therap. of Skin Diseases," 1900; "Syphil. Arteritis," 1904, etc. *Contrib.*—"Sarcoïde" (*Monats. f. Prakt. Dermat.*, 1910); *Classif.* of Epitheliomes, Internat. Cong. of Dermat., Berlin, 1904.

Follicular psorospermose, 1889; Vessels of heart valves, 1888; Cutaneous tuberculids, 1896.

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Repts. and *Folios* pub. by U.S. Geol. Surv., etc. *Contrib.* to *Bull. Geol. Soc. Amer.*, *Nat. Geog. Mag.*, etc., on underground waters and temperatures; coal.

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Contrib.—"Small Vertical Movements of a Stone laid on Surface of Ground" (*Proc. R.S.*, 1901); "Elec. Thermostat" (*Phil. Mag.*, 1904); "High or Low Temper. Alarm" (*B.A.*, 1904); "Side-Slip in Motor Cars" (*ib.*, 1904).

Designed many new Sci. Instruments.

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Books.—"Anaesthetics," 1882; "Vasomotors," 1884; "Osmosis and Cryoscopy," 1901; "Life and Death," 1903. *Contrib.* on Asphyx. Glycosuria; Hypotonus of Heart prod. by excitation of Vagus; Bile and Pancreatic secretions in Digestion of Fat, etc.

Disc. Vaso-dilat. nerves of diff. organs.

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Books.—"Exper. Morphol."; "Statist. Methods"; "Introduction to Zool."; "Eugenics"; "Inheritance of Characteristics in Domestic Fowl"; "Hered. in rel. to Eugen." 1911. *Contrib.*—"Studies in Morphogenesis" (*Bull. Mus. Comp. Zool.*, 1893); "Role of Water in Growth" (*Bull. Bost. Soc. Nat. Hist.*); "Hered. of Eye-color, Hair-form and color and Skin color in Man" (*Amer. Nat.*, 1908—10); "Inherit. of Epilepsy" (*Bull. Eng. Record. Off.*, 1911).

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Books.—"Princip. of Breeding"; "Educ. for Efficiency"; "Domest. Animals and Plants." *Arts.*—"Thremmat." (*Encyc. Amer.*); "Animal breeding" (*Encyc. Amer. Agric.*); "Comp. Agric." (*ib.*).

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Art.—"Röntgen Rays," "Quain's Dict. of Med." *Contrib.*—"Elec. Light applied to Ophthalmoscope" (*Lancet*, 1886); "Röntgen Rays and Localization" (*Brit. Med. J.*, 1898); "Stereos. Skiagraphy" (*ib.*); "Localization of Foreign Bodies in Eye and Orbit by Röntgen Rays" (*Trans. 9th Internat. Ophthalm. Cong.*, Utrecht, 1899).

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Contrib. to *Amer. J. Sci., Phys. Rev., Phys. Zachr., Science*, etc.

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Books.—"Wells and Water Supplies in Saginaw Bay Drainage Basin," "Peat Deposits of Maine" (*Bull.* 376, *U.S. Geol. Survey*); "Uses of Peat for Fuel and other Purposes" (*Bull.* 16, *U.S. Bureau of Mines*). *Contrib.*—"Nat. Hist. of Marl" (*J. Geol.*, 1901); "Peat in Mich." (*Ann. Rept. Mich. Geol. Surv.*, 1907) (also in book form); "Salt Marsh Formation in Vicinity of Boston, Mass., and Geol. Significance" (*Econom. Geol.*, 1910). Ed. *J. Amer. Peat Soc.*

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Books.—"Perpetual Calendar," 1887, 3rd edn. 1902; "Declin. and Proper Motions of 56 Stars used in Lat. Investig." 1895; "New Reduction of Piazzini's Star Observations"; and 70 others.

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Books.—"Textb. of Biol."; "Elem. Textb. of Bot."; "Elem. Textb. of Physiol."; "Nat. Hist. of Animals"; etc.

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Books.—"Food in Health and Dis." 2nd edn.; "Consumption," 2 edns.; "Dis. of Lungs, Heart and Kidneys." *Arts. in Sajous' Anal. Cyc. of Med. Contrib.*—Numerous.

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Book.—Jt. ed., 4th edn. of "Allen's Commercial Org. Analysis," 1909. *Contrib.* to *J. C.S.*, *J. S.C.I.*, *J. Agric. Soc.*

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Books.—"Meteorol."; "Phys. Geog."; "Triassic Form. of Conn." (U.S. Geol. Surv.). *Art.*—"U.S." in *Encyc. Brit.*; etc. *Contrib.*—Numerous

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Book.—"Mammalian Anat." 2nd edn.

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Books.—"Hereford Earthquake of Dec. 17, 1896"; "Study of Recent Earthquakes"; "Origin of Earthquakes." *Contrib.*—"Distrib.

of strain in the earth's crust, resulting from secular cooling" (*Phil. Trans.*, 1887); "Annual and semi-annual seismic periods" (*ib.*, 1893); "Twin earthquakes" (*Q. J. Geol. Soc.*, 1904).

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Books.—"Cave-hunting"; "Early Man in Britain"; "Brit. Pleistocene Mammalia."

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Books.—"Repts. of Progress, Tidal and Current Surv.," 1894—1903; "Repts. on Currents, Bay of Fundy, Belle Isle Strait, Newfoundland, etc."; "Annual Tide Tables, E. Can. and Pacific Coast." *Contrib.*—"Tide Gauges in Isolated Situations" (*Proc. Inst. C.E., Lond.*); "Tide Levels in E. Can." (*Can. Soc. C.E., Montreal*); Various, on Tides and Currents, *Trans. R. Soc. Can. and Nature*, 1900—10.

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Books.—"Isomorphism and Thermal Properties of Feldspars"; "High Temperature Gas Thermometry." *Contrib.*—"Air Thermom. at High Temps." (*Ann. d. Phys. u. Chem.*, 1899); "Black Body and Measurement of Extreme Temperatures" (*Astrophys. J.*, 1904); "Linear Force of Growing Crystals" (*Proc. Wash. Acad. Sci.*, 1906); "Some Min. Relations from Lab. Viewpoint" (*Bull. Geol. Soc. Amer.* 1910).

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Art.—"Phys.," in *Internat. Year Book*, 1898, and 1899. *Contrib.*—"New groups of residual rays in long-wave spectrum," *jtly.* (*Phys. Rev.*, 1908).

Reduction of Rowland's curve for specific heat of water, in mech. units, to Paris hydrogen scale, by means of thermom. comparisons; *disc.* new residual rays, *jtly.* with E. F. Nichols. **DEAN, BASHFORD**, Prof. of Vertebrate Zool., Columbia Univ., New York; Cur., Reptiles and Fishes, Amer. Mus.

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Book.—"Immunity in Diphtheria." *Art.*—"Tetanus," in "Quain's Dict. Med." *Contrib.*—"Diphtheria Immunity" (*Trans. Path. Soc. Lond.*, 1899); "Immunity in Relation to Pancreas and its Ferments" (*ib.*); "Further Observs. on a Leprosy-like Dis. of the Rat" (*J. Hyg.*, 1905); "Enquiry into Nature of Substances which influence Phagocytosis" (*Proc. Roy. Soc.*, 1876 and 1879).

Introduced rapid method of Immunisation used in prep. of diphth. antitoxin; First demonstrated "Thermostable opsonins," etc.

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Art.—"Peritonitis," "Quain's Dict. Med." and "Encyc. Med.,"; "Injuries and Dis. of Head," Treves' "Syst. Surg." Ed. Heath's "Injuries and Dis. of the Jaws," 4th edn., 1894. *Contrib.*—"Innervation of Pulmonary Vessels" (*Proc. Roy. Soc.*, 1889, and *J. of Physiol.*, 1894); "Temp. on 2 Sides of Body in Cereb. Compression" (*Proc. Neurol. Soc.*, 1889); "Cerebro-Spinal Pressure" (*J. Path.*, 1892); "Cerebellar Abscess successfully treated by Operation" (*Lancet*, 1892).

DEAN, H. R., Joseph Hunter Prof. of Path. since 1912, Univ. Sheffield, Eng.; *late Assist. Bact.*, Lister Inst. of Prev. Med.

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Books.—"Moto-Sensory Develop.," "Textb. of Hum. Physiol.," 1908; "Treatise on Physiol. of Exercise"; "Promotion of Efficiency." *Contrib.*—"Emotion of Joy," Doct. Thesis (Monog. Suppl. to *Psychol. Rev.* 1899); "Relation of Muscular Activity to Mental Process" (*Amer. Phys. Educ. Rev.*, XIV.); "Physiol. of Kinesthesia" (*J. f. Psychol. and Neurol.*, 1912); "Nerve-Mech. of Voluntary Movement" (*Amer. Phys. Educ. Rev.*, 1912).

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Books.—"Surg. Anat.," 3 vols.; "Surg. Anat. of Head and Neck"; "Enlargement of the Prostate"; "Appendicitis," 4th edn.; "Surg. of Upper Abdomen," with A. P. C. Ashhurst, 2 vols.

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Contrib.—Annual Rept. of Bot. Gard.; Cat. of Library.

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Book.—"Graebe's Expts. on Quinone," 1911. *Contrib.*—"Substitution in pyridine and quino-line, etc." (*J. f. Prakt. Chem.*, 1892, 1902, 1911); "So-called quinolinium bases and analogy" (*ib.*, 1893, 1911); "Oxonium theory" (*Lieb Ann.*, 1906, 1907, 1909); "Di- and tetra' hydroisoquinoline synth." (*ib.*, 1913).

Neg. orientation of N in pyridine ring; cyclammonium-cyclamine isomerisation.

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Books.—"Commerc. Geog." 1882; "States of C. Europe," 1883; "Colonial Empires of

To-day," 1884; "The New World," 1892; "Cuba," 1899; "N. America," 1904, 1913. *Arts.*—"N. Amer.," "U.S.A.," "Mexico," in Meyer's *Konvers. Lexik.*; "Brit. N. Amer.," and "N. Amer. Union" in *Geog. d. Welthandels*, 1913.

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Book.—"Cane Sugar," 1911.

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—*London*. Math.; *Amer.* Math.; *Roy.* Arts; *Amer. Assoc.*; *Amer. Econ. Assoc.*; *Amer. Acad. Polit. and Soc. Sci.*; S.P.E.E.; *Amer. Geog.* *Late Assist.* Prof. of Math., Univ. Missouri, 1893—1903.

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Books.—"Anscultn. and Percussn.," "Clin. Med.," 2 vols.; "Human Morphol.," etc.

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Books.—"Bact. for Medicals and Vets.," jty., 1895. *Contrib.* on unity of tuberc., bacillus in man, animal and bird, in *Virchow's Arch.*, *Deut. Med. Woch.*, *Geneesk. Tijdschr. v. Ned. Ind.*, and on glanders and its diagn. by mallein and Wassermann's reaction in *Zeitschr. f. Hyg. u. Infekt.-Krankh.*, *Berliner Tierärztl. Wochenschr.*, etc.

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Contrib. on leprosy in Livland, heart dis.,

estim. of blood press., malaria, recurrent fever, typhus, etc.

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Books.—"Perception of Motion," 1891; "Rept. of Exped. to Nachvak, Labrador," 1902. *Contrib.* on psychol.

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Books.—"Geolog. Sci.," "Gold Mines of Transvaal," "Hist. of Earth," "Mineral Riches of Asia," "Pract. Geol.," "Cape Diamonds," "Thermomineral Sources," "Ore Deposits"; Metals in Italy, Bulgaria, etc.

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Books.—"Moral Problem in Phil. of Spinoza and Hist. of Spinozism," 1893; "Pract. Phil. of Kant," 1905; "Figures and Doctrines of Philosophers," 1913; *Transl.* Kant's "Metaphys. of Custom."

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Ger. Chem. (V.-P.); Assoc. Ger. Chemists (V.-P.).

Books.—"Yeast, Ferment, and Putrefac.," jtlly.; "System of Nat. Yeast Cultiv.," jtlly.; "Essays in Hist. of Beer," jtlly.; "Handb. of Spirit Manuf.," with Märcker; Ed. "Dic. of Brewery" and "Dic. of Distilling."

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Arts.—"Actinomycosis," "Splenic Fever" in *Encyc. Med.*, 1899 and 1902; "Archives of Pub. Health Lab., Manchester," 1906; "Prevalence and Sources of Tubercle B. in Cow's Milk," Rept. Loc. Govt. Board, 1908—9. *Contrib.*—"Cutaneous pigment" (*Proc. Physiol. Soc.*, 1890); "Verteb. liver" (*Proc. Roy. Soc.*, 1890—91); "Psorospermosis as a poss. cause of epithelial tumours" (*Trans. 7th Cong. Hyg.*, 1891); "Chem. disinfectants" (*J. Soc. Chem. Ind.*, 1910 and 1911).

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Book.—"Carbonif. Limestone of Belg.," 1911.

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Contrib.—"Transpiration and Stomata in Halophytes" (*Annals of Bot.*, 1911); "Transpir. in Succulent Plants" (*Ib.*, 1912); "Attaching Disks of Ulva" (*Ib.*, 1912).

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Books.—On Geol. of S. Italy and on Relig. of India. *Contrib.*—Numerous since 1892.

Disc. Triassic Beds and Glacial Remains in S. Italy.

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Contrib. on Geom. to *Atti e Rend. Accad. Sci. Napoli, Pontaniana, G. Mat. Battaglini.*

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Books.—"Fixation of Dunes of Gascony," 1900; "Penetrability of Forests by Projectiles from Fire-arms," 1902; "Quarrimeter for measuring Pinus maritim." 1898; "Aid to Sylvicult.," 1907.

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Contrib.—"Practical Hints on Management of Pregnancy, Labour and Puerp. State" (*Dub. J.*, 1882); "Case of Acute Ascending Paralysis" (*Ib.*); "Case of Orbital Aneurysm in which Common Carotid Artery was Tied Twice" (*Brit. Med. J.*, 1886); "Acute Pericarditis and Paracentesis Pericardii" (*Trans. Ulster Med. Soc.*, 1900).

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Books.—"Introd. to Study of Bot." (with A. H. S. Lucas, for Australian students; "Outlines of Evol. Biol." 1912. *Arts.*—"Isle of Wight" and "Sponges," in *Encyc. Brit.*, edns. 9 and 11. *Contrib.*—"Studies on Comp. Anat. of Sponges" (*Q. J. Micro. Sci.*, 1888—94); "Oviparous Species of Onychophora" (*Ib.*, 1902); "Outlines of Development of Tuatara" (*Ib.*, 1899); "Pineal Organs, etc., of Tuatara" (*Phil. Trans.*, 1910); etc.

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Contrib. to Inst. Elec. Engrs., etc.
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Contrib. to *Trans. Chem. Soc.*, etc.

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Books.—"Anat. and Embryol. Researches on Anthropoid Apes," 1886; "Exped. to Cape Horn," 1892; "Races of Europe," 2 vols. 1897, 1909; "Races of Man," 1913, and in Eng. *Contrib.*—"Pigmentation in Europe" (*Bull. Soc. Anthropol., Paris*, 1910); "Exotic Races" (*Rev. Anthropol., Paris*, 1890); Huxley Memorial Lect., Anthropol. Inst. G.B., 1904; "Bibliog. of Sci. Soes. of Fr.," 1890—7; etc.

Embryol. Affinity of Ape and Man, 1885; *Classific. of Races*, 1887.

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Contrib.—"Accurate determ. of ionic velocities in solution" (*Faraday Soc.*, 1909); "Investig. of equilibria in homogen. syst. from physical data" (*ib.*, 1912); etc.

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Book.—"Elec. Conductiv. of Glass," 1897. *Contrib.*—"Theory of Cond. Galvanic Elements" (*Ann. d. Phys.*, 1903); "Relative Motion of Foucault's Pendulum" (*ib.*, 1905); etc.

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Books.—"Telescopic Work for Starlight Evenings"; "Meteorio Shower of Nov." *Arts.* on "Jupiter" and "Meteors," in *Encyc. Brit. Contrib.* more than 100 to R.A.S., *Eng. Mech., Nature, Knowledge, The Observ., Astron. Nachr.*, etc.

Disc. 5 comets, 2 of short period of Jovian family; determ. rotation periods of Mars, Jupiter and Saturn, and 2,500 radiant pts. of meteoric showers; observed 30,000 meters.

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Books.—"Surg. Annual," 1898, 1899; "Construc. of Hospitals," 1908. *Contrib.*—"Ventral Position," 1905; "Surg. treatm. of Cirrhosis of Liver," 1904; "New Meth. of Gastrostomy," 1903; "Curvature of Bones," 1907.

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Contrib.—"Nepheline rocks in Brazil with special reference to assoc. of Phonolite and Foyaitite" (*Q. J. Geol. Soc.*, 1887, 1891); "Study of Bendigo Meteorite" (*Arch. d. Mus. Nat. d. Rio*, 1896); "Monazite and Xenotime in Europ. Rocks" (*Min. Mag. and J. Min. Soc.*, 1897); "Genesis of diamond" (*J. Geol.*, 1911); and on early Amer. eotarg.

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Contrib. on engrng.

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Books.—"Photog. for Students of Phys. and Chem."; Ed., "Cyc. of Engrng." *Contrib. various.*

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Books.—"Metallography," 1910; "Chem. and Testing of Cement," 1911. *Contrib.*—"Repts. on Org. Chem." (*Chem. Soc. Ann. Rept.*, 1907—11); "Intermetallic Compounds" (*J. Inst. Metals*, 1908); "Common Defects in Alloys" (*ib.*, 1910); "Composition of Entectics" (*Trans. Faraday Soc.*, 1910).

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Books.—"Tech. Lab. Guide to Histol.," 1886, 2nd edn. 1898; "Relation between Variole and Vaccine," 1892; "Human Egg" (350th anniv. of Geneva Univ. Publ. of Honour) 1909. *Contrib.*—"First stages of blood-circ. in egg and embryo of human" (*Verhandl. d. Schw. Naturforsch. Ges.*, 1898); "Law of statics in hard and soft dental tissues" (*L'Odontol. du Dubois*, 1894); and on bicuspoid theory of teeth, notochordal canal and lecithophore in human embryo, persistent trophoderm in human egg, technical instruments, etc.

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Book.—"Handbk. of Engineering"; Chap. on Harbours, Docks, and Regulation of River Estuaries. *Contrib.*—"River Regulation Works and Harbour and Canal Construction in Ger." (*Proc. Inst. C.E.*, 1898—89); "Pierced Harbour Moles" (*Centrabl. d. Bauverw.*, 1908); "Sea Lighter Trade," 9th Internat. Cong. of Navig., Dusseldorf, 1902; "Dimension of

Maritime Canals," 12th Internat. Cong. of Navig., Philadelphia, 1912.

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Books.—"Agric.," 1876; "Comp. Physiol. of Germinat. Processes of Seeds," 1881; "Textb. of Plant Physiol.," "Bot. Travels in Brazil," 1897; "Elem. Pract. Plant Physiol.," 4th edn. 1912. *Contrib.*—Numerous.

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Book.—"Grasses in Bot. of W. Texas." *Arts.*—"Bulls. on Weeds," "Fiber Plants" (*Encyc. of Agric.*, Bailey). *Contrib.*—"Princ. Commere. Plant Fibers" (Yearbk., U.S. Dept. Agric., 1903); "Fibers used for Binder Twine" (*ib.*, 1911).

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Books.—"Corrosion of Mar. Boilers" (Watt Medal, Inst. C.E.); "Machinery Bearings" (Telford premium, Inst. C.E.).

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Books.—"Ry. Organization and Working" jtl., 1906; "Housing Prob. in Eng.," 1907. *Contrib.*—"Railway and State" (*Proc. Amer. Econ. Assoc.*, 1910); "Freight car efficiency" (*J. Western Ry. Club*, 1908); "Interp. of railway statistics" (*Ry. Gaz.*, 1910); "Railway rate-making and rate-reforming" (*Ry. World*, 1911).

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Books.—"Spectrog. Researches on Absorption of Ultra-Violet Rays by Albuminoids, Proteids and their Derivs.," 1909; "Variation of Nervous Centres," 1898. *Contrib. to Comptes Rend. Acad., Sci., and Soc. Biol.; Archiv. d. Physiol., and J. Physiol. and Path.*

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Books.—"Pract. Photometry"; "Purification of Sewage and Water"; "Public Lighting"; Ed. and Part Author, "Elec. Lighting and Photometry," in "Churchill's Chem. Technol.," Vol. 4; "Lime, Mortar and Cement." *Arts. in Encyc. Munic. Engrng. Contrib.*—"New Phases in Photometrical Practice" (*J. Soc. Chem. Ind.*, 1884); "Purification of Thames" (*J. Inst. C.E.*, 1897); "London Water Supply" (*J. Soc. Chem. Ind.*, 1897); "Recent Improvements in Biol. Treatment of Sewage" (*ib.*, 1906).

Inv. of "Radial," "Portable," "Hand" Photometers; Pentane-Argand standard of lights; Contact beds for sewage purif.

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Contrib.—Numerous in Trans. of above Soes.

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Contrib.—"Preparation of Esters from other Esters of same Acid" (with Patterson) (*J. Chem. Soc.*, 1901); Repts. in connection with pub. analytical work.

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Books.—"Element. Meteorol.," "Climate and Weather," *Arts.*—"Climate," in "Internat. Geog.," "Oceans," in *Encyc. Brit. Contrib.*—"Temperature and Salinity of N. Atlantic" (*Phil. Trans.*, 1901); Various in *J. Roy. Met. Soc., Geog. J., J. Scott. Geog. Soc.*; Repts. of Brit. Assoc., etc., on Circulation of N. Atlantic, Norweg. Sea, North Sea; Relation of air and ocean temperatures; Movements of underground water.

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Disc. carbon suboxide, 1906.

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Contrib.—"Displacements of semilunar cartilages" (*Lancet*, 1910); "Subepithelial lymphatic glands" (*Ib.*, 1911); "Functions of the tonsils and appendix" (*Ib.*, 1912).

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Books.—Numerous on invertebrates, etc.

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Book.—"Epidemic Influenza." *Contrib.*—Numerous in *Trans. Entom. Soc. Lond.*, *Proc. Zool. Soc.*, *Sci. Progress*, *Nature*, etc., since 1890, on Ossification and Insect Bionomics.

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Book.—"Man. of Human Osteol.," 1912. *Contrib.*—"Develop. of Branches of Fifth Cranial Nerve" (*Trans. Roy. Dub. Soc.*, 1896); "Sensory Distrib. of Facial Nerve," and other anat. papers to *J. of Anat. and Physiol.*

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Contrib.—"Halogen-substituted Acidic Thiocarbimides" (*Trans. Chem. Soc.*, 1897); "Certain Org. Phosphorus Compounds" (*Ib.*, 1904); "Chem. of Org. Acid Thiocyanates" (*Ib.*, 1906); "Molec. Refraction of Thiocyanates and other Salts" (with J. Taylor) (*Trans. Chem. Soc.*, 1910).

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Books.—"Rural Bird Life"; "Migration of Birds," 2 vols.; "Brit. Game Birds and Wildfowl"; "Nests and Eggs of Brit. Birds," and upwards of 20 other vols. on ornithol., etc. *Contrib.*—"Ornithol. of Algeria" (*Ibis*); "Bird of St. Kilda" (*Ib.*); "A New Law of Geog." (*Fort. Rev.*).

Disc. new species of birds, *Saxicola seebohmi*, and *Troglodytes hirtensis*; new theories of avine migration.

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Contrib.—"Country around Ammanford" jtly. (*Mem. Geol. Surv. Lond.*, 1907); "Country around Carmarthen" jtly. (*Ib.*, 1909); "Geol. of Titterstone Clee Hills" (*Rept. Brit. Assoc. Sheffield*, 1910—11); "Carbonif. Succession in Gower, Glam." jtly. (*Q. J. Geol. Soc. Lond.*, 1911).

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Contrib.—"Ascent of sap" with Joly (*Phil. Trans. B.*, 1895); "Phys. of transpiration current" (*Notes, Bot. Sch., Trin. Coll.*, No. 2, 1897); "Temperature of Plants" (*Trans. Roy. Irish Acad.*, 1903); "Osmotic pressures in plants and on thermo-elec. method of determ. freezing points" with W. R. G. Atkins (*Proc. Roy. Dub. Soc.*, 1910).

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Books.—"Manual of Pharmacol." *Arts.* in Allbutt's "Syst. Med." and Hale White's "Pharmacol.," "Brit. Pharm. Codex" (Pharmacol.). *Contrib.*—Numerous.

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Book.—"Insects and Dis." *Contrib.* on *Tipulidae* and other Diptera, and on *Coccidae*.

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Contrib. on Lymphatics of Stomach, Cæcum, Appendix, Testicle and Colon; "Meso-Colic Hernia," "Annals of Surg.," 1905.

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Books.—Eng. Ed., "Heart" vol., Notnagel's Syst., 1908; "Hookworm Dis." (jtl.) 1910; "Malaria," 1890—94; "Amebic Dysentery," 1891, 1902; "Chloroma," 1893; "Goitre," 1895.

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Books.—"Phys. Geog. for Beginners"; "Geogs. and Geog. Notebks."; "Teaching of Geog. in Element. Schs." (jtl.); Ed. "Annals, Assoc. Amer. Geog."

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B. 1859, Berlin, Wis. A.M. (Wis.) 1888; M.D. (Rush Med. Coll.) 1882, (Jefferson Med. Coll.) 1883. *Soc.*—F.A.A.; Amer. Assoc. Anat.; Amer. Nat.; Amer. Med. Assoc.; Chicago Med.; Chicago Pediat.; Ill. Med.; Chicago Path. *Late* Lect. and Demonstr. in Anat., Prof. of Obstet. and Demonstr. in Anat., 1892—98, Rush Med. Coll.

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Contrib.—"Rice Weeds" (*L. Bull.*, 1904); "Cotton, Corn, Cow Peas and Oats" (*Ib.*, 1908); "Crops for Hogs" (*Ib.*, 1910); etc.

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of Solar Eclipse Exped. to Tasmania, 1910; and Vavau, Friendly Is., 1911.

Books.—Astron. reports, etc. *Contrib.*—"South Australian Earthquakes" (*Proc. Austral. Assoc. Adv. Sci.*, 1908).

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Books.—"Projective Geom.," 3rd edn., 1905; "Geom. Transformations," 2 parts, 1901 and 1908. *Contrib. to Math. Ann., Zeitschr. f. Math., Repert. d. Kunstwiss.*

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Books.—"Volcanoes of Cape Verde"; "Chemical Mineral."; "Precious Stones"; "Phys. Chem. Miner."; "Petrogenesis"; "Radium"; "Mineral Chem."; and many others.

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Books.—"Antilles and the Far West," 1900; "E. Asian Voyage," 1906; "Textb. of Protozoa," 3rd edn. 1911; "Animal Homes and Animal Life" (with Hesse) 1910. *Contrib.*—Numerous on Protozoal, Animal Biol. and Geog.

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Book.—"Leprosy in Japan," etc.

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Books.—"Elem. Geodasy," 2 vols., 1909;

"Theory and Pract. of Surveying," 1902; "Log.-Trig. Tables," 1909, 2nd edn., 1912; "Applic. of Photog. in Surveying," 1896.

Inv. Photo-tachymeter.

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Contrib.—"Cytol. of surg. shock" (*J. Med. Research*, vols. 20 and 22); "Neurocytol. reaction in muscular exertion" (*Amer. J. Phys.*, vol. 25); "Reuperation of nerve cells after functional activity" (*J. Med. Research*, vol. 24); "Morphol. of functional activity in ganglion cells of crayfish" (*Arch. f. Zellf.*, IX.).

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Book.—"Statistics of Cancer in Hungary," 1906. *Art.*—"Tuberc. Colitis" in Joachims-thal's *Handb. of Orthopaed. Surg. Contrib.*—"Replacement of dislocation of Shoulder, Elbow and Hip" (*Ergebn. d. Chirurg.*, 1911); "Treatm. of grave Facial Neuralgia by resection of Gasserian ganglion" (*XX. Cong. Assoc. Fr. d. Chirurg.*); etc.

Orthopaedic apparatus.

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Contrib. on Fossil reptiles (Iguanodons and Mesosaurus), 1882—1912; Laws of Evolution, 1893—1912; Antarctic Fish, 1900—12.

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Book.—"Intro. to Study of Midwifery," 6th ed., 1906. *Contrib.*—"Methods of Craniotomy" (*Trans. Obst. Soc.*, 1889); "Fibroid Tumours Complicating Pregnancy and Labour" (*ib.*, 1901); "Chronic Endometritis and Chronic Metritis in Virgins" (*Trans. N. of Eng. Obstet. and Gynaec. Soc.*, 1904); "Symptoms and Treatment of Chronic Endometritis" (*Proc. Roy. Soc. Med.*, 1910).

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Book—"Heredity in Light of Recent Research," 1910 and 1912. *Contrib.*—"Develop. of Sagitta" (*Q. J. Micr. Sci.*, 1902); "Expts. in Hybridiz. of Echinoderms" (*Trans. Roy. Soc.*, 1903); "Sex-inheritance in Moth *Abraxas grossulariata*" (*Evol. Comm. Roy. Soc.*, Rept. 4, 1908); "Gametogen. of gall-fly, *Neuroterus lentic*." (*Proc. Roy. Soc.*, 1910 and 1911).

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Book.—"Dis. of Childhood," 1893. *Art.*—"Hysteria" in Tuke's *Dic. Psych. Med. Contrib.*—"Etiol. of some Syst.-dis. of Spinal Cord" (*Brain*, 1883); and to *Lancet, Brit. Med. J., Westm. Hosp. Repts.*, etc.

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Book.—Ed. Mayow's works for Ostwald's *Klassiker d. Exakt. Wiss. Art.*—"Copper" in Abegg's *Handb. d. Anorg. Chem.*

Effusion of gases; Theory of Capillarity and Colloidal Solutions; Nature of Emulsions; Surface-concentration of dissolved substances; Theory of electrolytic dissoc.; Equilibria and potential differences existing at semi-permeable membranes, etc.

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Books.—"Application of Gylden Disturbance Theory," 1882; "Appendix to A. Kruger's Observations," 1885; "Scandinavian Triangulation," 1888; "Formulae and Tables for Estimation of Time in N. Sea," 1889; "Determin. of Cliché Constants for Photog. Cat. of Stars," 1893; "Photog. Cat. of Stars on the Helsingfors Zone," 1903 and 1908; "Researches of Univ. Observ.," 1907 and 1909, etc. *Contrib.* to *Fennia*, and to Finnish Soc. Sci.

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Books.—"Measures of 900 Double Stars"; "Measures of 1,200 Double Stars"; "Cat. and Re-meas. of Hough Double Stars"; "Measures of 2,200 Double Stars"; "Secular Perturb. of Four Inner Planets." *Contrib.*—Numerous.

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Book.—"Notes on Gen. Path.," 1907.

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Books.—Ed. "Neumann's Theoret. Optics," 1885; "Probable Value of the Ohm," 1895; "Radioactivity," in Kohlrausch's "Text-bk. of Prac. Phys.," 1910. *Contrib.*—Numerous to *Ann. d. Phys.*, *Phys. Z.*, etc., on estimation of energy of Röntgen Rays, disc. of Radium Emanation, Detachment of Negative Ions from Metal Surfaces by Röntgen Rays, etc.

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Contrib.—"Etiol. of Hog-cholera" (*Bull.* 72,

U.S. Dept. Agric., 1906); Numerous others on Chem. and Bact. of Tuberculosis, Hog-cholera, etc.

Disc. that hog-cholera is caused by a filterable virus.

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Contrib.—Numerous on phys. anthropol. and ethnol. of N. Amer. Indians.

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Books.—"Chem. and Micros. Aids to Clin. Diag.," 1900; "Laws of Health and School Hyg.," 1907. *Contrib.*—"Uric Acid Excr. and Leucocytosis" (*Edin. Med. J.*, 1900); "Clin. Exam. of Blood" (*Glasgow Med. J.*, 1900); "Digestion Leucocytosis and Cancer of Stomach" (*Brit. Med. J.*, 1901); "Ortol Reaction in Milk" (*Lancet*, 1903).

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Contrib.—"Indust. Progr. of U.S.A." (*J. Soc. Arts*, 1911), etc.

DOUGLAS, JAMES ARCHIBALD, On Geol. Exploration in Peru, Bolivia and Chili, 1910—12. Wharfedale, Saltburn-by-Sea, Yorks., Eng.

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Book.—Chap. on "Geol. of Oxford and Banbury District," in Geol. Assoc. "Field Geol.," 1909. *Contrib.*—"Phys. Constants in Minerals and Igneous Rocks" (*Q. J. Geol. Soc.*, 1907); "New Cretaceous Crinoids" (*Geol. Mag.*, 1908); "Carboniferous Limestone of Co. Clare, Irel." (*Q. J. Geol. Soc.*, 1909).

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Contrib.—"Influ. of absorptive capacity of brick upon adhesion of mortar" (*Proc. Amer. Soc. Testing Materials*, 1908); "Expts. upon

absorption, porosity and sp. gr. of building rock" (*Ib.*, 1911); "Paper testing" (*Paper Trade J.*, 1910); "Accurate testing in cotton ind." (*Proc. Cotton Mfrs.*, 1913).

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Publ. on Climate, etc., of Africa.

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Books.—"Geol. of West Shore and Islands of L. Winnipeg"; "Souris River Coal-field"; "Cascade Coal-field"; "Coal-fields of Manitoba, Saskatchewan, and Alberta." *Contrib.*—"Phys. Geog. of Red River Valley" (*Ottawa Nat.*, 1901); "Notes on utilization of poor coal and slack" (*J. Can. Min. Inst.*, 1906); "Form. of Coal" (*Trans. Roy. Soc. Can.*, 1910); "Undeveloped coal resources of Can." (*Bull. Can. Min. Inst.*, 1911).

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Books.—"Anal. Geom."; "Projective Geom." *Contrib.*—"Forms of quintic curves" (*Math. Rev.*, 1895); "Conformal repres. of certain isosceles triangles upon upper half-plane" (*Ann. of Math.*, 1905).

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Contrib.—"Researches on Effect of Light upon Bact. and other Organisms" (*Proc. Roy. Soc.*, 1877); "Influence of Light upon Protoplasm" (*Ib.*, 1878); "Behaviour of Oxalic Acid, etc., in Sunlight" (*Ib.*, 1879); "Action of Sunlight and of Diffused Light on Microorganisms" (*Ib.*, 1886).

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Books.—"Naut. Almanac," 1896—1912; Ed. "Taylor's Madras Cat. of Stars"; "International Geog." Chap. on Math. Geog.; "Precession Tables," 1910. *Contrib.*—"Orbit of

Junco" (*Monthly Notices, R.A.S.*, 1890); "Distrib. of Stars of Cape Phot. D.M." (*Ib.*, 1902); "Places of Standard Stars for the N. Zones of the Astron. Ges." (*Ib.*, 1904); "Perturbations of Biellid Meteors" (*Proc. Roy. Soc.*, 1905).

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Books.—"Notes on Chem. Research"; "Phys. and Chem. of Dyeing." *Arts.*—"Chem. and Phys. of Dyeing," "Gallic Acid and its Allies," "Tannins, Anal. of Leather, Colouring Matters," "Fibroids and Artificial Silk" in Allen's Org. Anal.; "Artif. Silk" in Thorpe's Dic. App. Chem. *Contrib.*—"Action of Dyeing" (*Proc. Far. Soc.*, 1910); "Artificial Silk Indust." (*J. Soc. Chem. Ind.*, 1909); "Theory of Dyeing" (*Ib.*, 1905); "The Solution State" (*Chem. News*, 1905).

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Art.—"Circulation" in Wood's Ref. Handb. 1900. *Contrib.*—"Hemorrhage and fasting on blood proteins" (*Stud. Biol. Lab., Hopkins Univ.*, 1890); "Differential respiration" (*Ib.*, 1891); "Secretory nerves to adrenal bodies" (*Amer. J. Physiol.*, 1897).

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Books.—"Sci. and Phil. of the Organism," 1908 (Gifford Lect.); "Ordnungslehre," 1912; etc.

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Book.—"Hurter and Driffield System," 1903. *Contrib.*—"Photo-Chem. Investiga-

tions" and other papers (with Hurter) (*J. Soc. Chem. Ind., Photog. J.*, etc., 1890—98).

Method of determ. sensitiveness of photog. plates.

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Books.—"Treatise on Tunnelling, Explosive Compounds and Rock Drills," 1878; "Treatise on Explos. Compounds and Rock Drills," 1882. *Contrib. to Proc. Amer. Inst. Min. Engrs.* Ed. "Ball's Railroad and Teleg. Laws of Penna.," 1884.

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Books.—"Atlas of Plant Geog.," 1887; "Handb. of Plant Geog.," 1890; "Ger. Plant Geog.," 1895; "Veget. of Earth," jty. *Arts.*—"Palms" in Martius' Fl. Brasil.; numerous in Schenk's Handb. d. Bot., 1880—90. *Contrib.*—"Plant Ecol." (*St. Louis Cong.*, 1904; *Die Wiss.*, 1913).

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Contrib. in *Publ. Astron. Observ. Kasan Univ.*, etc.

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Book.—"Magnetic Circuit," in Eng., 1896. *Contrib.*—Numerous on optics, magnetic balance, half-ring electro-magnet, ironclad galvanometer, etc.

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Books.—"Treatise on Gout" (transl. into Fr. and Ger.), 1889; "Sequels of Dis. and Prognosis," 1896; "Harv. Oration, R.C.P., London," 1898. *Arts.*—"Dietary for the Sick"; "Obesity," in Allbutt's "Syst. Med." Ed. "Warburton Begbie's Works" (New Syd. Soc.), 1882.

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Contrib.—Numerous on physiol. action of X-rays, esp. depilatory effect; etc.

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Books.—"Element. Exper. Mechs.," Ed. and part-author "Text-bk. of Phys.," "Phys. Measurements" (with Ewell). *Contrib.* on viscosity, tidal phenomena, etc., in *Phil. Mag., Phys. Rev., Amer. J. Sci.*

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Contrib. to Heidelb. Astrophys. Inst.; Princeton Observ.; Astron. Nachrichten, on Celest. Photog., Photog. Photom., Visual Photom.

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Books.—"Fungous Dis. of Plants," 1909; "Plant Physiol.," 1911. *Contrib.* on marine algae, mushrooms, lycopersecin in tomato, etc.

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Books.—"Cause and Specif. Cure of Hay Fever," 1903; "Treatm. of Drainage," 1907, 2nd edn. 1912; "Syst. of Bacteria, Ferments and Moulds," 1907. *Contrib.*—"Dem. of Cholera Vibriones in River Water" (*Arbeits. Kais. Gesund.-amt.*, 1894); "Food Control in Hamburg" (*Hyg. Rundsch.*, 1899); "Sero-biol. Behaviour of Sexual Cells" (*Zschr. f. Immun.*, 1910); "Present Position of Surface Water Provision" (*Gesund.-ingnr.*, 1912).

Pollantin for hay-fever.

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Books.—"The New Knowledge"; "Chem. of Commerce"; "Some Chem. Problems of To-day"; Chapt. of Indus. Chem. in "Amer. Year Book." *Contrib.*—"Indust. Fellowships" (*Sci.*, 1909); "On Industrial Fellowships" (*J. Soc. Chem. Ind.*, 1909); "On Relation between Chem. and Manuf. in Amer." (*J. Soc. Chem. Engng.*, 1910).

Patents on phosphorus and glass; Industrial fellowships.

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Book.—Trans. Erdman's "Inorg. Preparations." *Contrib.*—"Action of Phenylsemicarbazid and Semicarbazid Hydrochloride on Pthalic Anhydride" (*J. Amer. Chem. Soc.*, 1905); "Action of Aluminic Chloride and Benzol upon Mucocloryl Chloride, Bromide and Corresp. Acids" (*Amer. Chem. J.*, 1905); "Food Laws of U. Kingdom and their Administration" (*Bull.* 143, Bur. of Chem., Dept. Agric., 1911); "The Hydrolytic Enzyme Lipase," 1905.

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Book.—"Syst. of Psychol.," 1912. *Contrib.*—"Complication expt. and related phenomena" (*Psych. Rev.*, 1910); "Expts. with reactions to visual and auditory stimuli" (*Ib.*, 1910); "Reactions to rhythmic stimuli, with attempt to synchronize" (*Ib.*, 1910); "Rhythm and the specious present" (*J. Phil.* etc., 1911).

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Contrib.—"Solubility of Sulphur Dioxide in Sulphuric Acid" (Newcastle Chem. Soc., 1881); "Oxides of Manganese" (*Ib.*, 1881); "Fusion of Refractory Materials" (*J. Soc. Chem. Ind.*, 1901).

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Contrib. to *Trans. Junr. Inst. Engngs.*, etc.

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Contrib.—"Antimony Ores in Sevier Co., Arkansas" (*Proc. Amer. Assoc.*, 1877); "Ashes of certain Weeds" (*J. Amer. Chem. Soc.*, 1879); "Columbite, Orthite, Monazite" (*Amer. Chem. J.*, 1883); "Notes of Students' Work in Chem. Lab." (*ib.*, 1886, 1888, 1889, 1892, 1894, 1897, 1899); "Titania in Soils."

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Books.—"Elementary Exper. Sci."; "Elementary Exper. Chem."; "Org. Chem."; "Text-bk. of Pract. Chem." *Contrib.* numerous on Viscosity, to *Trans. Chem. Soc.*, *Zeits. Phys. Chem.*, since 1894.

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Art.—"India-Rubber," in *Encyc. Brit.* *Contrib.*—Offic. Repts. on cotton cultiv. and trop. agric. in Brit. Colonies; numerous on gen. and biol. chem. in *Trans. and Proc. Roy. Soc.*, and *Chem. Soc.*

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Contrib.—"Dis. of currant canes" (*Cornell Agric. Expt. Station, Bull.* 125, 1897); "Classif. of Flethy Pezizineae" (*Bull. Torrey Bot. Club*, 1900); "Develop. of sexual organs and sperogonium of *Marchantia polyneapha*" (*ib.*, 1908);

'Geoglossaceae of N. Amer.' (*Ann. Mycol.*, 1908).

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Book.—"Kinematics of Machines." *Contrib.*—"Measurement of Air Flowing through Orifices" (*Trans. Amer. Soc. Mech. Engrns.*, 1905); "Investig. of Canadian Coals" (*Pub. Dept. Mines, Ottawa*, 1911).

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Book.—"Psych. Terminol.," 1900. *Contrib.*—"Superstition of Intellectualism"; "The concept of necessary connection"; "Anal. of religious emotions."

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Contrib.—"Mechan. Feeding of Silver-lead Blast Furnaces" (*Trans. Amer. Inst. M.E.*, 1901); "Dwight and Lloyd Smelting Process" (*Engrng. and Min. J.*, 1908).

Patentee, Dwight and Lloyd syst. of Blast Roasting of fine Ores.

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Contrib.—"Classif. of Lepidopterous Larvae" (*Proc. N.Y. Acad. Sci.*, 1895); "List of Lepidoptera of N. Amer." (*Bull.* 52, U.S. Nat. Mus., 1903); etc.

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Books.—"Biog. of G. Reichenbach," 1912; "Cat. of Models and Sci. Apparatus," 1892. *Art.*—"Intro." to *Encyc. of Pure and App. Maths.*, 1907. *Contrib.* on anal., alg., diff. eqns., theory of functions, Nova Kepleriana, since 1884; and addresses on the Ger. Mus. in Munich, on relations between pure and app. maths. and between science and art, on math. and tech. educ.

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Books.—"Fertilisers and Feeding Stuffs"; "Manuring of Market Garden Crops"; "Manuring of Hops." *Contrib.*—"Anal. Determ. of available Mineral Plant Food in Soils" (*J. Chem. Soc.*, 1892); "Kjehldahl's Method for Nitrogen" (*ib.*, 1895); "Phosphoric Acid and Potash Contents of Wheat Soils of Field at Rothamsted" (*Phil. Trans.*, 1901); "Lawes Trust Lectures, 1901" (U.S. Dept. Agric. *Bull.* 106, 1902).

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Book.—"Astron., a Manual for Students." *Contrib.*—"Potential of an Anchor Ring" (*Phil. Trans.*, 1893); "Rereduction of Groombridge's Cat." (with W. G. Thackeray), App. to Greenw. Observs., 1904; "Spectrosc. Observ. in Eclipses of 1900, 1901, 1905" (*Phil. Trans.*, 1906); "Systematic Motions of the Stars" (*Proc. Roy. Soc. Edin.*, 1909).

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Books.—"Rept. on Cattle Plague in Norfolk,"

1865; "Notes on Diphtheria," 1883; "Notes on Influenza," 2nd edn., 1896; "Norfolk and Norwich Hosp., 1770—1900"; "Collectedanea." *Contrib.*—"Treatment of Boils and Carbuncles" (*Lancet*, 1869 and 1874); "Local Use of Cold in Abdom. Inflammations" (*ib.*, 1876); "Influenza" (*ib.*, 1890); "Some Mod. Med. Aspects of Life Assurance" (*Brit. Med. J.*, 1899).

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Books.—"Inheritance in Maize," 1911; "Hereditry and Eugenics," 1912. *Contrib.* on physiol. of variation and heredity.

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Contrib.—"Cannabinol" (*Trans. Chem. Soc.*, 1899); "Constit. of Abietic Acid" (*ib.*, 1904); "Prep. of Ketones of Higher Fatty Acids" (*ib.*, 1911).

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Book.—Ed. and Transl. of Zittel's "Textb. of Paleont.," 3 vols. *Contrib.* numerous to State Geol. Surveys, Ia., New York, New Jersey, Conn., etc.

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Contrib. to Agric. Bull. of Straits Settlements and F.M.S. since 1906; "Cultiv. and prep. of Camphorin F.M.S." (*Bull. Dept. Agric. F.M.S.*, 1912); "Prep. of plantation of Para rubber" (*ib.* 1913).

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Book.—"Tuberc. Test. and Combat in Cattle," 1898; "Stomach Dis. of Cattle," 1906; "Repts. of Work at Vet. Inst., Leipzig," 1909, 1911. *Contrib.*—"Tuberc. Protective Inoc. of Cattle"; "Relat. between Human and Bovine Tuberc." to *Centrabl. f. Bakt.*

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Contrib.—"Effect of Elec. Oscillations on

Iron" (*Phil. Mag.*, 1906); "Efficiency of Generation of Oscillations" (jty.) (*Proc. Inst. Elec. Engrs.*, 1910); "Energy Relations of Detectors used in Wireless Teleg." (*Proc. Phys. Soc., Lond.*, 1910); "Propag. of Elec. Waves round Bend of Earth" (*Proc. Roy. Soc.*, 1912).

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Books.—"Sandstone and Chalk of Upper Silesia," 1865; "Rüdersdorf and Vicinity," 1873; "Geol. Chart. of Lahr," jty. 1884; "Geol. of Baden-Baden," 1892; etc.

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Books.—"Dairy Cattle and Milk Production." *Contrib.*—"Influ. of Stage of Lactation upon Composition and Properties of Milk" (*Bull.* 155, *Bur. Animal Ind., U.S. Dept. Agric.*); "Study of Cause of Wide Variation in Production of Dairy Cattle" (*Res. Bull.* 2, *Mo. Expt. Station*); "Yearly variation in fat content of milk" (*Milchw. Z.-bl.*, 1909); etc.

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Books.—"Forest Zool." 1897; "Galls of Plants and Animals," 1890; "Textb. to Neudamm Forest," 4th edn., 1912; "Technics of Forest Protection," 1904; "Struggle between Man and Beast," 2nd edn., 1907; "Animal Life of Ger. Forests," 1908; "Fisheries and Fish-Breeding," 1902. *Art.*—"Animals" in "Landesk. d. Brandenburg," 1909; "Length of Life in Plant and Beast," in *Saluti senectutis* (A. v. Lindheim), 1909; "Ann. Rept. on Lit. of Fishery," 1912.

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Various Chem. *Late Pres., Amer. Refrac. Ores Co., 1909.*

Books.—"Dinitronaphthalenes"; "Refractory Ores," 1908. *Contrib. to Ber. d. Chem. Ges., Amer. Chem. Soc.*

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Art.—"Star" and "Nebula" in new *Encyc. Brit. Contrib. to Monthly Notices R.A.S.*

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Books.—"Textb. of Meat Hygiene," 3rd edn. 1913 (and in Eng., '08); "Meat Inspection Legislation," 1903; "Vet. Police Legislation," 1912.

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Books.—"Reactions of Chromic Acid and Chromates to Gelatine, Gum and Sugar," 1878; "Influence of Coloured Light on Photog. in Natural Colours," 1879; "Complete Handb. of Photog.," 4 vols., 5th edn., 1912; "Sensitometry of Photog. Plates," 1899—1902; "Instantan. Photog.," 2nd edn. 1886—8; "Yearb. of Photog. and Reproduction," since 1887; "Receipts and Tables for Photog.," 8th edn. With E. Valenta; "Photog. by Röntgen Rays," 1896; "Photochem. and Spectrum Anal.," 1903; "Atlas of Typical Spectra," 1912. *Contrib.*—Numerous in *Denkschr. and Sitz.-ber. Akad. Wiss. Wien, on orthochrom. photog., etc. Chlorbromsilvcr process (with G. Pizzighelli).*

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Book.—"Pract. of Obstet.," 4th edn.
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Contrib.—"Morphol. of Cranial Muscles in some Vertebrates" (*Q. J. Micr. Sci.*, 1911); "On Hyster. Paroxysmal Oedema" (*Q. J. Med.*, 1909).

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Books.—"Struc. of Central Nerv. Syst.," 2 vols., 8th edn. 1911; "Comp. Anat. of Brain," 4 pts. 1887—1904; "Origin of Nerv. Dis.," 1908. *Arts.* on Periph. Nerv. Dis. in many Hdbks. *Contrib.* on fishintestines, human stomach, hypophysis, relat. of anat. to psychol., etc.

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Arts.—"Notes on Treatment," in Mackintosh's "Atlas of Fractions and Dislocations"; Surg. Chapter in St. Andrew's Ambulance Assoc. *Offic. Handb. of Nursing. Contrib.*—"Laceration of Large Arteries" (*Brit. Med. J.*, 1912); Various on Malformations and Gen. Surg. in *Brit. Med. J., J. of Anat., Lanct.*, etc.

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Books.—"Practical Physiol." (co-author); "Klein's Histol." (co-author). *Art.*—"Gastric Secretion," in Schäfer's "Text-bk. of Physiol." *Contrib.*—Various to *J. Physiol., Prac. Roy. Soc.*

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Books.—"Lab. Guide in Exper. Pharmacol." (jtlly. with Cushing); *Physiol. standardiz. of Digitalis* (jtlly. with Hale) (*Bull.* 48 *Hyg. Lab.*); *Physiol. standardiz. of Ergot*" (*ib.* 76) jtlly. *Contrib.*—"Studies on relation of adrenals to pancreatic activity" (*J. Pharm. and Exp. Therap.*, 1909); and to *Amer. J. Physiol.*, *J. Amer. Med. Assoc.*, etc.

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Arts.—"Dis. due to Chem. Agents," in Osler's *Mod. Med.*; "Urine," in Keen's *Encyc. Surg.* *Contrib.*—"Disorder due to exposure to intense heat" (*J. Amer. Med. Assoc.*, 1908); "Studies of influ. of X-ray on metabolism" (*ib.*, 1906, *Amer. J. Med. Sci.*, 1907); "Hyg. of Med. Wards" (*Amer. J. Med. Sci.*, 1908); "Study of respiration" (*Boston Med. and Surg. J.*, 1912).

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Books.—"Plane and Solid Mensur.," "Plane Trigon.," "3,000 Arith. Examples and Exercises." *Contrib.*—"Radial Area-Scale" (*Proc. Roy. Soc.*, 1905); "Co-eflic. in Simpson's Rule" (*Messenger of Maths.*, 1906).

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Books.—"Oxygen Requirement of Organisms," 1885; "Methylene Blue React. of Living Nerve-Sub.," 1886; "Colour-Anal. Repts. on Histol. and Clin. of Blood," 1891; "Estim. of Value of Diphth. Antitoxic Serums," 1897; "Anaemia," (jtlly.) 1898; "Coll. Papers on Immunity," 1903; "Partial Functions of Cells" (Nobel Essay) 1908; "Repts. on Exper. Path. and Chemotherap." (Harben Lects.) 1908; "Outlines of Exper. Chemotherap.," 1910; "Exper. Chemotherap. of Spirillooses," 1910.

Diphth. antitoxin; Immunity reaction; Exper. cancer research; Chemotherap. of infect. dis.; Dioxydiamidoarseno-benzol, 606, Salvarsan.

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Books.—"Gen. Perturbations of Minerva by Jupiter" (*Mem. Nat. Acad. Sci.*, 1899); "Mass of Titan" (*Pub. U.S. Nav. Observ.*, 2nd series, Vol. 6); "Cat. of 23,521 Stars between 13° 35' and 43° 25' S. Declin. for Equinox 1850, from Observns. at U.S. Nav. Observ. 1848—52" (with F.B. Littell) (*Pub. U.S. Nav. Observ.*, 1911). *Contrib.*—"Orbit of Hyperion" (*Astron. J.*, 1892); "Orbit of Anahita" (*ib.*, 1889).

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Art.—"Foreign bodies in air-passages" in "Syst. of Treatment." *Contrib.*—"Clin. value of direct exper. methods" (*Arch. f. Laryng.*, vol. 15); "On Hypopharyngoscopy" (*Ib.*, vol. 19); "Experience of Killian's Frontal Sinus operation" (*1st Internat. Laryng.-Rhin. Cong., Vienna*); "Acoustic Defects of Labyrinth in normal and defective Auditory Ossicles" (*Verh. d. deut. otol. Ges. Basel*, 1909.)

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Books.—"Geometry"; "Surface Theory." *Contrib.*—"Transl.-surfaces connected with a universal quotic" (*Amer. J. Math.*, vols. 29 and 30); "Minimal lines and congruences in 4-dimens. space" (*Trans. Amer. Math. Soc.*, 1911); "Flat spread sphere-geom. in odd dimens. n -space" (*Amer. J. Math.*, 1912)

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Books.—"Fishes of Brit. Guiana"; "The Characidae, a Study in Diverg. and Converg. Evolution"; "Adaptation in 50 Years of Darwinism"; "Viviparous Fishes of Pacific Coast." *Contrib.*—Over 100, since 1885.

Explorns. on Pacific coast of N. Amer.; Caves of Mississippi, Cuba, Brit. Guiana, Colombia, S.A.

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Relativity.

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Contrib. on agric. and entom. to *U.S. Agric. Dept. Repts.*; on veg. histol., parasitol. and archæol.

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Book.—"Diff. Geom.," 1909. *Contrib.* on transformans. of A-surfaces, etc.

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Books.—"Element. Exper. Chem.," 1900; "Lab. Man. of Inorg. Chem.," 1911. *Contrib.* in *J. Amer. Chem. Soc., Berichte, Chem. Gesell., Western Chem. and Metall.*

EKHOLM, NILS, Mem. Swed. Acad. Sci.; Meteorol., Met. Central Office, Stockholm, Sweden; Actuary, Insur. Co. "Svenska Lif," Stockholm.

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Books.—"Observns. of C. Thorsen, Spitzb., 1882—3," 1887—91; "Met. of Hedin's Journeys in C. Asia, 1894—7 and 1899—1902," 1905—7. *Contrib.*—"Variations of climates" (*Q. J. Met. Soc. London*, 1901); "Emission and absorp. of heat" (*Met. Zeitschr.*, 1902); "Height of atmosph." (*Ib.*, 1902); "Unperiodic decreases of atmosph. press." (*Ib.*, 1907).

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Books.—"Dead Water" (N. Polar Exped., 1904); "Tables for Sea Water under Pressure," 1910 *Contrib.*—"Stationary Waves" (*Arch. f. Mat. Astr. and Phys.*, 1906—07); "Theory of Sea Currents" (*Ann. d. Hydrog.*, 1906); "Resonance through Radiation" (*Ann. d. Phys.*, 1907); "Theory of Spectral Lines" (*Ib.*, 1907).

Inv. Current-meter and other oceanog. apparatus.

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Books.—"Synthetic Prep. of Org. Compounds," 2 vols., 1889-91; "Accumulators," 4th edn., 1908; "Electrolyt. Manuf. of Chem. Subs.," 2nd edn., 1911.

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Contrib. on testing Pepsin, Trypsin, etc. Assay of Cantharides; Scale Salts of Iron, etc.

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Contrib. on marine zool.

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13, Charles St., St. James, London, S.W.

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Art.—"Distrib. of Hydraulic Power" in *Encyc. Brit. Contrib.*—Several in *Trans. of Engrng. Inst.* and Pres. Address, Inst. Mech. E., 1911.

Hydraulic machinery.

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M.D. (Cantab.) 1908; M.R.C.P. (Lond.) 1910. Soc.—Fell. Roy. Med.; Physiol.; Assoc. Physicians. *Late* House Physician, Ophthalm. House Surg. and Assist. House Surg., Univ. Coll. Hosp.

Contrib.—"Innervation of Ileo-colic Sphincter" (*J. Physiol.*, 1904); "Antiperistalsis in Colon" (*ib.*); "Adrenalin" (*ib.*, 1905); "Splanchnic Innervation of Suprarenal Gland" (*ib.*, 1912).

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Books.—"Studies in Psychol. of Sex," 6 vols.; "Man and Woman"; "The Criminal"; "Nationalisation of Health"; "Task of Social Hygiene"; "World of Dreams"; etc. *Arts.*—"Criminal Anthropol." in Juke's Dict. of Psychol. Med.; "Psychopath. Sexuality" in Marie's Internat. Treatise of Path. Psychol.; "Psychol. of Normal Sexual Instinct" in Moll's Handb. of Sexual Sci.

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Books.—"Testing of Eyes," 2nd edn.; "Stereosc. Photog. Atlas of Path. Anat. of Eyes." *Contrib.*—Numerous.

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Contrib., with Geitel, on Colour Transmiss. of the Atmos., Radio-activity, Presence of Radium in Thermal Spring Deposits Photo-electricity of Alkali Metals to *Ann. d. Phys., Phys. Z., Terrestr. Magnetism, Meteorol. Z.*, since 1881.

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Books.—"Monograph of Genus *Lilium*"; "Trees of Gt. Britain" (with A. Henry). *Contrib.*—"Catalogue of Butterflies of Sikkim" (*Trans. Ent. Soc.*); "On Genus *Parnassius*"; "Geog. Distrib. of Asiatic Birds" (*Proc. Zool. Soc.*); "Cross-bred Sheep" (*J. Roy. Agric. Soc.*); and num. in *J. of Forestry*.

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Books.—"Intro. to Project. Geom. and its Applic.," 1905; "Kinematic Link System and Geom. Transformns.," 1906; "Applic. of Elliptic Functions to Problems of Closure," 1902. *Contrib.*—"Diff. Eqns. of Norm. Stresses in a Plane (*Arch. f. Math. u. Phys.*, 1911); over 50 others on linkages for ellipt. func., collineations in a plane, twisted curves and surfaces; hydraulic meth. of solving algeb. eqns.

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Book.—"Textb. of Microchem." 1911. *Art.*—"Microchem. Anal." in Handwörterb. d. Naturwiss. *Contrib.*—Various to *Wiener Monatsh. f. Chem.*, etc.

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Contrib.—"Assymetry, supernumerary appendages, moulting and regeneration (*J. Exper. Zool.*, 1906, 1908); "Differentiation of tissues in regenerating crustacean limb" (*Amer. J. Anat.*, 1910); "Origin of Erythrocytes by process of budding or constriction" (*Science*, 1912).

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B. 1852. *Educ.* Munich. Ph.D.
Contrib.—numerous on hyg., bact., and immunity.

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Contrib.—Implantation in Guinea-pig; Nutrition of early Embryo (*Proc. Roy. Soc.*, 1908).

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Books.—Transl. Dolezalek's "Theory of Lead Accumulator (Storage Battery)"; Aebeg's "Electrolytic Dissociation Theory."

Contrib.—"Standard Cells," *jtly.* (*Phys. Rev.*, 1907); "Potential of Thallium Electrode" (*J. Amer. Chem. Soc.*, 1910); etc.

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Contrib.—"Commensals in tubes of Chaetopterus" (*Amer. Nat.*, 1905); "Tube formation by marine annelid Chaetopt. varioped." (*Proc. Ind. Acad. Sci.*, 1907); "Life hist. and habits of Chaetopt. varioped." (*J. of Morph.*, 1908).

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Books.—"Forest Use," 1888; "Handbk. of Forestry," 1905; "Forest Valuation and Stats.," 1911.

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Publ.—"Carbonif. Flora of Saxony," 1870; "Tertiary Plants of S. Amer.," 1895; "Tert. Plants of Asia Minor," 1903; and on Tert. plants of Bosnia and of numerous districts in Ger.

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Books.—"Hydraulic Lab. of Dresden Tech. H. Sch.," 1900; and numerous on Shipbuilding since 1894.

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Books.—"Six Lects. on Prehist.," Fr. 1905, and in Span. and Dutch. *Art.*—"Prehist." in "La Patrie belge," 1905. *Contrib.*—"Prehist. finds in Concepcion, Campedre (*Bol. Soc. Geol. Mex.*, 1909); "New petroglyphs of Lower Cal." (*Rev. anthrop.*, 1912); "Geol. Exped. in Yucatan" (*Par. Inst. Geol.*, 1910); "Present state of colithic problems" (*Rev. gén. des Sci.*, 1912).

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Books.—"Arch framework trusses without hinge at crown," 1883; "Strength and Span of Iron Bridges," 1892—3; "Breaking-strength of straight Bars," 1891. *Contrib.*—

- "Estim. of rail, permanent way" (*Fortschr. d. Eisenbahnwesens*, 1888); "Theorem of Least Supplement" (*Zeitschr. d. Arch. u. Ing. Vereins Hannover*, 1889); "Elastic tunnels" (*Zeitschr. f. Bauwesens*, 1902); "Geom. theory of Earth pressure" (*ib.*, 1881).
- Weschnitz bridge at Weinheim, 1874.
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- Books.*—"Studies on Question of Foundlings' Hospitals"; "Systolic Murmur of Head of Children"; "Yellowness of Newly-born"; "Antiseptic Measures in Hyg. of Newly-born"; "Vulvovaginitis of Girls"; "Disturbances of Digestion of Sucklings"; "Protection of Children and Increase of Population." *Contrib.* to *Jahrb. f. Kind.*; *Archiv. f. Kind.*; *Prager Med. Woch.*, etc.
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- Books.*—"Handb. of Dis. of Peripheral Nerves," 1874—76; "Dis. of Spinal Cord and Oblongata," 1876—78; "Handb. of Electrotherap.," 1882—86; "Congen. Thomsen's Dis.," 1886; "Dystroph. muscul. progress.," 1891; etc. *Contrib.*—150 on intern. med. and neuropath.
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- Contrib.*—"Lecithin subs. of heart and muscles" (*Zeits. f. Phys. Chem.*, vol. 51); "New meth. of homogenia. and sedimentat. of tubercle B. in sputum and urine" (*Zeits. f. Hyg. u. Infekkrankh.*, vol. 61, and *Zeits. f. Urol.*, vol. 2); "Quant. reaction and standardization of tuberculin" (*Beitr. z. Klin. d. Tuberk.*, vols. 14—16); "Exper. Studies on Phlorizine-Diabetes" (*Biochem. Zschr.*, vols. 23—24).
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- Contrib.*—"Studies in Blood Pressure" ("J. Hopkins Hosp. Repts.," 1904); "Heart Block in Mammals" (*J. Exper. Med.*, 1905—06); "Mammalian Heart Strips" (*Amer. J. Physiol.*, 1910).
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- Contrib.*—Numerous on Org. Syntheses and Constit., and on Stereo-chem., to *Liebig's Ann.*, *Ber. d. Chem. Ges.*, *Z. f. prakt. Chem.*, etc.
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- Arts.*—"Nerv. Syst." in Aschoff's "Path. Anat." and Schwalbe's "Teratol.," and in Marchand and Krehl's "Gen. Path." *Contrib.* to *Virchow's Archiv. Ziegler's Beiträge, Verh. d. deut. path. Ges.*
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Books.—"Red Stars"; Cunningham Mem., Roy. Irish Acad.; New edn. of Webb's "Celest. Objects," and Proctor's "Star Atlas." *Contrib.* to *Monthly Notices, Roy. Astron. Soc.*; *Astrophys. J.*; *Astron. Nachr.*; *J. Roy. Astron. Soc. Can.*

Nova Lacertae; 1,100 double stars, 30 variable stars, 17 nebulae, 109 stars of Type IV., etc.

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Books.—"Actiol. of Uterusmyonion," 1899; "Studies on Cystic Mole," 1912; etc.

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Books.—"Plants for Bot. Instruction," 3 vols., 1892, 2nd edn. 1902; "Poisonous Plants of Ger.," 1909.

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Contrib.—"Laws of connection between conditions of chem. change and its amount" (*Trans. Roy. Soc.*, 1864, 1866, 1895); "Synthetic geom." (*Proc. Lond. Math. Soc.*, 1897); "Variation with temp. of rate of chem. change" (*Roy. Soc.* 1912).

Disc. law of variation with temp. of rate of chem. change, 1895.

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Book.—Trans. into Ger. Travers' "Exper. Study of Gases," 1905, contrib. 2 chapters.

Contrib.—"Pressures of Saturation of Oxygen" (*Phil. Mag.*, 1895); "On Secondary Butylbenzene" (*Trans. Cracow Acad.*, 1897); "On Oxygen at Low Temperatures" (*Ib.*, 1907); "Latent Heat of Evapor. of Gases," 1911.

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Books.—"Plant Chem.," 3 vols., 1908—09; "Chem. of Enzymes," 1910; "Coll. Papers, Biochem. Lab., Stockholm Univ." 1911. *Art.*—"Glucosides," in Abderhalden's "Biochem. Handlex.," *Contrib.*—"Velocity of Chemical Reaction" (*Z. f. phys. Chem.*); "Decrease of Solubility" (*Ib.*); "Chem. Composition and Formation of Enzymes," jtlly. with Beth of Ugglas (*Z. f. physiol. Chem.*, 1910—11).

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Hepaticae, esp. of Porto Rico.

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Contrib.—Geol. of N.E. of Caithness; numerous on crystall., miner., petrology, dynam. geol., econ. geol., in *Q. J. Geol. Soc.*, *Miner. Mag.*, *Geol. Mag.*, *Geog. J.*, *Sci. Progress*, *Bull. Imper. Inst.*, etc.

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Book.—"Quantit. Anal." 1897. *Contrib.*—"Adsorp. of Dissolved Substances" (*J. Phys. Chem.*, 1906); "Dichloracetyl Phosphide" (*Amer. Chem. J.*, 1902); "Benzophosphide" (*ib.*, 1910); "Place of Research in Undergrad. Schools" (*Science*, 1911).

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Contrib.—"Doridoideus Gardineri" (*Q. J. Micros. Sci.*); "Bionom. Observ. on Brit. Millipedes" (*Annals and Mag. Nat. Hist.*); "Egg capsule of Glomeris" (*Zool. Anzeiger*).

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Contrib.—"Phenomena produced by electric or heat current in magnetic field" (*Communic. Phys. Lab. Leiden*); "Relation between mortality of infants and high temperature." (*Proc. Roy. Acad. Amsterdam*, 1907); "Angle between Gradient and Wind-direction," (*Phys. Z.*, 1908).

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Contrib.—"Expts. on radiation of heated gases" (*Phil. Mag.*, 1895); "Solar eclipse of May 28th, 1900: general discuss. of spectrosc. results" (*Phil. Trans.*, A., 1903); "Spectrum of sun-spots" (*Mem. Kodaikanal Observ.*, 1909); "Radial movement in sun-spots, 2nd paper" (*Monthly Notices, R. A. S.*, 1909—10).

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Books.—"Colcoptera Neerlandica," 2 vols. 1898 and 1903, and suppl.; etc.

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Books.—"Pfeffer's Physiol. of Plants"; "Matric. Bot."; "Weeds of Vict."; "Plants Indigen. to Vict."; "Protoplasmic Streaming in Plants"; "Rural Calendar." *Contrib.*—"Flora of Austral.," 1—19 (*Roy. Soc. Vict.*, 1906—12); "Ascent of Water in Trees" (*Phil. Trans.*, 1905—07).

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Books.—"Phys. Chem.," 1909; "Phys. Measurements," 1910. *Contrib.*—"Magnetic Double Refraction" (*Phys. Rev.*, 1903); "Elec. Product. of Ozone" (*Phys. Zeits.*, 1906); "Metallic Reflect." (*Amer. J. Sci.*, 1907); "Artific. Rotary Polarization" (*Phys. Rev.*, 1911).

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Books.—"Treat. on Earthquake Measurement"; "Magnetic Induct. in Iron and other Metals"; "Steam Engine and other Heat Engines"; "Strength of Materials"; "Mech. Production of Cold." *Arts. in Encyc. Brit. Contrib.*—"Exper. Researches in Magnetism" (*Phil. Trans. Roy. Soc.*); "Theory of Molec. Magnetism"; "Researches on Crystalline Struct. of Metals" (*Phil. Trans. Roy. Soc.*).

Researches in Magnetism (awarded Roy. Med.). *Inv. Extensometer; Hysteresis tester and other apparatus for magnetic testing.*

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Books.—"Physiol. of Facetted Eyes of Crabs and Insects," 1891; *Physiol. Explan. of Psychic Appearances.* *Contrib.*—Numerous to *Pflüger's Arch. f. Physiol., Sitz. Akad. Wiss., Vienna.*

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Books.—"Normal Plates on Develop. of Necturus Maculosus," 1910; "A Cross Sect. Anat." 1911. *Contrib.*—"Cytoplasmic and Nuclear Changes in Striated Muscle Cell of Necturus" (*Amer. J. Anat.*, 1904); "Gastrulation and Embryo Formation in *Amia Calva*" (*Ib.*, 1906); "Closing of Wounds in Necturus" (*Ib.*, 1907); "React. to Light of Decapitated Young Necturus" (*J. Comp. Neurol. and Psychol.*, 1908).

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Books.—"Tetanus as Infect. Dis.," 1890; "Anaemia," 1896; "Clin. Anal. of Urine," 1902; "Path. of Digest. Organs," 1905. *Contrib.*—"Pathogen. of Tetanus" (*Berlin. Klin. Woch.*, 1890); "Part played by Giant Cells in Phagocytosis" (*J. of Path. and Bact.*, 1893); "Pernic. Anaemia and Dermatophy" (*Zeitschr. f. Klin. Med.*, 1900); "Chronic Achylia gastrica" (*Ib.*, 1908).

Disc. Tetanus Toxin, 1889.

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Books.—"Herpes and other Skin Dis."; "Studies on the Ear"; and others on Miners' diseases, etc.

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Books.—"Acoustics and Optics"; "Electric Batteries." *Contrib.* on interference, spectrosc., etc., to *J. Phys., Astrophys., J. Comptes Rendus*, etc.

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Contrib.—"Excis. of Knee-joint: 3 successful Cases" (*Dub. J. Med. Sci.*, 1877); "Dis. of Wrist, with successful Case of Excis. in Child, aged 6" (*Brit. Med. J.*, 1880); "Knee Haemarthrosis: its Nature, Diag. and Treatment" (*Ib.*, 1883).

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Contrib.—Numerous.

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Contrib.—"Bacteriol. of Sulphur Waters of Luchon," 1909; "Opothérap. by Derm. Extr." (*Cong. Dermatol. Internat. Rome*, 1912).

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Books.—"Geol. and Geog. of N. Nigeria," 1911; "On Horseback through Nigeria," 1911. *Contrib.*—"Igneous geol. of Bathgate and Linlithgow Hills" (*Trans. Roy. Soc. Edin.*, 1905—06); "Geol. of Ardrossan" (*Ib.*, 1907); "N. Nigeria and its Peoples" (*Proc. Roy. Phil. Soc. Glasgow*, 1912).

First geol. map and sci. account of country lying between confluence of rivers Niger and Benue and Lake Chad.

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Books.—Various on Bot. *Contrib.* on Nutrition of Algae; Lichens; Origin and Division of Crystals; Symbiosis and its rôle in Synth. of Organisms.

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Books.—"Text-bk. of Descrip. Geom.," 1910. *Arts.*—"Synth. and Anal. Geom. in 19th Cent.," "Group Theories," in *Encyc. d. Math. Wiss. Contrib. to Giorn. d. Mat., Ann. di Mat., Math. Annalen, Monatsh. f. Math. u. Phys.*, and to *Trans.* of numerous Acads.

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B. 1856, Mantua. *Educ.* Mantua, Turin,

Leipzig, Florence. Hon. Ll.D. (St. And.), 1912. *Late* Prof. of Physiol., Genoa

Book.—"A Physiologist round the World." Many papers and chapters on Physiol., princ. on Blood and Nerv. Syst.; Founder and Ed. *Archivio di Fisiologia*.

First to discover an anti-body in the blood; Action of Pepton on coag. of blood.

FANTHAM, HAROLD BENJAMIN, Parasitol., Liverpool Sch. of Trop. Med.; Assoc. Ed., *Annals of Trop. Med. and Parasitol.*, Sectional Ed. for Protozool., *Trop. Dis. Bull.*

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Educ. Univ. Coll. London; Christ's Coll. Cambridge; Roy. Coll. Sci. D.Sc. (Lond.); B.A. (Cantab.); Assoc. R.C.S. Soc.—F.Z.S.; Camb. Phil. *Late* Assist. to Quick Prof. of Biol., Cambridge Univ.; Assist., Zool. Dept., Univ. Coll. London; Protozool. to Grouse Dis Inquiry; Mem. Board of Agric. Inquiry into I. of Wight Bee Dis.

Chapters. in "Grouse in Health and Dis.," 1911. *Arts.* in *Encyc. of Sport. Contrib.*—"Microsporidiosis Rept." jtly. (*Supp., J. Bd. Agric.*, 1912); "Trypanosoma rhodesiense," jtly. (*Proc. Roy. Soc.*, 1910); and on morphol. of bacteria, hermaphroditism and teratol. of reptiles and amphibia.

Disc. Nosema apis, cause of I. of Wight Bee Dis.

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Books.—"Canalisation"; "Thermal Conductors"; "Hydraulic Theory of Lakes"; and numerous others.

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Books.—"Gold Measures of N.S. and Deep Mining," 1899; "Deep Gold Mining in N.S.," 1903; "Geol. and Mineral Resources of Chibougamau Region, Quebec," 1910; "Struct. of Tungsten Deposits of Moose River, N.S.," 1910. *Contrib.*—"Annual Repts., Geol. Surv. Can.," 1886—1910; "Geol. Maps of N.S." (*Ib.*); "Geol. Plans and Sect., Gold and Tungsten Mines of N.S." (*Ib.*).

FARIS, ROBERT LEE, Assist., Coast and Geod. Surv., Washington, D.C., U.S.A.; Inspec. of Magnetic Work; Chief of Div. of Terres. Magnetism.

B. 1868, Caruthersville, Mo., U.S.A. *Educ.* Missouri Univ. C.E. (Miss.) 1890. *Soc.*—C.E. Wash.; Wash. Phil.; Wash. Geol. *Late* Comdg. Off. Coast and Geod. Surv. Ships, in Charge of Hydrographic, Topographic, and Magnetic Work.

Contrib.—U.S. Coast and Geod. Surv. Repts. on Terres. Magnetism; Abstracts of Sci. Papers of Wash. Phil. Soc. in *Science*.

Magnetic storms.

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Books.—"Mar. Algae of New Eng."; "Bibliog. Index, N. Amer. Fungi"; "Gymnosporangia of U.S." *Contrib.* on Impurities of Drinking Water; Asexual Growth on Prothallus of Pteris Cretica; Peronosporae of U.S.

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B. 1865, Leicestershire. *Educ.* Magdalen Coll., Oxford. M.A.; D.Sc. (Oxon.). *Soc.*—F.L.S. *Late* Dem. in Bot., Univ. Oxford, 1887—92; Fell. Magdalen Coll., 1889—1901.

Books.—"Pract. Intro. to Bot."; "Plant Life." *Art.*—"Cell" in "Lanckester's Zool." *Contrib.* to Roy. Soc., *Annals of Bot., Nature.*

Cell; Vascular Cryptogams and Hepaticae.

FARMER, ROBERT CROSBIE, Princ. Assist. Chem., Research Dept., Roy. Arsenal, Woolwich, London.
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B. 1877, Liverpool. D.Sc. (Liv.) 1904; Ph. D. (Würz.) 1899; M.Sc. (Birm.) 1902. *Soc.*—F.C.S.; Ger. Chem. *Late* Lect., Birmingham Univ., 1901—2.

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B. 1867, Newark, N.J. *Educ.* Newark Acad., Univ. of Princeton, Columbia, Cambridge, Berlin. M.A. (Prince.) 1891; M.D. (Colum.) 1891.

Contrib.—Various, on Anthrop. and Med. Subjects.

FARRINGTON, OLIVER CUMMINGS, Cur. of Geol., Field Mus. of Nat. Hist., Chicago, Ill., U.S.A.

B. 1864, Brewer, Me. M.Sc. (Maine) 1888; Ph.D. (Yale) 1891. *Soc.*—F.G.S. Amer.; Amer. Assoc. Adv. Sci.; Ill. Acad. Sci.; Chic. Geog. Soc. *Late* Assist. in Mineral and Biol., Yale Univ., 1889—91; Assist. in Mineral Dept., U.S. Mus., 1893—94; Lect. in Mineral, Chicago Univ., 1894—1900; Chairman, Sect. Petrol. and Miner., Internat. Sci. Cong., St. Louis, 1904.

Books.—"Gems and Gem Minerals," 1903. *Contrib.*—"Compos. of Iolite" (*Amer. J. Sci.*, 1892); "Observns. on Mexican Volcanoes" (*Pub. Field Mus.*, 1879); "Meteorite Studies" (*ib.*, 1902—10).

FARUP, P., Fell. Norweg. Acad. Sci., Prof. of Inorg. Chem., Tech. High Sch., Trondhjem, Norway. Ph.D.

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Books.—"Evol., Obstet. and Gynaec. in Writings of Hippocrates," 1897; "Hist. of Obstet.," 1906.

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Book.—"Guide to Finger-Print Identific.;" "Dactylography," 1912. *Contrib.*—"Skin Furrows of Hand" (*Nature*, 1880); "Dactyloscopy" (*St. Thomas's Hosp. Gaz.*, 1904); "Finger-marks in Pre-hist. Pottery" (*Staffords. Sentinel*, 1905); "Hist. of Use of Finger-Prints" (*Knowledge*, 1911).

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B. 1870, L'Anse, Mich. *Educ.* Univs. Toronto, Harvard. B.A. (Tor.) 1898; Ph.D. (Harv.) 1904. *Soc.*—F.R.S.C.; F.A.A.; Amer. Phytopath.; Bot. Amer.

Contrib.—Various on anat. of ferns, cytology and morphol.

FAUST, EDWIN STANTON, Prof. of Pharmacol., Univ. of Würzburg, Ger.

B. 1870, Baltimore, U.S.A. B.A. (Hopkins) 1890; M.Sc. (Strass.) 1898; Ph.D. (Mun.) 1893. *Soc.*—Corresp. Mem. Roy. Soc. Med. and Nat. Sci., Brussels. *Late* Assist. in Physiol. Chem., Hopkins Med. Sch.; Assist. in Pharmacol., Strassburg.

Book.—"Animal Poisons," 1896. *Contrib.* on Pharmacol. and Exper. Therap. to *Archiv. f. Exp. Path. u. Pharm.*

FAVARO, ANTONIO, Nobile, Prof. of Graph. Statics and Hist. of Maths., Univ. Padua, Kt. Commr. of several Ital. and foreign orders. Padua (Nov.—April); Fiesso d'Artico, Venice, Italy (May—Oct.).

B. 1847, Padua. *Educ.* Padua Univ.; Sch. for Engrng., Turin; Zurich. D. Maths. (Padua); C.E. (Turin). *Soc.*—Roy. Inst. Venice; Roy. Hist. Inst. Rome; Acad. Crusea, Florence; Acads. in Austria, Germany, Holland, Mexico, Russia.

400 papers and vols. concer. maths. and hist. of sci. Galileo's works, 20 vols., 1890—1909, National edn.

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Contrib.—"Develop. of Human (1) Sphenoid, (2) Palate Bone, (3) Maxilla, (4) Chondrocranium" (*J. Anat. and Physiol.*).

FAWITT, CHARLES EDWARD, Prof. of Chem., Sydney Univ., N.S.W., Austral.

B. 1878, Glasgow. *Educ.* Glasgow, Edinburgh, Leipzig, London, Birmingham, Aachen.

B.Sc. (Lond.) 1901; D.Sc. (Edin.) 1904; Ph.D. (Leip.) 1902; 1851 Exhibr., 1900—02; Carnegie Research F., 1903—04. *Soc.*—F.C.S.; Chem. Ind.; Mem. Roy., N.S.W. *Late Lect. Chem., Glasgow Univ., 1904—08.*

Book.—"Tables for Students; Quant. Chem. Anal.," 1903. *Contrib.*—"Decomp. of Urea" (*Z. Phys. Chem.*, 1902); "Phys.-Chem. of Amide Group" (*Proc. Roy. Soc. Edin.*, 1904); "Decomp. of Dimethylurea" (*Trans. Chem. Soc.*, 1905); "Viscos. at High Temperatures" (*Proc. Roy. Soc.*, 1908).

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B. 1868, Williamsburg, Pa. *Educ. Pub. Schs., Altoona, Pa.; Lafayette Coll.; Johns Hopkins Univ. A.M. (Lafay.) 1892; Ph.D. (Hopk.) 1895. Late Assist., Johns Hopkins Univ., 1893—95; Instr. 1895, Assist. Prof. 1900, Assoc. Prof. 1905—07, M.I.T.*

Contrib.—"Microsc. investig. of broken steel rails; manganese sulphide as a source of danger" (*Proc. Amer. Soc. Testing Materials*, 1908—09); "Causes of failures of metals" (*ib.*, 1911); and on properties of steel, alloys of Tellurium, and anal. chem.

FAYE, ANTON LUDVIG, Fell. Norweg. Acad. Sci. *Late Col. and Chief Comdr. of Sanitary Branch of Service of Norweg. Army; M.D. Universitets gt. 12, Christiania, Norway.*

Contrib. on anthrop. and hist. of med.

FAYOLLE, ALBERT LOUIS VICTOR MARCEL, Expert Chem. for Court of Appeal of Paris and Seine Tribunal; Direc. of Central Lab. of Med. and Hyg. Products, Ec. Sup. Pharmacy, Paris.

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B. 1867, Paris. Pharmacist; Off. Pub., Instruc.; Off. Mérite Agric.; Chev. du Cambodge.

Books.—"Adulter. of Food," 6 vols., jty. (crowned by Acad. of Med.).

FEARNSIDES, W. G., Sorby Prof. of Geol., Univ. Sheffield, Eng. *Late Fell. and Lect. in Nat. Sci., Sidney Sussex Coll., and Dem. in Petrol., Univ. Cambridge.*

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Hon. Mem. Mineral. Soc., Lond.

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Books.—"Flora of European Russia," (jty.); "Conspectus Florae Turkestanicae" (jty.); "Flora of Asiatic Russia" (jty.).

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Books.—Revision of Allen's "Commer. Org. Anal.," Dyestuff Sect., 1911 (with others); Trans. "Molinari, Inorg. Chem.," 1912. *Contrib.*—"Colloidal Barium Sulphate" (*Trans. Faraday Soc.*, 1908); "Colloidal Dyestuffs" (*J. Soc. Dyers and Colourists*, 1908).

Metal-filament lamps; Coal-tar dyestuffs; Combust. of gaseous mixtures.

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Books.—"Singularity of Fourier's Series," in Fr. 1911; "Harmonic Functions," jty. in Ger. 1911. *Contrib.*—"Res. on Fourier's Series" (*Math. Annalen*, 1904); "Laplace's Series" (*ib.*, 1909); "Least absolute root of algeb. eqn." (*ib.*, 1908); "Stability and lability of a material point in a resisting medium" (*Crelle J.*, 1906).

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Books.—"Dis. and Accident Insur. in Forestry and Agric.," "Guide to Surv. and Valuation of Real Estates"; "Nature and Cultiv. in Woods"; "Swiss Forest Calendar"; "Coal Form. in Switz."

FELDBAUS, FRANZ M., Ed., *Quellen-forsch. z. Geschichte d. Tech. u. d. Naturwiss.*, Berlin, Ger.

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Books.—"Transformers," 1894; Transl.

Blakesley's "Alternating Currents," 1891; "Hdbk. of Elec. Lighting," jtly., 1898, 3rd edn. 1907.

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Book.—"Geol. and Palaeont. of Mexico," jtly., 3 pts., 1889—99.

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Books.—"Insects Affecting Park and Woodland Trees," N.Y. State Mus. Mem. 8, 2 vols., 1905—06; etc.

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Bulletins publ. by U.S. Geol. Sur. and State Sur. of Wis. and Ill.

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Book.—"Publ. of Haynald Observ.," Nos. 4—10. *Contrib.*—"New Theory of Sun Phenom.," etc., to *Astron. Nachr.*, *Astrophys. J.*, *Mem. d. Spettros. Ital.*

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Contrib. on Astron. and higher math. to *Ott. e. Rend. Accad. Napoli*, *Lincei*, *XL*, *Giorn. Mat. di Battaglini*, etc.

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Educ. High Sch. and Univ., Glasgow. M.A. (Glas.). Hon. LL.D. (St. And.); F.I.C., 1878 (P.V.-P.). *Soc.*—F.R.S.E.; F.C.S.; F.S.A. Lond. and Scot.; Hon. Mem. Imper. Milit. Acad. Med., St. Petersburg; Mem. Hist. Med. and Nat. Sci., Ger.; F.M. Fr. Archaeol.; etc.

Book.—"Bibliotheca Chemica," 2 vols., 1906. *Arts.* on hist. of Chem. and technol., in "Encyc. Brit.," "Pop. Encyc." *Contrib. to Proc. and Trans.* of various socs.

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Book.—"Value of Sci. Training." *Contrib.*—"Develop. of Pollen Tube and Div. of Generative Nucleus in Certain Species of Pines" (*Annals Bot.*, 1901); "Germ. of Spora of *Agaricus campestris*" (U.S. Dept. of Agric. Bureau of Plant, *Bull.* 16, 1902); "Life Hist. of Pinus, with Spec. Ref. to Sporogenesis" (*Proc. Wash. Acad. Sci.*, 1904).

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Contrib.—"Manganese-ore deposits of India" (*Mem. Geol. Survey of India*, 1909); "Petrology and manganese-ore deposits of Chhindwara district, Centr. Prov." (*Records Geol. Survey India*, 1906); "Quinquennial Rev. of mineral production in India for years 1904—1908" (*Records, Geol. Survey India*, 1909); "Origin of meteorites" (*J. Asiatic Soc. Bengal*, 1912).

Disc. several new minerals.

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Books.—"Tortricidae of N. Amer.," "Butterflies of Maine," "The Gypsy Moth," "Crambidae of N. Amer.," "Genera of the Tortricidae and their Types," "Grasses of Maine," "Pterophoridae of N. Amer.," "Pyralidae of N. Amer.," "Orthopterae of New Eng." *Contrib.*—Numerous for 40 years.

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B. 1873, Orono, Me. B.Sc. (Harv.) 1897. *Soc.*—F.A.A.; Amer. Acad.; Bot. Amer.; Amer. Antiq.

Book.—"Gray's New Man. of Bot.," 1908 (jtly.). *Contrib.*—"Plants of Wineland the Good" (*Rhodora*, 1910); "Bot. Exped. to Newfoundland and Labrador" (*Ib.*, 1912).

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Contrib.—"Observ. in 35 Years in Cuba on Ophthalm." (Address to Amer. Acad. Ophthalm., N.Y.). Founder and Ed. of *Cronica Med.-Chir. de la Habana*.

Paludism, eye disturbances produced by alcohol and tobacco.

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B. 1869, Guadalajara, Spain. D.Sc. (Madrid). *Soc.*—Roy. Span. Nat. Hist.; Span. Assoc. Adv. Sci. *Late Conserv.*, Nat. Sci. Mus., Madrid; Prof. of Nat. Hist., Inst. of Secondary Educ., Soria y Almeria.

Books.—"Crystallog." 1901; "Geol. Observns. in Isle of Hierro," 1908; "Volcanic Erupt. of Teneriffe, Nov., 1909," 1911; "Geol. Studies in Rif," 1911. *Contrib.*—"Measurem. of microsc. Dihedral crystals" (*Rev. Acad. Ciencias Madrid*, 1905).

FERNBACH, AUGUSTE, Prof. at Pasteur Inst., Paris; Lect. of Biol. Chem., Paris Univ.

B. 1860, Paris. D.Sc. (Paris). *Soc.*—Fr. Chir.; Ger. Chem.; Hon. Mem. Inst. of Brewing, Amer. Inst. Brewing, Swedish Brewers' Soc.

Arts.—"Fermentation" ("Chem. Dic. Würtz."). *Contrib.*—"Researches on Saccharase" (*Ann. Inst. Pasteur*, 1890); "Saccharific. of Starch" (*Ann. de la Brasserie*, 1899); "Coaguln. of Starch" (with J. Wolff) (*Ann. Inst. Pasteur*, 1904). Ed. *Ann. de la Brasserie* since 1898.

Disc. Amylocoagulase and tannase; Bactericidal action of yeast extracts; Action of phosphates on enzymes.

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B. 1838.

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B. Sidney, O. M.A. 1901, M.S. 1902 (Ohio Wesleyan); Ph.D. (Cornell) 1909. *Soc.*—Amer. Psych. Assoc.; Amer. Illum. Engrng.; Amer. Med. Assoc. (Mem. Comm. on Vision). *Late Instr.* in Phys. and Psych., Univ. Arizona, 1906—07.

Contrib.—"Exper. exam. of phenomena usually attributed to fluctuation of attention" (*Amer. J. Psych.*, 1906); "Intermittence of minimal visual sensations" (*Ib.*, 1908); "Streaming phenomenon" (*Ib.*, 1908); "Tests for efficiency of stimuli in which new colour is sensed" (*Psych. Rev.*, 1912).

FERRERI, GHERARDO, Ord. Prof. of Oto-Rhino- and Laryngol. and Direc. of Clin., Univ. Rome, Italy.

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Books.—"Comp. Anat. of Corp. Quad." (Gold Med. Thesis, 1870); "Exper. Researches in Cereb. Physiol. and Path." 1873; "Functions of Brain," 1876 and 1886; *Gulst. Lects.* on "Localis. of Cereb. Dis.," 1878; *Croon. Lects.* on "Cereb. Localis.," 1890; "Regional Diag. of Cereb. Dis.," "Allbutt's Syst. of Med.," 1899; "Heart and Nerv. Syst." (Harv. Orat. R.C.P., 1902); "Tabes Dorsalis" (Luml. Lect. R.C.P., 1906). *Contrib.*—"Localis. of Function in Brain" (with W. A. Turner) (*Phil. Trans.*, 1875); "Effects of Lesions of Cerebellum, etc." (*Ib.*, 1895 and 1898).

Cereb. localisation.

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Art.—"Cerebro-Spinal Fluid" in Buck's Ref. Handb. *Contrib.*—"Chronic Internal Hydrocephalus with Absence of Optic Chiasm" (*Yale Med. J.*); "Cell Div. in Carcinoma" (*Ib.*); "Present Status of Neurone Theory" (*Psychol. Bull.*, 1911).

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Books.—"Elasticity of Joints"; "Torsion of Joints"; "Handbk. Sick-nursing"; "Ger. War Ambulance"; "Effect of Small-pointed Bullets"; "Red Cross in Boer War," 1900. *Contrib.* to *Deutsch. Aerztezschr.*, *Zschr. f. Chirurg.*

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Contrib.—"Snake Ceremonials at Walpi" (*J. Amer. Ethnol. and Arch.*, 1894); "Archaeol. Exped. to Arizona" (*Rept. Bur. Amer. Ethnol.*, 1898); "Aborigines of Porto Rico and Neighbouring Islands" (*ib.*, 1907); "Antiq. of Mesa Verde, Cliff Palace" (*Bull. Bur. Amer. Ethnol.*, 51, 1911).

Excav. and repair of Casa Grande, Arizona; Spruce Tree House and Cliff Palace, Mesa Verde Nat. Park, Colorado.

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Books.—"Collected Works of A. Fick," 1903—05; "Handbk. of Joint and Muscle Movements," 3 vols., 1904—11. *Contrib.*—"New Ophthalmotonometer" (*Verh. Phys. Med. Ges. Würzb.*, 1888); "Fertilis. of Axolotl" (*Zeitschr. f. Wiss. Zool.*, 1893); "Comp. Anat. Study of Orangoutan" (*Archiv. f. Anat.*, 1895); "Individual Plasma" (*Lancet*, 1907).

First descrip. of behaviour of middle piece of spermium in ovum of vertebrates.

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Contrib. to *Landw. Vers.*, *J. Landw.*, *Amstbl. f. Kameroun*, *Tropenpflanzer*, *Zeitschr. f. Angew. Chem.*, *Zeitschr. f. Kolloide*, on cocoa, caoutchouc, etc.

FICKER v. **FELDBAUS**, **HEINZ**, Extraord. Prof. of Meteorol., Graz Univ., Aust.

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Book.—"Hydrographical Surveying." *Arts.*—"Sextant," "Sounding," "Nautical Surveying" (*Encyc. Brit.*, 10th edn.). *Contrib.*—"A Method for Determin. of Time by Equal Altitudes of Two Stars on Opposite Sides

of Meridian" (*Monthly Notices, Roy. Astron. Soc.*); "The Parilograph" (*Nature*, 1910); "The Altazimetro" (*Naut. Mag.*, 1911).

Joint patentee with Cust of a pneumatic self-recording Tide Gauge; An instrument for accurate determin. of rise and fall of tide from a ship at anchor.

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Book.—Ed. of *Bibliographia Zoologica. Contrib.* on verteb. embryol. and on bibliog.

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Book.—"Anal. Mech." (jtl.) 1912. *Contrib.*—"Quintic curves" (*Amer. J. Math.* and *Trans. Amer. Math. Soc.*); "Circuits of plane curve" (*Math. Ann.*, 1909).

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B. 1881, Ney, O. *Educ.* Ohio State Univ. B.Sc. (Ohio) 1906. *Soc.*—Amer. Chem. *Late Chem.*, Amer. Zinc and Chem. Co.

Contrib.—"Some Variations in Determination of Volatile Matter in Coal" (*J. Indust. and Engng. Chem.*, 1910); "Anal. Coal and Coke" (*Bur. Mines Tech. Paper 8*).

FIELDS, JOHN CHARLES, F.R.S. (1913); Prof. of Math., Univ. Toronto, Canada.

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Book.—"Theory of Algebraic Functions of a Complex Variable," 1906. *Contrib.*—"Reduction of gen. Abelian integ." (*Trans. Amer. Math. Soc.*, 1901); "Complementary theorem" (*Amer. J. Math.*, 1910); "Algeb. proofs of Riemann-Roch theorem and of independence of conditions of adjointness" (*Acta Math.*, 1902); "Forms for the Abelian integrals" (*Crelle's J.*, 1904).

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- Book.*—"Intro. to Projective Geom." *Contrib.*—"Resist. to Torsion of certain Forms of Shafting" (*Phil. Trans.*, 1899); "Elastic Equilib. of Circ. Cylinders" (*ib.*, 1902); "Approx. Solution for Bending of a Beam of Rectangular Cross-sect." (*ib.*, 1903); "Dispersion in Artificial Double Refraction" (*ib.*, 1907).
- Math.* Theory of Elasticity; Double refraction produced in transparent materials by stress.
- FINDLAY, ALEXANDER**, Prof. of Chem., Univ. Coll., Aberystwyth, Wales; Examr. in Phys. Chem., Inst. of Chem.
- B. 1874, Johnshaven, Scotl. *Educ.* Aberdeen Gram. Sch.; Univs. of Aberdeen and Leipzig. M.A. (Aber.) 1895. D.Sc. (Aber.) 1902. Ph.D. (Leip.) 1900; F.I.C.; F.C.S. *Late* Lect. Phys. Chem., Univ. Birmingham.
- Books.*—"Phase Rule and its Applications"; "Phys. Chem. and its Applications in Med. and Biol. Sci."; "Pract. Phys. Chem."; *Trans.* Ostwald's "Principles of Inorg. Chem." *Contrib.*—"Theory of Fractional Precipitation" (*Zeitschr. Phys. Chem.*, 1900); "Influence of Hydroxyl and Alkoxy Groups on Velocity of Saponific." (*Trans. Chem. Soc.*, 1905, 1909); "Influence of Colloids on Absorp. of Gases in Water" (*ib.*, 1910).
- FINE, HENRY BURCHARD**, Prof. of Math., and Dean of Dept. of Sci., Princeton Univ., U.S.A.
- B. 1858, Chambersburg, Pa. *Educ.* Univs. Princeton, Leipzig. A.B. (Prince.) 1880; Ph.D. (Leip.) 1885; LL.D. (Williams) 1909. *Soc.*—Amer. Math.; Amer. Phil.
- Books.*—"Number System of Algebra"; "Coll. Algebra"; "Co-ord. Geom." (with H. D. Thompson).
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- Books.*—"Syphilis and Venereal Dis." 1885, 6th edn, 1907; "Gonorrhoea," 1888, 6th edn, 1908; "Skin Diseases," 1907. *Contrib.* 150.
- FINGER, HERMANN**, Ord. Prof. of Org. Chem., Tech. Sch., Darmstadt.
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- Late* Physician to Middlesex Hosp., Lond.; Cons. Physician to Scot. Hosp. and Roy. Caledonian Asy., Lond.; Prof. of Med., Univ. of Aberdeen, till 1912.
- Arts.*—"Pneumothorax" in "Allbutt's and Rolleston's Sys. of Med.," 1909; and in Fowler's "Dict. of Pract. Med." *Contrib.*—"Tubercular Periton. and Double Pleurisy—Recovery" (*Trans. Clin. Soc. Lond.*, 1891); "Rheumatic Pericarditis with Delirium" (*ib.*, 1890); "Some Points in Pneumothorax" (*Scot. Med. and Surg. J.*, 1899); "Tuberculous Pyopneumothorax treated by Incision and Removal of Ribs" (*Trans. Clin. Soc., Lond.*, 1904).
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- Books.*—Jt. Author, "Principles of Soil Management," 1909; 10 reprints. Soil Surv. Investig., U.S. Dept. Agr. Drainage and other bulls. Cornell Expt. Sta. *Contrib.*—"Relation of Soil Survs. to Crop Survs." (*Proc. Amer. Soc. Agron.*, 1907—09); "Study of Soil Granulation" (*ib.*, 1910).
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- Books.*—"Regen. of Lens," 1900; "Vital Colouring of Freshwater Animals," 1908; "Evol. Research in Embryol. and Path. of Man," 1912. *Arts.* in Encyc. d. mikros. Technik., Encyc. f. Geburtsh., Terminol. d. Entwick.-mech. *Contrib.* on Ctenophos., Teratol., Verteb. column and thorax of man, etc.
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Purins, proteins, ferments, etc.

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Books.—"Bastard-folk in S.W. Africa," 1911; "Social Anthropol.," 1910. *Contrib.*—"Radius and Ulna" (*Zeitschr. Morph. u. Anthropol.*, 1906), etc.

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Books.—"Social Bearing of Machines in Agric.," 1902; 4 chapters in "Origin of Agric. Machinery in Ger.," 1910; "Agric. Machines," 1911. Numerous *arts.* in "Landlexikon," 1911.

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Books.—"Physiol. of Alimentation," 1907; "Œdema" (transl. into Ger. and Russ.), 1910; "Nephritis" (transl. into Ger. and Russ.), 1912; Transl. Cohen's "Phys. Chem. for Physicians and Biol.," 1903; Transl. Pauli's "Phys. Chem. in Service of Med.," 1906. *Contrib.*—Numerous, on chem. behaviour of various colloids and spec. problems of turgor, plasmolysis, œdema, glaucoma, nephritis, hæmolytic, etc., to *Kolloid Zsch., Kolloidchem. Beihefte, Amer. J. Physiol., J. Amer. Med. Assoc., Cinc. Lancet*, etc.

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Books.—"Linear Drawing and Lettering"; "Lettering of Working Drawings"; "Descriptive Geom.," "Co-ordinates of Surveying"; "Earthwork Haul and Overhaul." *Contrib.*—"Maths. of Paper Location of a Railroad" (*Engrng. News*, 1905).

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Books.—Lab. Manuals: "Physiol.," "Materia Med.," "Veter. Dose Book and Prescrip. Writing"; "Urine Exam.,"

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B. 1861, Youghal, Irel. *Educ.* Westtown, Cornell Univ. M.E. (Cor.) 1888. *Soc.*—Amer. Inst. E.E.; Amer. Testing Materials; Amer. Electrochem.; W. Penna. Engrs. *Late Mem. Standards Comm. Amer. Inst. E.E.*; P.P. W. Penna. Engrs. Soc., 1900.

Contrib.—"Spark Distances correspond. to diff. Voltages" (Internat. Elec. Cong., St. Louis, 1903); "Power Factor, Capacity, etc., of Rubber-covered Wires" (Amer. Inst. E.E., 1907); "Losses, Indirect Volts, etc., in Lead Cores of Cables" (*Id.*, 1909); "Original Methods of Heating Split Pairs in Cables" (*Id.*, 1908).

Electro-deposition of Beryllium (with R. A. Fessenden), 1897—98.

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Book.—"Agric. for Common Schs." (with F. A. Cotton); Various Exper. Sta. Bull. (with A. T. Wiancko). *Contrib.*—"Character and Purpose of Elem. Agric. in Ind." (*Nature Study Review*, 1909); "Extent of Elem. Agric. in Ind." (*Id.*, 1909); "Work in Corn Pollination" (*Rept. Ind. Acad. Sci.*, I. 1908, II. 1910, III. 1911).

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Steamer Albatross, 1902, 1904; Ed. *The Condor*, 1902—06.

Book.—"Asteroidea of N. Pacific and Adjacent Waters," 1911. *Contrib.*—"Birds of Laysan and the Leeward Islands, Hawaiian Group" (*Bull. U.S. Fish. Comm.*, 1903); "Anat. of *Lottia gigantea*" (*Zool. Jahrb.*, 1904); "Star-fishes of Hawaiian Is." (*Bull. U.S. Fish. Comm.*, 1903, 1906); "Holothurians of Hawaiian Is." (*Proc. U.S. Nat. Mus.*, 1907).

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Theory of functions, etc.
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Publ. on black phosphorus, etc.
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Books.—"Irritation in Plants," 1907; "Textb. of Bot." *Contrib.*—"Geotropical irritation" (*Jahrb. f. wiss. Bot.*, 1905); "Water Supply and Osmotic Press. of Desert Plants" (*Zachr. f. Bot.*, 1911); "Physiol. of Stopping with caoutchouc" (*Beihefte z. Tropenpfl.*, 1909); etc.

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Contrib.—"Perforating Inflamm. of Vermiform Appendix" (*Trans. Assoc. Amer. Physic.*, 1886); "Acute Pancreatitis" (*N.Y. Med. Rec.*, 1889).

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Books.—"Plate Girder Rail. Bridges"; "London Main Drainage"; "London Bridges"; "The Thames and Lea," *Contrib.*—"Forth Bridge" (*Inst. C.E.I.*, 1887); "Blackwall Tunnel" (*Inst. C.E.*, 1897); "Assuan Dam" (*ib.*, 1902); "Tunnel Construct." (*Brit. Assoc.*, 1894).

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Books.—"Plurality of Inhabited Worlds"; "Balloon Voyages"; "Cat. of Double Stars"; "Stars and Curios. of Heaven"; "Mars"; "Popular Astron.," etc.

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Books.—"Steam Boilers," 1889; "Measurement of Power," 1892; "Rope Driving," 1895; "Kinematics"; "Transmiss. of Power." *Art.*—"Power Production," in *Encyc. Amer. Contrib. to Elec. World, Amer. Machinist, Machinery*, etc.

Dynamometer.
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B. 1862. *Educ.* Nuremberg. Ph.D. *Books.*—"Embryol. Expts.," 1889, 1891, 1893; "Textbk. Zool.," 1898; "Descent Theory," 1901; "Darwinian Theory," 1903. *Contrib.*—"Cloaca and Phallus" (*Morphol. Jahrb.*, 1902—06); "Head Region of Amniota" (*ib.*, 1903—12).

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Books.—"Agric. Repts. in Travel," 1869, 1871; "Dairying," 1876; "Expts. on Milk of 16 Cows," 1891; "Textbk. of Dairying," 1893, 4th edn. 1908, and in Eng. 1896, and Russ. 1900.

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Books.—"Principles of Elec. Wave Teleg.," "Man. of Radioteleg.," "Alternate Current Transformer"; "Handbk. of Elec. Testing Room." Departmental Ed. and Author of 25 arts. in *Encyc. Brit.* (11th edn.). *Contrib.*—70 to *Procs. Roy. Soc.*, *Phys. Soc.*, *Inst. Elec. Engrns.*, and *Brit. Assoc.*

Wireless Teleg.; *Inv.* oscill. valve as detector, and Cymometer to measure wave lengths.

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Books.—"Time and its Notation"; "Prime Meridian for All Nations"; "New Time Reckoning."

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Books.—"Annual Govt. Repts. under Alkali Works Acts," 1884—95; "Descrip. of an Anemometer," 1876. *Contrib.*—"Air Pollution by Chem. Works" (*Q. J. Sci.*, 1870); Various on Suppression of Noxious Gases and Coal Smoke; Construc. an Anemometer for Measurement of Speed of Corrosive Gases in Flues, Culverts, etc.; Collapsing Aspirator used in anal. of such Gases; Rhysimeter for Speed of Currents of Water or of Ships.

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Art.—"Educ. in Irel." in "Teachers' Encyc." *Contrib.*—"Tech. Educ. in Irel." (*J. R.S.A.*); "Sch. work in relation to bodily health" (*Roy. Inst. Pub. Health*, 1911).

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Books.—Ed. and Transl. v. Kahlden's "Path. Histol." *Art.*—"Biliary Chlorosis" in Allbutt and Rolleston's "Syst. Med." *Contrib.*—"Secretion of Saliva" (with J. N. Langley) (*Phil. Trans.*, 1888); "Etiol. of Chorea" (*St. Bart.'s Hosp. Repts.*, 1896); "Maternal Factors in Causation of Rickets" (*Brit. Med. J.*, 1895); "Oxycephaly" (*Q. J. of Med.*, 1911).

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Contrib.—"Nasal Diphtheria" (M.D. Thesis, 1902); "Post-scarlatinal Diph. and its Prevention"; "Further Observ. upon Typhoid Carriers" (*Lancet*, 1910).

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Books.—"Introduct. to Study of Minerals"; "Rocks"; "Meteorites"; "Optical Indicatrix and Transmission of Light in Crystals." *Contrib.*—"On Meteorites which have been found in the Desert of Atacama and its Neighbourhood" (*Miner. Mag.*, 1889); "Mexican

- Meteorites with esp. regard to supposed Occur. of widespread Meteoric Showers" (*Ib.*, 1890); "Baddeleyite (native zirconia)" (*Ib.*, 1893); "On a Meteoric Iron found in 1884 in W. Australia, containing Cliftonite" (*Ib.*, 1887).
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- Contrib.*—To *Miner. Mag.*, *J. Miner. Soc.*
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- Contrib.*—Various to *J. Physiol.* since 1898.
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- Books.*—"Volcanic Eruptions in W. Indies," 1902 (with Dr. T. Anderson); "Geol. of Land's End Dist." (with C. Reid); "Geol. of Lizard and Menage" (with Hill).
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- Art.*—"People of Brit. Isles" in Oxford Survey of Brit. Empire. *Contrib.*—"Anat. of Gastropoda" (*Trans. Linn. Soc.*, 1904; *Records Indian Mus.*, 1912); "Interim Repts. on Ethnog. Surv. of Wales" (*Brit. Assoc.*, 1907, 1910).
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- 60; Prof. of Physiol., Long Island Coll. Hosp., 1862—68; State Surg.-Gen., N.Y., 1874—78.
- Books.*—"Physiol. of Man," 5 vols.; "Textb. of Human Physiol.," "Collected Essays," 2 vols.; "New function of Liver," 1862, and in Fr., 1868; "Source of Muscular Power," 1876; "Respiration," 1881; "Stercorin and Cholesteræmia," 1897.
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- Contrib.*—"Efficiency of Man" (with W. Marcet) (*Proc. Roy. Soc.*, 1899); "Methods of Sewage Anal." (with G. McGowan and R. S. Finlow) (Roy. Comm. on Sewage Disposal, 1904); "Tests for Arsenic in Fuel" (with McGowan) (Roy. Comm. on Arsen. Poisoning, 1903, and *J. Soc. Chem. Ind.*, 1905).
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- Books.*—"Phonolite of Hegau"; "Taxation according to Communal Value"; Coll. Textbks.; "Mineralogy for Chem. and Engrs." *Ger. Pat.*, Gold extren. with bromine.
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Contrib.—Numerous.

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Contrib.—"Path. of Kidney in Domestic Animals" (*Monatsh. f. prakt. Tierheilk.*, XX.); "Case of Pneumonocystis in a Cow" (*Maanedsskr. f. Dyrhæger*, XVIII.); "Local Eosinophily in Zooparasitic Dis." (*Z. f. Infekt.-Kr. d. Haustiere*, IV.).

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Contrib. on Urine Anal.; Animal Metabolism.
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Book.—"Entom.," also in Japanese.

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Books.—"Sewerage," 6th edn., 1910; "Water Supply Engrng.," 2nd edn. *Contrib.*—Numerous on form of jets from orifices and tubes, etc.

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Contrib.—"Attempt to Increase Fat in Milk by means of Liberal Feeding" (jtly.) (*Bull. B. 222*, Cornell Univ. Agric. Exper. Sta.); "Methods of Milking" (jtly.) (*Bull. 213*, *ib.*).

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Books.—14 State Entomol. Repts.; Rept. on "Fishes of Ill." *Contrib.* on Food of Birds, Fishes, and Insects; Contagious Dis. of Insects; Entomotraca of N. Amer.; Ichthyol. of Ill.; Local Distrib. and Ecol. of Ill. Birds and Fishes.

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Books.—"English Tunnels, espy. submarine," 1884; "Calc. of even and curved Reservoir-Floors," 1894, 2nd edn., 1909. *Art.*—"Hydraulics" in *Encyc. d. Math. Wiss.*, 1906. *Contrib.* on Meth. of observing displacements in sand; formula for rise of temp. in water conduits; equation of ground-water movement and many of its applics. Formulæ for calculation of stresses in tanks and conduits and of their diminution when inward-pressure increases; disc. of "Wanderwellen" meth. of calculation of balance docks; theory of progress of floods in rivers, etc., in *Sitz.-ber. Akad. Wien., Zeitschr. Archiv. u. Ing. Verein.*, etc.

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Contrib.—"Hysteresis in sheet iron and steel" (*Trans. A.I.E.E.*, 1900).

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Contrib.—"Linear eqns. of finite diff." (*Ann. di. Mat.*, 1907); "Determin. of asymptotic develop. of a given function" (*Ann. Math.*, 1910); "Theorem on anal. extension of power series" (*Bull. Amer. Math. Soc.*, 1910); "Relation between sum-formulae of Hölder and Cesàro" (*Amer. J. Math.*, 1910).

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Contrib.—"Neurotropism" (*Ziegler's Beitrage*, 1898, 1900); "Antitoxins" (*Centrallbl. Bakt.*, 1905); and to *Biochem. Z.*, etc.

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Contrib.—60 to *Trans. Chem. Soc.* since 1897.

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Arts. on Liquid Fuel in *Encyc. Brit.* Papers on "Boilers" and "Liquid Fuel."

Develop. of use of petroleum for propulsion at sea.

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Books.—"Elem. Treatise on Elec. and Magnetism" (Ed. and part author), 3rd edn., 1910. Numerous arts. in Watt's "Dic. of Chem."; Ed. Lardner's "Handb. of Nat. Phil." *Contrib.* to *J. Chem. Soc., Phil. Trans., Proc. Phys. Soc., J. Elec. Engrs., Phil. Mag., Repts. of Brit. Assoc.*

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Contrib.—"Death from Gases emanated from Ferro-Silicon" (*Med. Off. Health*, 1909).

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Book.—"A Lab. Manual in Gen. Chem." *Contrib.*—"Conductiv. and Dissoe. of Electrolytes" (*Phys. Rev.*, 1899); "Trisulphoxyarsenic Acid" (*Zeit. f. anorg. Chem.*); "Oxidation of 2, 2 Dichlorovinyl Ethyl Ether" (*J. Amer. Chem. Soc.*, 1909); "Compos. of Greek Vases" (*Ib.*, 1910).

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Books.—"Bot. Types," 1888; "Zool. Types," 1890; "Midwif.," 1896; "Dis. of Women," 1910; "Lects. to Midwives," 1907. *Arts.* in Green's "Encyc. Med.," 1899, and Churchill's "Syst. of Treatment," 1911. *Contrib.*—"On Height of Fundus in Labour" (*Edin. Med. J.*, 1895); "Fate of Retained Placental Tissue" (*Brit. Med. J.*, 1898); "Spurious Abortion" (*Med. Chron.*, 1901); "Supports of Pelvic Viscera" (*J. Obstet. Brit. Emp.*, 1908).

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Soc.—Geol. Fr.; A.F.A.S.; Archeol. Fr.; Prehist. Fr.

Contrib. on Geol. of Caucasus, Provence, Pyrenees, Jura, Spain, Sardinia, and on Prehist. Remains and on Embryogeny of Ammonites, to *Soc. Geol., Bull. Service Carte geol., Comples Rendus*, etc.

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Books.—"An English-Irish Dict.," 1903; "Electron Theory," 1906 (Ger. and Ital. transl.); "Two New Worlds," 1907 (Ger. transl.); "New Light on Immortality," 1908 (Ital. transl.); "Wonders of Phys. Sci.," 1910; "Contemporary Chem.," 1911. *Contrib.*—"Contemporary Elec. Sci." (*Electrician*, 1896—1906, weekly); and to *Proc. Roy. Soc., Faraday Soc., Roy. Irish Acad., Roy. Dub. Soc. Inr.* (1912) Optophone, to make light audible.

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Book.—"Concise Knowledge Astron." (jt. author). *Contrib.*—"Observ. of Sun-spot Spectra" (*Trans. Internat. Solar Union*, 1906); "Spectros. Compar. of Mira Ceti and Titanium Oxide" (*Monthly Notices, R.A.S.*, 1909); "Spectrum of Magnesium Hydride" (*Phil. Trans. Roy. Soc.*, 1909); "Spectra of Comets" (*Monthly Notices, R.A.S.*, 1910).

Member of 5 Eclipse Expeds.; Identified the characteristic bands of the Third Type Stars with flutings of titanium oxide; Disc. existence of magnesium hydride in sun spots; Reproduced spectra of tails of comets from carbon monoxide at very low pressures.

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Flat Rail Tramway Syst. in Salford and Manchester, 1873; Heaton Park and Bridge, Quay wall, Newcastle; Snowdon-Port Madoc and other Light Rlys. thro' Parliament, 1904—1906: etc.

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Books.—"Sewage Works Analyses"; "Intro. to Bacteriol. Enzyme Chem." *Contrib.*—"Iron Nitride" (*J. Chem. Soc.*, 1901); "Suspended Matter in Sewage and Effluents" (with E. Ardern) (*J. Soc. Chem. Ind.*, 1905); "Bacterial Purific. of Ammonia Recovery Liquor" (with Ardern and Lockett) (*ib.*, 1911); "Oxidation of Phenol by certain Bacteria in Pure Culture" (with Ardern and Lockett) (*Proc. Roy. Soc.*, 1910).

Reported to Govts. of Bengal and United Provinces on sewage disposal.

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Books.—"Disease of Lungs" (with R. J. Godlee), 1898; "Arrested Pulm. Tuberculosis," 1892; "Descrip. Cat. Pathol. Mus. of Middlesex Hosp.," 1884; "Origin of Anaemic Murmurs," 1884; "Localis. of Lesions of Phthisis," 1887 (Transl. into French); Ed. "Dict. of Pract. Med.," 1890. *Arts.*—"Bronchiectasis," "Syphilis of Lung," in Allbutt's "Syst. Med." *Contrib.*—"Open-air Treatment of Tuberculosis" (*Med. Chir. Trans.*, Vol. 53); "Med. and Sci. in the 18th Cent." (*Med. Soc. Lond.*, 1907); "Modern Med." (Address in *Med. B.M.A.*, Sheffield, 1908); "Vaccine Therapy" (*Trans. Roy. Soc. Med.*, 1910).

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Book.—"River, Road, and Rail." *Art.*—Ventilation in *Encyc. Brit. Contrib.*—"Simple Tunnel"; "Mersey Tunnel."

Miners' phthisis; Divers' or Caisson Dis.; Press. of grain in silos; Radium and its disc. in Cornwall; Safeguarding of pure food; Preservation of Winchester Cathedral, etc.

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Art.—"Tea" (with P. J. Sageman) in Allen's

- "Commerc. Org. Anal.," Vol. 6. *Contrib. to Trans. Chem. Soc.*, etc.
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Books.—"Outlines of Bact.," and numerous others on Bact., Water Purific., Cholera, etc.
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Books.—"Synth. of Drugs," 3rd edn., 1911; "Biochem.," 1911.
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Books.—"Text-bk. Carbon Compounds," 1881; "Carbon and its Compounds," 1889; "Origins of Chem.," 1884. *Contrib.*—"Heptylic Acid" (*Liebigs Ann.*, 1872); "Dibenzylidiazobenzoic Acid" (*Ber. d. D. Chem. ges.*, 1872); "Action of Nitric Acid on Compounds of Hydrogen" (*Conf. Chem. Soc., Paris*, 1890); "Nitramines" and numerous others in *Rec. d. trav. Chim. des Pays-Bas*, 1882—1911.
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Book.—"Chem. Basis of Pharmacol." (with Fortescue-Brickdale). *Contrib. to J. Chem. Soc., Ber. Deut. Chem. Ges.*
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Contrib.—"Computation of Viendeel girders" (*Tekn. Tidskr.*, 1909, 1912); "Sol. of Clapeyron's eqns." (*Ingenioren*, 1912); "Ferroconcrete section with an eccentric force" (*Ib.*, 1913).
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Contrib. to Mitt. d. Militärgeog. Inst.
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Book.—"Handb. of Briquette Manuf.," 2 vols., 1909—10. *Arts.* on *Mining and Dressing in Meyer's Konversat.-Lex.* *Contrib.*—"Acetylene lighting in mines" (*Zsch. Bergwesen*, 1901); "Progress of mining and machinery in Prussia" (*Zsch. Kali*, 1911); "Treatment of iron ores," 1903; "New lead ores at Beuthen," 1912.
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Books.—"Micro-organisms in Water"; "Life of Pasteur" (with Prof. Frankland); "Bacteria in Daily Life." *Contrib. to Phil. Trans.*, etc.
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Books.—"Studies in Logic by Members of Johns Hopkins Univ." jtly., 1883; "Educ. of Women in U.S." jtly., 1890; *Assoc. Ed.*, "Baldwin's Dict. of Phil. and Psychol." *Arts.*—"Vision," "Proposition," "Syllogism," etc. in Baldwin's Dict. *Contrib.*—"Colour Theory" (*Mind*, N.S. vols. I.-III.); "Histurgy" (*Proc. Internat. Cong. Phil.*, Heidelberg, 1908); and in *Amer. J. Math.*, *Amer. J. Psychol.*, etc.

Theory of colour-vision; Antilogism (inconsistent triad).

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Books.—"Elec. Waves"; "Mechanics" (jtly.); "Elements of Elec. Engurg." (jtly.). *Contrib.*—"Condition of ether near a moving body" (*Phys. Rev.* I.); "Poynting's theorem" (*ib.*, vol. XIII.); "Energy transformations in Synchronous Converter" (*Trans. Amer. Inst. E. E.*, XXII.); "Reversible and irreversible polarization" (*Trans. Amer. Electrochem. Soc.*, VII.).

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Book.—"Injuries and Dis. of Articular Cartilage," 1873. *Art.*—"Movable Kidney" in *20th Cent. Pract. of Med.*, Vol. 9. *Contrib.*—"On Cholecystotomy" (*Trans. Acad. Med. J.*, 1889); "On Massage" (*ib.*, 1890); "Movable Kidney" (*ib.*, 1893); "Three Cases of Enteroctomy and Enterorrhaphy" (*ib.*).

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Contrib. to v. Winckel's "Handbk. d. Geburtsh.;" to v. Dietrich Handbk.;" and numerous *J.*

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Books.—"The Moon," 2nd edn., 1913; "Repts. of Breslau Observ.," 2 vols., 1901—1903. *Arts.* on Astron. in Herder's *Encyc. Contrib.*—Numerous.

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Books.—"On After Images," 1899; "Frontal Lobes," 1907; "Occipital Lobe," 1911; "Handb. of Ment. Exam. Methods," 1912. *Art.* on "Psychopath.," in Monroe's *Cyc. of Educ.*, 1910—13. *Contrib.*—"Sensations following nerve division" (*J. Comp. Neurol.*, 1909); "Assoc. functions of cerebrum" (*J. Phil.*, 1910); "New phrenology" (*Sci.*, 1912); "Time of some mental processes in retardation and excitement of insanity" (*Amer. J. Psych.*, 1906).

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Books.—Numerous on Pharmacol., Therapeut., Med., Serpent's Venom, and Antivenin, etc. *Contrib.* to *Trans. Roy. Soc.* of London and Edin., etc.

Disc. effects of Physostigma on the Eye; Action of Strophanthus on heart and circulation; Exist. of mutual antag. between effects of certain medicines; Relation of chem. constitution to pharmacol. action, etc.

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Books.—"Golden Bough," 1890, 2nd edn. 1900; "Adonis, Attis, Osiris, Studies in Hist. of Oriental Religion," 1906, 2nd edn. 1907; "Scope of Social Anthropol.," 1908; "Totemism and Exogamy," 1910; "Magic Art and Evol. of Kings," 1911; "Taboo and the Perils of the Soul," 1911; etc.

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Contrib.—"Use of Lime in Penna. Agric." (*Bull.* 61, 1900).

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Books.—"Upper Devon. Coral Fauna in Ger.," 1885; "Devon. Avicubidae of Ger.," 1891; "Carnic Alps," 1894—5; "Lethaea geognostica, Handb. of Hist. of Earth," 1897—1911, 5 vols., 3 to follow; "The Dawn on Earth," 5th edn., 6 vols., 1908—11; "Middle Alps of Tyrol," 1905; "Animal Life in Olden Times," 1907; "China," 1912; "Ger. Coal Fields and Supplies," 1912.

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Books.—"Points on Functional Calculus," 1906; "Fredholm's Equation," 1911; Fr. edn. of "Encyc. Sci. Math." *Contrib.* on Calculus, Foundations of Gen. Anal., etc.

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Contrib. on mining to *Trans. J.M.M.*

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Book.—"Minnesota Plant Dis.," 1905. *Contrib.*—"Seed Fungus of Lolium Termilemium" (*Phil. Trans.*, 1903); "Expts. with Brown Rust of Bromes" (*Annals of Bot.*, 1902); "A Prelim. List of Minn. Uredineae" (*Minn. Bot. St.*, 1901); "Losse Smuts of Barley and Wheat" (*Bull.* 152, Bur. Plant Ind., U.S. Dept. Agric., 1909).

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Contrib.—"Observ. on bacteria found in calf lymph during process of glycerination" (*Loc. Govt. Bd. Rept.*, 1899—1900); "Influ. of anaerobic conditions on extraneous organisms of glyc. calf lymph" (*Ib.*, 1900—01); "Meth. of Anaerobic Culture" (*Ib.*, 1901—02); "Culture of Nitroso-Bacterium" (*J. Hyg.*, 1903).

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Book.—"Hist. of Fresenius Lab.," 1898. *Contrib.*—Numerous on anal. of mineral waters, etc.

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Books.—Ed., 2nd edn. of Borgmann's "Anal. of Wine," 1898 *Arts.* on Foods and Drugs, Spirits, Liquors. *Contrib.*—"Testing of Portland Cement" (*Zeitschr. f. anal. Chem.*, vols. 23, 24, 32); "Proofing and Testing of Spirits" (*Ib.*, vol. 29); "Anal. of Sweet Wines" (*Ib.*, vols. 28, 36, 37).

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Books.—"Comprehension of Aphasia," 1891; "Cereb. Infant. Paralysis," 1891, 1893, 1897; "Studies on Hysteria," with J. Breuer, 1895; "Interpret. of Dreams," 1900, 3rd edn. 1911; "Psychopath. of Everyday Life," 1901, 4th edn. 1912; "Three Essays on Theory of Sex," 1905, 1910; "Wit and its relation with Unconsciousness," 1905, 1912; "Psychoanalysis," 1910, 1912; "Dreams," 1901, 1911; "Coll. Papers on Neuroses," Pt. I., 1906, 1911, Pt. II., 1909, 1912; "Gradiva," 1907, 1912; "Childhood Recollection of Leonardo da Vinci," 1910 and in Eng. by Brill, and other languages.

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Book.—"Study of Chem. Compos.," 1904. *Art.*—"Density," in Watts's "Dict. Chem." *Contrib.*—"Double Salts" (*Sci. Progress*, 1907); "Influence of Temp. on Change in Vol. through Neutralisation of different Salts at diff. Concentrations" (*Z. f. phys. Chem.*, 1909).

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Books.—"Rhinol. Laryng. and Otol. and Their Significance in Gen. Med.," 1898, and in Eng., 1900; "Ear Labyrinth," 1905.

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Books.—"Flowers and Flower Lore"; "Wild Flowers"; "Gloss. of Devon. Plant Names"; "British Earth and Water Worms" (in prep. for *Ray Soc.*). *Contrib.* to *Naturalist*, *Zool.*, etc., on Brit. Oligochaeta, etc.

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Books.—"Theory of Valency," 1909; "Intro. to Chem. of Paints," 1910; "Corrosion of Iron and Steel," 1911; "Elem. Domestic Chem.," 1911; Gen. Ed. "Textbks. of Inorg. Chem.," *Contrib.*—"Valency" (*J. Chem. Soc.*, 1908); "Rusting of Iron" (*J. Iron and Steel Inst.*, 1908); "Cuprous Comps. of Carbon Oxides" (*Ann.*, 1908); "Corrosion and Preserv. of Iron" (*J. Iron and Steel Inst.*, 1911).

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Contrib.—"Acute Haemorrh. Pancreatitis"

(*Clin. Soc. Trans.*, 1899); "Renal Calculus and Röntgen Rays" (*Ib.*, 1898); "Sarcoma of Tongue" (with R. H. J. Swan) (*Guy's Hosp. Repts.*, 1902); "Laminectomy for Tumour in Spinal Canal" (*Brit. Med. J.*, 1900).

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Books.—"Austrian Flora," 1897, 1909; "Gesneriaceae," 1904; and many school text-bks. *Contrib.*—"Flora of Salzburg" (*Verh. Zool. Bot. Ges.*, Vienna, 1888—98); "Flora of Balkan Peninsula" (*Ib.*, 1894—99, and *Mitt. nat. Steiermark*, 1909—11); "Flora of Constantinople" (*Denkschr. Vienna Acad. Wiss.*, 1899).

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Books.—"Australian Insects," 1907; *Off. Rept.* on "Fruit Flies and Other Pests in various Countries, 1907—8," 1909. *Contrib.*—

"Australian Termitidae" (*Proc. Linn. Soc. N.S.W.*); "Monog. of Australian Poyllidae" (*ib.*, 1900—03); "Australian Brachyscelidae (gall-making Coccids)," pts. I.—V. (*ib.*, 1892—98); "Genus Phycopsis" (*ib.*, 1903).

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Books.—"Anat. for Art Students"; "Evol. of Eye of Verteb.,"; "Anat. Wall-charts"; "Relation between Cranium and Size of Brain." *Contrib.* numerous to *Arch. f. Anat. u. Physiol.*, *Anat. Anzeig.*, *Verhandl. d. Anat. Ges.*, *Arch. f. Anthropol.*, *Z. f. Neurol. u. Psych.*, etc., on a verteb. theory of vertebrated head, Froriep's ganglion, gill-slit organs, etc.

Identified Schiller's skull.

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Book.—"Astron. Spectroscopy," 1893; *Man. Ed. of Astrophys. J.*

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Books.—"Maternity"; "Antiseptic Methods in Obstet. Practice" (Transl. from Bar). *Contrib.* during 30 years.

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Contrib.—"Determin. of value of Pitot Constant" (*Phil. Mag.*, 1911).

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Book.—"Lab. Exercises in Elem. Bot." (with George B. Rigg), 1911; "Northwest Flora" (with Rigg) in press. *Contrib.*—"Morphol. Study of Asclepiadaceae" (*Bot. Gaz.*, 1902); "Embryo Sac of *Casnarina Stricta*" (*ib.*, 1903); "Height and Dominance of Douglas Fir" (*Forestry Q.*, 1910); "Polytrichaceae of Western N. Amer." (*Proc. Wash. Acad. Sci.*, 1910).

Food-making from kelp (with Magnusson).

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Books.—"Llantwit Majir—a 5th Century Univ." *Contrib.*—"Notes on ancient mortars" (*Proc. Bristol Nat. Soc.*, 36); "Roman colours, with spec. ref. to those at Caerwent" (*Proc. Clifton Antiq. Club*, 253); "Leaden fonts" (*Archaeol. J.*, 40); "Fonts with repres. of 7 sacraments" (*ib.*, 17).

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Books.—"Textb. of Ophthalm." 12th edn.; "Prev. of Blindness." *Contrib.* on Ophthalm.

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Books.—"Physiol. Practice," 2nd edn. 1912. *Art.*—"Colour changes and chromatic skin-functions of animals" in Hdb. d. Vergleich. Physiol. *Contrib.*—"Physiol. studies in mountains" (*Sitz.-Ber. Physiol. Soc. Erlangen*, 1908, 1909); "Pigment cells" (*Arch. f. Entwick.*, 1910); "Physiol. and developm. of vasc. syst." (*Arch. f. Anat. u. Physiol.*, 1906); and on heat regulat. by chromatophors.

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Africa, 1906; Direc. of Hamburg S. Sea Exped., 1908—09.

Books.—"Phys. Anthropol. of N. Nyassaland"; "Ger. Nyassa and Ruwumaland: Country and People." *Contrib.*—Numerous on trop. med.

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Books.—"Bones and Muscles of Extremities of Snake," 1870; "Comp. Anat. of Larynx Muscles," 1872, 5th edn., 1902; "Morphol. and Systematics of a Bird," 1888; "Spinoo-ccipital Nerves," 1897; Ed., Gegenbauer's "Human Anat.," 1909; "Descent of Mammals," 1904; Ed. "Gegenbauer's Coll. Works," 3 vols., 1912. *Contrib.*—"Shoulder Muscles" (*Morph. Jahrb.*, 1872—1902); "Comp. Anat. of Excret. Organs" (*Ib.*, 1878); "Genealogy of Reptiles and Birds" (*Jena Z.*, 1900—02).

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Book.—"Swed. Anthropol.," with G. Retzius, 1907. *Contrib.*—"Histogen. and Growth of Retina" (*Fysiolog. Sällsk. Handl.*, 1907); "Musculus popliteus" (*Ib.*, 1903); and others on histol., anat., anthrop., biog., etc.

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Books.—"Comp. Chem. Physiol. of Lower Animals," 1903; "Probl. of Physiol. and Path. Chem.," 2 vols., 1912—13.

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Book.—"Influence of Bodies of Complex mult. on Theory of Numbers," 1911. *Contrib.* to *Crelle's J.* and *Circ. Math.*, Palermo.

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Contrib. on scurvy, nutritional physiol., etc.

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Book.—"Absolute Value of Gravity at Potsdam as obtained by Reversible Pendulum" (with F. Kühnen), 1906. *Arts.* on Cartography and Phys. Appar. in *Encyc. d. Math. Wiss. Contrib.*—"Law of Reciprocity" (*Abh. Ges. d. Wiss. Gött.*, 1902); "Swing of Double Pendulum" (*Sitz. d. Berlin Akad.*, 1902); "Gen. Proof of Exist. of Klassenkörper" (*Math. Ann.*, 1906); "Abel Numbers" (*J. f. Math.*, 1909).

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Book.—"Elem. Treatise of Gen. and Tech. Histol." 1909. *Contrib.*—"Nerve endings, etc., of Ammoeetes branchialis" (*Atti Acad. Turin*, 1905-7); "Periph. nervous syst. of Amphioxus lanceolatus" (*Internat. Monatschr. f. Anat. u. Physiol.*, 1889); "Nerve endings, etc., of surreal capsule of mammals" (*Atti Acad. Turin*, 1890-91); "Developm. of surreal capsule of mammals" (*Arch. Sci. mediche*, 1892).

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Book.—"Bot. for India," 2 pts. *Contrib.*—"Expts. in Fertilis. of Ind. Cottons" (*Mem. Agric. Dept. of India*).

GABBA, LUIGI, Ord. Prof. of Technol. Chem., Tech. Inst., Milan; Mem. Roy. Inst. Lombardy.

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Contrib. on Synthesis of Isoquinolines, Cyclic Bodies, Use of Amines in Synthesis, etc., to *Ber. d. Chem. Ges.*, since 1876.

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Books.—"Textb. of Physiol.," etc.

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Book.—"Textb. of Chem. Toxicol.," 1909. *Contrib.*—"Alkaloids of Corydalis" (*Arch. d. Pharm.*, 1902-12); "Mustard-oil yielding glucosides" (*ib.*, 1897-99); "Theory of racemisation and substitut." (*J. f. prakt. Chem.*, 1913).

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Kirkeveien 70, Christiania, Norway. *Contrib.* on cancer, tuberc. and path. anat.

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Books.—"Handb. of Water Examn.," 4 edns.; "Guide to Hyg.," 6 edns.; "Hyg. of Water" 1913. *Arts.*—Numerous in Encycs.,

etc. *Contrib.*—"Watercourses and typhus" (*Klin. Jahrb.*); numerous on sewage, drinking water, etc.

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Contrib.—"Bot. Tour in Lushai Hills" (*Records, Bot. Surv. Ind.*, 1901); "Census of Ind. Polygonums" (*ib.*, 1903); "Cat. of Phanerogams, Roy. Bot. Gard., Calcutta" (*ib.*, 1912).

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Books on Calcar., Tert. and Glac. Deposits of N. Ger.; La Palma, Madeira and other Volcanic Islands; Geol. of Ger. Afric. Colonies.

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Book.—"Transl. Hugo de Vries' "Intracellular Pangenesis, etc.," 1910. *Art.*—"Educ. Work of Bot. Gardens," in *Cyc. of Educ.*, 1911. *Contrib.*—"Effects of rays of radium on plants" (*Mem. N.Y. Bot. Garden*, 1908).

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Books.—Transl. Lehme's "Tab. Surv. of Artificial Org. Colouring Matters"; "Gujrati Works on Sci. and Technol."

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Contrib.—"Iron, Steel and Concrete Construction" (*Trans. Inst. C.E.I.*, 1904); "Reinforced Concrete Piling" (*Trans. Inst. Mun. and Co. Engrs.*, 1905); "Reparations to Nave Roof of Winchester Cathedral" (*Architects' Mag.*, 1903); etc.

Improvements in reinforced concrete.

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Books.—"Lab. Manual of Phys." (with R. A. Millikan). *Contrib.*—"Effect of Temp. on Metallic Spectra" (*Phys. Review*, 1907); and others jty. with G. E. Hale, H. B. Lennox, U. S. Adams, on Sun Spot Spectra, Arc and Spark Lines of Titanium, etc.

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Contrib.—"Distrib. Elec. on Circular Disc and Spher. Bowl" (*Q. J. Maths.*, 1886); "Elec. and Magnetic Images of a Multiple Point in a Sphere" (*Mess. Maths.*, 1896); "Change of a Syst. of Independent Variables" (*Camb. Phil. Trans.*, 1899); "Rise of a Spinning Top" (*Id.*, 1903).

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Books.—"Textb. of Zool."; "Elem. Zool."; "Biol. of Sex for Parents and Teachers." *Contrib.*—"Budding in Devo Vaga" (*Bull. Mus. Comp. Zool.*, XXXV.); "Phosphores. Bermudan Annelid, *Odontosyllis enopla Verrill*" (*Trans. Amer. Micros. Soc.*, XXX.); "Common freshwater Oligochetes of U.S." (*Id.*, XXX.).

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Arts. in Annals of Central Off. of Meteorol. and Geod., Rome; Tech. Revs. and Bulls. Ital. Aeronaut. Soc.; Bulls. Ital. Meteorol. Soc.

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Books.—"Animal Life," 1908; "Animal World," 1911. *Arts.* in *Encyc. Brit.* and "Dic. Nat. Biog." *Contrib.*—"Colour Physiol. of Crustacea" (*Phil. Trans. Roy. Soc.*, 1904—05); "Anat. of Arenicola" (*Q. J. Micros. Sci.*, 1895—96); "Brit. Turbellaria" (*Id.*, 1893); "Green Cells of Convolva" (*Id.*, 1903, 1907).

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Books.—"Man. of Indian Timbers"; "Bambuseae of Brit. India" (*Ann. Roy. Bot. Garden, Calcutta*, vol. VII.); "Materials for a Flora of Malay Peninsula" (jty.).

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Books.—"Teaching Botanist," 2nd edn., 1910; "Lab. Course in Plant Physiol.," 2nd edn., 1908; "Denys' Descrip. and Nat. Hist. of Acadia" (trans. and ed.), 1908; "Le Clercq's New Relation of Gaspesia," 1910. *Arts.* upon Bot. and Bot. Educ. and Nat. Hist. in *Bot. Gaz.*, *Science, Bull. Nat. Hist. Soc. N.B. Contrib.* on Archaeol. of New Brunswick in *Trans. Roy. Soc. Can.*

Plant ecol.; Organisation of bot. educ.; Apparatus used in plant physiol.

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Book.—"Work, Wages and Profits" (*Engnrg. Mag.*, N. Y.).

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GARBAT, A. L., Assist. Path., German Hosp., New York, U.S.A.; and M.D.

Book.—Transl. and ed., Citron's "Immunity: Methods of Diag. and Therapy."

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Books.—"Fauna and Geog. Maldive and Laccadive Archipel," 1901—06. *Contrib.*—"Percy Sladen Expedn. to Indian Ocean" (*Trans. Linn. Soc.*, 1908); "Coral Reefs," etc. (*Proc. Phil. Soc. Cantab.*, 1898); "Natives of Rotuma" (*Proc. Anthropol. Inst.*, 1898); "Corals from S. Pacific" (*Proc. Zool. Soc.*, 1897—99).

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Book.—"Corrosion and Preserv. of Iron and Steel" (with A. S. Cushman); 32 Brochures on Paint Industry. *Contrib.* to *J. Frank. Inst.*, etc.

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Books.—"Wool Dyeing," 1897; "Dict. of Dyes, Mordants, etc." (with Rawson and Laycock). *Arts.*—"Natural Colouring Matters," in Allen's "Commerc. Org. Anal.," 1911; "Dyeing" and "Detection of Dyes," in Thorpe's "Dict. Appl. Chem.," 1911. *Contrib.*—"Mercerisation" (*J. Soc. Dyers and Colourists*, 1898); "Stability of Potassium Permang." (*J. Soc. Chem. Ind.*, 1904); "Iodination of Phenols" (*J. Chem. Soc.*, 1909); "Estimation of Tannic Acid" (*Proc. Internat. Cong. Appl. Chem.*, 1909).

Inv. (with A. Dufton) "Dalite" colour matching lamp.

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Books.—Treatises on Phys., Elec., Geom., Optics. *Contrib.*—Numerous.

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Books.—"Surg. of Kidney" (with Ehrhardt), 1906; "Surg. of Lung" (with Quincke), 2 edns. 1912; "Therap. of Intern. Dis." (with P. Krause) 1911.

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Book.—"Inborn Errors of Metabolism," 1909. *Arts.* in Allbutt and Rolleston's and Osler's "Systs. of Med." *Contrib.*—"On the Yellow Colouring Matter of Urine" (*Proc. Roy. Soc.*, 1893); "Urinary Pigments in their Path. Aspects" (*Lancet*, 1900); various in *J. Physiol.* Pigments of Urine; Alkaptonuria and other Abnormalities of Metabolism.

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Contrib.—"Some Physico-Chem. Properties of Pyridine and Water" (*J. Chem. Soc.*, 1908); "Electrochem. Expts." (*Zeitschr. f. Phys. Chem.*); "Solubility of Triphenyl Methane" (*ib.*, 1906).
- GARTEN, SIEGFRIED**, Prof. of Physiol., Giessen Univ., Ger.
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 M.A. (Cantab.). *Soc.*—F.G.S.; F.R.G.S. *Contrib.*—Numerous.
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 B. 1883, Mahabeshwar, India. B.A. (Williams Coll.) 1906. *Soc.*—Amer. Assoc. *Late Zool.*, Louisiana State; Assist. Zool., State of Mass.
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Book.—"Nav. Hyg."
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Book.—"Pract. Methods of Org. Chem.," 11th edn., 1912, and in Eng.
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 B. 1870, Neuenburg, Württ. Ph.D., 1894. *Late Priv. Doz.*, Heidelberg, 1901—6.
Books.—"Dipsomania"; "Psychol. of Children," 3rd edn., 1912; "Suicide," 2nd edn., 1910.
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Books.—"Course of Chem.," 3 vols.; "Human Alimentation in Health and Sickness"; "Chem. applied to Physiol. and Hyg.," etc. *Contrib.* 450 on disc. of Carbylamine, Ptomaines, Leucomaines, Normal Arsenic in Men and Animals, Min. Waters, Volcanoes, Colouring Matters of Wines, Mechanism of Variation of Living Beings, Estim. of Fluorine, Sulphur Compounds, Gas from Rocks, etc.
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 B. 1842, Jersey. *Educ.* Victoria Coll., Jersey. *Soc.*—M. Inst. C.E.; M. Inst. E.E. (P.P.). *Late Engrn.-in-Chief* and Cons. Engrn., British Post Office.
Contrib.—Numerous.
- GAY, CARL W.**, Prof. of Animal Husbandry, Univ. Pennsylvania, Philadelphia, Pa., U.S.A.
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 B. 1874, Boston, Mass. A.B. (Harv.) 1897; M.D. (Hopkins) 1901. *Soc.*—F.A.A.; Amer. Assoc. Path. and Bact.; Amer. Assoc. Cancer Research (Mem. Counc.); Hon. Mem. Manila Med.; San Francisco Acad. Med. (Mem. Counc.); Amer. Med. Assoc.; Exper. Biol. and Med.
Book.—"Studies in Immunity," with Bordet, 1909. *Contrib.*—"Anaphylaxis" (*J. Med. Research*, 1907—09); "Fixation reaction" (*Pasteur Annales*); "Locus of anti body formation" (*Univ. Cal. Publ. in Path.*).
 Alexin fixation by serum precipitates; conglutination and its diagnostic value.
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Inv. dry air blast for manuf. of iron, 1894.
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 B. 1870, Breslau. *Educ.* Breslau, Berlin. M.D.; Mem. Leop. Carol. Acad. *Late Scient. in Carol Zeiss's Optical Manuf.*, Jena.
Books.—"Microphot. of Coloured Preparations," 1899; "Functional Bone Develop.," 1910. *Contrib.*—"Microstereog. with Great Enlargement" (*Photog. Rundschau*, 1897);

"Funct. Struct. of Teeth" (*Arch. f. Entwickl.-Mech.*, 1900); *Coarse and Fine Struct. of Inverteb. Bones* (*Id.*, 1909—10); "A Law of Formation" (*Anal. Anzeig.*, 1906).

GEDDES, PATRICK, Prof. of Bot., Univ. Coll., Dundee, Scotl.

B. 1854. *Educ. Univ. Coll.*, London; Sorbonne; Univ. Edinburgh.

Books.—"Evol. of Sex," with J. A. Thomson; etc.

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B.Sc., M.Sc. Tech. (Manc.). *Soc.*—A.M.I.E.E.; Manc. Lit. and Phil. (Counc.).

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B. 1844, Fredrikvern, Norway. *Educ.* Fredrikshald, Christiania; Grad. in Maths. and Nat. Sci. (Christ.) 1868. *Soc.*—Ger. Astron.

Books.—Several of Observ. and of Norweg. Geodetic Comm.; "Astron. Observ. of *Fram* Exped.," 1901; "Text-bk. Astron.," 1908. *Contrib.*—"Zodiacal Light" (*Arch. f. Math. og Naturvrd.*, 1878, and *Bull. Astron. Fr.*, 1902); "Conical Pendulum" (*Arch. f. Math. og Nat.*, 1880), etc.

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Books.—"Scenery of Scotland," 1865, 1901; "Geol. Sketches at Home and Abroad," 1882; "Life of Murchison," 1875; "Memoir of A. C. Ramsay," 1895; "Ancient Volcanoes of Britain," 1897; "Founders of Geol.," 1897, 1906; "Text-bk. Geol.," 1903; "Scottish Reminis.," 1904; "Landscape in Hist.," 1905; "Love of Nature among the Romans," 1912.

Volcanic hist. of Brit. Isles; Glac. Geol. and connection of scenery with geol. processes.

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Books.—"Great Ice Age," 1874, 3rd edn., 1894; "Prehist. Europe," 1882; "Outlines of Geol.," 1884, 4th edn., 1903; "Fragments of Earth Lore," 1892; "Earth Sculpture," 1898 and 1909; "Struct. and Field Geol.," 1898, 3rd edn., 1912; "Mountains, their Origin, Growth and Decay," 1913; "Antiquity of Man in Europe," 1913. *Contrib.*—Many. Hon. Ed. of *Scot. Geog. Mag.*

First attempt to correlate and classify glacial and interglacial formations of Europe.

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GEIRSVOLD, MAGNUS MEKLENBORG, Munic. Physician, Bergen, Norway; M.D.

Contrib. on bact., poliomyelitis, cerebrospinal meningitis, etc.

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Book.—"Ionisation of Gases and Atmos. Elec.," 1902. *Contrib.* on Norm. Conductivity of Atmos. Air; with Elster: Radio-activity of Atmos., Distrib. of Radio-active Substances in Soil and Sediments of Thermal Springs, Elec. of Rain and Snow, Photoelectric Photometers for ultra-violet and visible Light; Photo-elec. Properties of Alkaline Metals, etc.

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Book.—"Electromagnetic Waves," 1905. *Contrib.*—"Reflection of Elec. Wire Waves" (*Wied. Ann.*, 1893); "Complex Hertzian Waves" (*Id.*, 1895, 1896, 1898); "Radiating Capacity of Metals for Hertzian Waves" (*Ann. d. Physik*, 1907); "Generation of Current from Periodic Electromotor" (*Ber. phys. Ges.*, 1909).

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Arts. in Harnsworth's *Encyc. Contrib.*—Numerous to *J. Soc. Chem. Ind.* on new process for manuf. of phosphorus, fixation of atmosph. N. as cyanogen in elec. furnace, etc.

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Book.—"Teratology of Fishes," 1912. *Contrib.*—"Develop. of starfish Solaster Endeca Forbes" (*Trans. Zool. Soc. Lond.*, 1912); "Locomotor function of Lantern of Aristotle" (*Proc. Roy. Soc.*, 1912); "Aeration of Lab. Aquaria" (*J. R. Micr. Soc.*, 1911 and 1912).

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Contrib.—"Reciproc. in Statics" (*Proc. Lond. Math. Soc.*, 1886); "On the Methods of Grassmann" (*Fr. Assoc., Caen*, 1894); "The Ausdehnungslehre and Statics" (Internat. Cong., Heidel., 1904); "Applic. of Polars to Forces in Space" (*Ib.*, Rome, 1908).

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Book.—"Caoutchouc-bearing Lianas of Congo Free State," with E. De Wildeman.

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Books.—"Town Paving," 2 vols., 1897, 1900; "Canalisation of Small and Medium Towns," 2 vols., 1910, 1911; Chaps. on Drainage and Illumination in "Cologne," 1888. *Contrib.*—40 on Munic. Health, Transport, etc.

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Books.—"Notes on Important Rock-making Minerals," 1909; "Metallic Minerals," 1911. *Contrib.*—"Min. and Use of Metals by Ancient Egyptians" (*Pop. Sci. Monthly*, 1905); "Main Tungsten Area of Boulder Co." (Colo. Geol. Surv., 1908); "Geol. of the Hahns Peak Area" (*Ib.*, 1908); "Building Stones" (*J. Engrng., Colo. Univ.*, 1904—05).

Disinteg. of building materials in arid regions and in cities.

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Books.—"Monog. on Indigo"; "Chem. of Dyestuffs"; "Chem. Technol. of Textile Fibres." *Contrib.*—Theory of dyeing; Connect. betw. const. of dyestuffs and ability to form lakes with mordants; Adsorption; etc.

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Books.—"Lessons on Elec.," 2 vols., 8th edn., 1910; "Elec. Measures," 4th edn., 1911; "Elements of Electro-technique"; "Problems and Projects of Electro-technique" (with De Bast).

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Contrib.—"Anat. and histol. of *Caudina arenata*" (*Bull. Mus. Comp. Zool.*, 1896); "Develop. of *Phascosoma*" (*Zool. Jahrb.*, 1906); "Inheritance of Polymorphism and Sex in *Colias philodice*" (*Amer. Nat.*, 1911); "Sipunculids of E. Coast of N. Amer." (*Proc. U. S. Nat. Mus.*, 1913).

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Books.—"Lab. Exercises in Phys. Chem.;"

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Book.—"Graptolites in Trondhjem Schists." *Arts.* on mining in Salomonsen's Konvers. Lex.

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Contrib.—"Commercial Loading of Teleph. Circuits in Bell Syst."

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Contrib.—Numerous on Comp. Anat., espec. on Suprarenal Capsule.

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Book.—"Magistri Salernitani." *Contrib.*—Transformans. of aromatic compounds in the organism; Aromatic and fat nitriles; Action of oxide of carbon, Digitalis, etc.; Physiol. of Man in the Alps.

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Arts.—"Hypertrophy of Heart" and "Insuffic. and Dilatation of the Heart," in Osler and McCrae's "Syst. of Med.;" "Visceral Syph." in Power and Murphy's "Syst. of Syph." (with Sir W. Osler). *Contrib.*—"Enlarged Veins in Children" (*Lancet*, 1906); "A hitherto undescribed Wave in the Jugular Pulse" (*ib.*, 1907); "Action of Digitalis on Human Heart" (*Q. J. Med.*, 1908); "Pulse immed. preceding Epileptic Attack" (*ib.*, 1910).

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Books.—"Hydraulics"; "Water Hammer in Hydraulic Pipe Lines." *Contrib.*—Several to Roy. Soc. and Inst. C.E.

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Book.—"Biochem. Researches," 5 vols. *Contrib.*—Numerous on Biochem.

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Arts. in Roll's Encyc. *Contrib.*—Various to *Zentralbl. d. Bauverw.*, *Zeitschr. f. Bauwesen*, *Zeitschr. d. Ver. Deut. Ing.*, *Z. d. Ver. Deut. Eisen-verw.*, etc.

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Contrib.—"Theory of Centrifugal Pumps" (*Zeitschr. d. Ver. Deut. Ing.*, 1875); "Drill-ploughs at Chicago Exhib.," 1893; "Manure Sprinklers," 1894, etc.

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Books.—"Textb. of Bot.," 1894, 5th edn. 1910; "Cereals," 1899, 2nd edn. 1907; "Niphobolus," 1901; "Java and Sumatra," 1902; "Studies on Cell. Division in Plants," 1905; "Fertilis. and Transmiss. in Plants," 1907. *Art.*—"Leaf" in *Handb. d. Naturw.*, 1912. *Contrib.*—"Hymenophyllaceae" (*Flora*, 1890); "Evol. of Parasitic Exoascaceae" (*ib.*, 1895); "Studies on Characeae" (*ib.*, 1895—8); "Mosses of damp virgin forests" (*Ann. Jard. Bot. Buitenzog*, 1910).

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- Books.*—“Agric. Educ. in Britain,” 1888; “Agric. and Forest Chem., 1902, etc. *Contrib.*—“Resist. of Seeds to Chem. Agents” (*Gar. Chim. Ital.*, 1879); “Condens. of Vapour from Fumaroles” (*Nature*, 1883); “Latent Vital in Seeds” (*ib.*, 1895); “Dante and the Agric. of his Cent.,” 1899.
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- Books.*—“Problems of Life,” 4 pts., 1900—10; “Diptera and Orthoptera”; “Human Embryol.”; etc.
- Disc.* specific granules in red corpuscles of blood of Verteb.; new species and genera of Diptera and Orthoptera.
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- Books.*—“Geol. of Henry Mts.”; “Glaciers” (Harriman Alaska Exped.); “Lake Bonneville” (U.S. Geol. Survey). *Contrib.*—“Moon’s face” (*Phil. Soc. Wash.*, 1892); “Niagara Falls and their history” (*Nat. Geog. Monog.*, 1895); “Origin of hypotheses” (*Sci.*, 1896); “Recent earth movement in Great Lakes region” (*Ann. Rept. U.S. Geol. Surv.*, 1898).
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- Book.*—“Lab. Man. in Phys.” *Contrib.*—“Relations between Ether, Matter and Elec.” (*Phil. Mag.*, 1901); “Eclipse problems” (*Publ. U.S. Nav. Observ.*).
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- Contrib.* on marine animals.
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- Basic process for steel manuf.
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- Books.*—“Gas and Fuel Anal. for Engnrns.,” 6 edns.; “A short Handbk. of Oil Anal.,” 6 edns.; “Engine Room Chem.,” 2 edns. *Arts.*—“Oils” in Roger’s and Aubert’s “Ind. Chem.”; “Wool Fat” in Allen’s “Commercial Org. Anal.” *Contrib.*—“Determ. of Nitrates in Potable Water” (*J. Amer. Chem. Soc.*, 1894); “Effic. of Accidental Gas Explosions” (*ib.*, 1907); “Hydrocarbons of Wool Grease Oleins” (*ib.*, 1910); “Determin. of Methane and Hydrogen in Illeg. Gas” (*ib.*, 1895).
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- Books.*—"Heliometer Determin. of Stellar Parallax" (with Elkin), 1884; "Determin. of Solar Parallax by Observ. of Juno" (with Lord Lindsay), "and of Mars at Ascension in 1877" (*Mem. Roy. Astron. Soc.*); "Determin. of Long. and Lat., Lindsay Exped. to Mauritius in 1879 and 1880" (with Lindsay and Copeland); "Teleg. Operations connecting Long. of Aden and C. of Good Hope" *Annals Cape Observ.* Vol. 1); "Determin. of Solar Parallax from Observ. of Iris, Victoria and Sappho" (with Auwers and Elkin) (*Cape Annals*, Vols. 6 and 7); "Hist. and Descrip. of Cape Observ." *Arts.*—"Micrometer," "Telescope," etc., in *Encyc. Brit.*, 9th and 10th edns.
- Origination of Internat. Cong. for Carte du Ciel; Geod. Surv. of S. Africa; Arc of Merid. on 30th merid. now in course of execution; Cape photog. Durchmusterung (with Prof. Kapsteyn).
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- Contrib.*—"Genesis of Ions by Collision in Argon and Helium" (*Phil. Mag.*, 1908 and 1912); "Elec. Effect of Ultra Violet Spectrum" (*ib.*, 1910); "Intensity of U.V. light from elec. discharge at low press." (*Phil. Mag.*, 1911); "Variation with distance of Ioniz. prod. by Röntgen Rays" (*ib.*, 1912).
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- Contrib.*—"Dental Mechanics as a Problem" (*Brit. Dent. Assoc. J.*, 1910); and many others.
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Books.—"Jurassic W. of Central Massise"; "Cretac. of Aquitaine"; "Volcanoes of Auvergne." *Contrib.*—Numerous.

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Contrib.—"Observ. and Expts. on Growth of Oysters" (*U.S. Fish Comm. Rept.*, 1903); "Cannibalism of Fasciolaria" (*Zeitschr. f. wiss. Zool.*, vol. 80); "Movement and problem-solving in Ophiura" (*J. Exper. Zool.*, vol. IV.); "Nematocysts of Eolida" (*Ib.*, vol. IX.).

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Contrib. on radioact., etc.

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Books.—"Pelecypoda of Miocene of Maryland" (*Md. Geol. Surv.*); "Underground Waters of W. Tenn., W. Ky. and S. Ill." (*U.S. Geol. Surv.*); "Denudation and Erosion in S. Appalachians" (*Ib.*).

Field work on coastal plain formations and coalfield geol. Appalachian and Eastern interior fields.

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Books.—"Essays on Phil. and Hist. of Biol.," 1900; "Psych., Physiol. and Path. Studies," 1903; "Elem. Treatise of Physiol.," 3rd edn. 1913. *Contrib.*—"Res. on toxins and antitoxins of fish serums" (*Acad. Sci. Paris*, 1898—1912); "Studies on physiol. of thyroid and parathyroid glands" (*Soc. Biol.*, 1891—1911); "Res. on physiol. of cardiac muscle" (*Arch. Physiol.*, 1889—91; *Soc. Biol.*, 1890—91); "Influ. of liver on blood-coagulation (new function of liver)" (*Ib.*, 1895—97).

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Contrib.—"Bacteria in Pub. Swimming Baths" (*Thompson Yates Lab. Reports*, 1903); "Inherent Phagocytic Power of Leucocytes" (*J. of Path.*, 1909); "Adrenal Tumours" (*Q. J. Med.*, 1912).

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Books.—"The Weather," 2nd edn., 1905; "Atmosph. Elec.," 1908; "Theories of the Universe," 2nd edn., 1910. *Contrib. to Ann. d. Phys., Phys. Zeitschr., Meteorol. Zeitschr. Archiv. d. Geneva, etc.*

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Contrib.—"Life and Culture of Hupa" (*Univ. Cal. Pub., Amer. Arch. Ethnol.*, 1903); "Hupa Texts" (*Ib.*, 1904); "Morphol. of Hupa Lan

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Books.—"Atlas of Human Anat."; "Dis. of the Lungs," 1898. *Contrib.*—"Nephrectomy for Tumour in an Infant" (*Clin. Soc. Trans.*, 1884); "Removal of Cereb. Tumour" (*Med.-Chir. Trans.*, 1886); "Subdiaphragmatic Abscess" (*Internat. Clinics*, 1894); Surg. Treatment of Empyema (Lects.) (*Lancet*, 1885).

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Books.—"Nat. Hist. of Azores"; "Monog. on Petrels"; "Biol. Central-Amer."

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Books.—"Comp. Embryol. of Plant Organs," 1883; "Outlines of Systematics," 1881; "Sketches of Plant-Biol.," 1889; "Organography of Plants," 1898; "Exper. Morphol. of Plants," 1908.

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Soc.—Leop. Carol. Acad.; Corresp. Anthrop. Vienna; Erfurt Roy. Acad.; Copenh. Antiq.; Finn. Antiq.

Books.—"Design and Ornament in Neolith. Pottery," 1891; "Primitive Man," 1898; "Old Thuring. Discoveries in Weimar," 1912; and numerous others on Prehist. and Archaeol. of Ger.

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Contrib.—"Isothermal layer of atmosphere and atmospheric radiation" (*Proc. Roy. Soc.*, 1909); "Our knowledge of upper atmosphere" (*Brit. Assoc. Rept.*, 1909).

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Contrib.—"Yellow Fever" (*Bull. 16, Yellow Fever Inst.*, 1907); "Trematodes" (*Bull. 71, Hyg. Lab.*, 1911); "Exper. Measles" (*J. Amer. Med. Assoc.*, 1911); "Typhus" (*Pub. Health Repts.*, 1912).

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Contrib.—Various, to *Procs. of Elec. and Sci. Soc.*

Electro-magnetic investigations; Four patents on lamps and electric motors; Arid land development.

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Contrib. on elec. discharges and spectroscopy. Disc. positive rays, etc.

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Contrib.—“Tetraphenylmethane” (*Ber. d. dent. chem. Ges.*, 1897); “Triphenylmethyl” (*ib.*, 1900—09); “Quinocarbonium Salts” (*Liebigs Ann.*, 1909—10).

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Book.—“Intro. to Crystallog.” 1911.

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M.B. (Lond.) 1900; F.R.C.S. (Edin.) 1910; L.S.A. 1900. Soc.—F.R.S.E.; Inst. Hyg.; Brit. Med. Assoc. Late Lect. on Biol., City of London Sch.; Prof. of Biol. and Physiol., City of Lond. Coll.

Contrib.—“Comp. Histol. of Urethra” (*J. Anat. Physiol.*, 1902); “Pancreas in Carcinoma” (with W. T. Hillier) (*Reps. of Cancer Research, Middlesex Hosp.*, 1904); “Contraction of Isolated (Esophagus)” (*Proc. Physiol. Soc.*, 1905); “Origin of Human Prepuce” (*Brit. Med. J.*, 1907).

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Books.—“Chem. Investig. of Gastro and Intest. Dis.” (with Vaughan Harley). Contrib.—“Metabolism on Ordinary and forced Diets in Norm. Individuals” (with Bardswell and Chapman) (*J. Physiol.*); “Lead Absorp. and Lead Poisoning” (with Goadby) (*Lancet*, 1910).

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Books.—“Dis. of Children” (jtl.), 9th edn., 1910; “Common Neuroses” (Harv. Lects.), 2nd edn., 1894. Arts.—“Liver”; “Spleen”; and “Suprarenal Capsules”; “Atlas of Path.” (New Syd. Soc.), 1879—83; “Acute and Chronic Bright's Dis.” in Keating's “Cyc. Dis. of Children”; “Influenza,” “Asthma,” in Albutt's “Syst. Med.”; Bradshaw Lect., Roy. Coll. 285

Physicians, Lond., 1885; "On Cancer," "Meningeal Hæmorrhage," "Empyema," "Diastolic Bruits at Apex of Heart," "Acute Dila. of Heart in Scarlatinal Dropsy," "Rheumatism in Childhood," "Treatm. of Acute Chorea by Massage and Nourishment," etc., in *Guy's Hosp. Repts.*, 1869—90. *Contrib.*—"Anæmia as a Cause of Heart Dis." (*Lancet*, 1880).

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Book.—"Clim. of Hawaii"; "Estab. of Facial Values"; "Beneath Hawaiian Palms and Stars"; "Within Hawaiian Reefs." *Contrib.*—"White settler in Hawaii" (*Anglo-Amer. Mag.*, 1900); "Leprosy in Hawaii" (*Med. Record*, 1900); "Cult. and educ. in the med. man" (*Med. Rev.*, 1904); "Influ. of subtle and undeterm. forces in estab., develop. and maintenance of racial characteristics" (*Milton Univ. Arch.*, 1910).

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Books.—*Repts.* on Leprosy; "Clin. Observ. at the Settlement," 1904; "Leper Fever," 1905; "Treatm. of Leprosy," 1912.

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Books.—*Trans.* "Scientific Feeding of Animals"; "Exam. of Milk and Dairy Products." *Contrib.*—Numerous to Chem. Soc., Lond., Berlin, and Paris.

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Book.—"Textb. of Chem." *Contrib.*—"Properties of solutions" (*Proc. Roy. Soc. Edin.*, 1881); "In vaporation" (*Brit. Assoc. Repts.*, 1885).

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Contrib.—"Calycanthine" (*J. Amer. Chem. Soc.*, 1905); "Isocalycanthine" (*Ib.*, 1909); "Marrahün" (*Ib.*, 1908).

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Books.—"Expenses Necessary for Sanitation in Tropics," 1910; "The Part Sanitation is Playing in Constr. of Panama Canal."

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Books.—"Lab. Course in Bact.;" "Lab. Guide to Dissection of Cat." *Contrib.*—Various.
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Books.—"Bench Work in Wood"; "Locomotive Sparks"; "Locomotive Performance"; "High Steam-Pressures in Locomotive Service"; "Superheated Steam in Locomotive Service." *Contrib.*—Numerous.

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Arts. in *J. Sci. Coll. Imper. Univ. Tokyo, 1890—1912.*

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Books.—"Elements of Surg. Diag.," new edn., 1903; "Evolution of Surg.;" "Dis. of Blood Vessels" (Lettsom Lects.), 1902; Ed. "Internat. Text-bk. of Surg.," 2nd edn., 1902. *Arts.*—"Dis. of Testis," "Popliteal Aneurysm," in Heath's "Dict. Surg.;" "Injuries and Dis. of Blood Vessels," "Surg. of Chest," in Treves' "Syst. Surg.;" "Dis. of Blood Vessels," and "Dis. of Chest," in Treves' "Man. of Surg." *Contrib.*—"Amput. of Breast" (*Lancet*, 1892); "Operative Treatment of Varicose Veins" (*ib.*, 1899).

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Books.—"Geol., Gypsum Deposits, Struct. Materials, Water Resources of Oklahoma"; "Geol. and Water Resources of Panhandle of Texas." *Contrib.*—"Comanene Cretaceous of Kan." (*Amer. Geol.*, 1900); "Dakota Cretaceous of Kan. and Neb." (*J. Kan. Acad. Sci.*, 1902); "Okla. Metalliferous Minerals" (*Min. and Sci. Press*, 1911).

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Books.—"Illus. Dict. of Med., Biol. and Allied Sci.," 6th edn.; "Practitioners' Med. Dict.," 2nd edn.; "Student's Med. Dict.," 11th edn.; "Pocket Pronouncing Med. Lex.," 6th edn.; "Biog. Clinics," 5 vols.; etc.

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Arts. on Cotton, Silk and Wool, in Thorpe's *Dict. App. Chem.*, 1912. *Contrib.* (july) "Action of H₂O₂ on Second. and Tert. Aliphatic Amines" (*J. Chem. Soc.*, 1899); "Reactns. and constit. of Methazonic Acid and mode of form. of Isoxazoles" (*ib.*, 1900); "Alkylated Oximes and iso-Oximes" (*ib.*, 1901); "Supposed exist. of two Isomeric Triethyloxamines" (*ib.*, 1901).

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Books.—"Man. of Dis. of Nerv. Syst.," 3rd edn., 1899; "Diag. of Dis. of Brain," 1885; "Epilepsy and other Chronic Convulsive Dis.," 2nd edn., 1901; "Borderland of Epilepsy," 1907; "Diag. of Dis. of Spinal Cord," 3rd edn., 1883; "Man. and Atlas of Med. Ophthalm.," 4th edn., 1904; "Pseudo-hypertrophic Muscular Paralysis," 1879; "Syph. and Nerv. Syst." (Lettsom Lects.), 1889. *Arts.*—"Hypertrophy," "Dilatation of Heart," Reynolds' "Syst. Med.," Vol. 4; "Leucocythæmia," *ib.*, Vol. 5; "Hodgkin's Dis.," *ib.*, Vol. 5.

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Books.—"Develop. of Middle Ear"; "Auricular Manifests. of Hysteria"; "Treatise on Path. and Therap. of Ear and Respiratory Passages," 1903; "Dis. of the Labyrinth," etc. *Contrib.* on Acoumetry, Syndromes, Ocular Paralysis caused by Oto Trouble, Dry Inhalation of Med. Solutions.

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Contrib. to *Liebig's Ann., Ber. Deut. Chem. Ges.*, etc.

Artificial alizarin (with Liebermann).

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Books.—"Extension of Pascal's Hexagon," 1880; "Theory of Quaternions," 1883; "Anal. Geom. of Plane and Space after Solution," 4 vols., 1885—90. *Contrib.*—Many to *Crelle's J., Grunert's Arch., Schömilch's Zschr.*

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Contrib.—"Wis. Flowers and their Pollina-

tion" (*Bull. Wis. Nat. Hist. Soc.*, 1909); "Beeflies (Bombyliidae) in their Relations to Flowers" (*Ib.*, 1910); "Wis. Bees" (*Can. Entom.*, 1910); "A Prelim. List of Flies of Wis." (*Bull. Wis. Nat. Hist. Soc.*, 1910).

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Books.—"Elec. and its Applicns.," 16th edn., transl. in Fr., Ital., Span., Russ.; "Light and Colour," 3rd edn.; "Handbk. of Phys.," "Treatise on Elec.," 7th edn. *Contrib.* on Dispersion of Elec. Waves, Transform. of Current through Aluminium Cells, etc., to *Ann. d. Physik, Phys. Zschr., Fortschr. d. Phys.*

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Books.—"Formule for Reduct. of Observ. of Moon"; "Mars"; "10 Algol Stars"; "Variable Stars." *Contrib.* on Comets and Fixed Stars to *Astron. Nachr.*, etc.

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Books.—"Anat. of Rhabdocoela"; and on *Myzostoma, Turbellaria, Human and Animal Parasites*, etc.

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Contrib. on fat embolism, carcinoma of appendix, etc.

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Contrib.—"New Theory of Comets" (with E. D. Roe) (*Astron. Nachr.*, 1911); "Fall of Potential in Geissler Tubes" (*Wied. Ann.*, 1898).

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Books.—"Aeroplane—Past, Present and Future"; "Story of Aeroplane"; "Heroes of the Air"; "Aeroplane in War"; "A Day with the Airmen"; "Aviation," 1913.

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Books.—"Clin. Lects.," 4 vols.; "Nor. Konv. Lexicon." *Contrib.* on Method of Staining Bacteria, 1884; Diuretin, 1890; etc.

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Books.—"Plane Aerodynamics"; "Essays on Aerodynam."

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Books.—"Protophyta," 1897 Exped.; "Diatomaceae and Plankton from Arctic," 1893—96 Exped.; "Plankton of Norweg. N. Sea," 1902; "Diatoms in N. Plankton," 1905.

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Books.—"Prac. Guide to Inorg. Chem. for Bd. of Educ.,"; "Lab. Guide for Quant. Inorg. Anal.,"; "Breadmaking." *Arts.*—"Beers, Wines, Spirits, etc.," in "Harmsworth's Encyc.,"; "Brewing and Micro-organisms," in "Technics." *Contrib.* on Action of Metall. Oxides in Decomp. of Potassium Chlorate; Estim. of Sulphites; Proteids of Barley and Malt; Lager Beers; Causes of Dis. in Bread and other Foods.

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Contrib.—"Sensitive Micro-balances" (*Proc. Roy. Soc.*, 1909); "Ionisation by Impact" (*Rep. Austr. A.R.A.S.*, 1910).

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Contrib.—"Geol. of N.W. Minn." (*Minn. Geol. Surv.*, 1893—99); "Petrog. Geol. of cryst. rocks of Minn." (*ib.*, 1900); "Copper-bearing rocks of Wis." (*Wis. Geol. Surv.*, 1901); "Lead and zinc deposits of Wis." (*ib.*, 1906); "Glaciers of Prince William Sound and Kenai Penins., Alaska") *U.S. Geol. Surv.*, 1913).

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Books.—Co-Ed. "Hermann Grassmann's Math. and Phys. Works," 1894—1911; "Projective Plane Geom.," 2 vols., 1909, 1913.

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Books.—Contrib. to the Engrs. Pocket-bk. (Hütte) Co-ed. of "Soholl's Guide to Machines"; "Calc. of Steam-engines."

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Book.—"Course of Gen. Path.," 1902. *Contrib.*—"Identity of Tuberc. in Man and Animal" (*Internat. Cong. Hyg.*, 1903); "Pseudo-tuberc. in Domestic Animals and Genesis of Tuberc." (*J. Soc. Roy. Brussels*, 1880); "Exper. Study of Inoculability of Cancer" (*Bull. Acad.*

- Med. Belg.*, 1894, 1896); "Shortening of Intest. in Cirrhosis" (*J. Soc. Sci. Med. and Nat.*, 1888).
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- Contrib.*—"Ophiura brevispina" (*Mem. Nat. Acad. Sci.*, 1900); "Hist. of Oyster Products in the South to 1865" (*The South in Building the Nation*, vol. V.); "Conditions and Econ. Influence of Oyster Production in the South since 1865" (*Id.*, vol. VI.); "Metamerism of the Echinoid *Pluteus*" (*Johns Hopkins Univ. Circ.*, 1911).
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- Contrib.*—"Effects of sol. salts on insol. phosphates" (*J. Biochem.*, vol. 7); "Quant. determ. of Gliadin" (*Id.*, vol. 9); "Refractive indices of solutions of certain proteins" (*J. Biol. Chem.*, 1913); "Product. and movement of nitric nitrogen in soil" (*Centr. f. Bakter.*, 1912).
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- Books.*—"Treatise on Veg. Cytol.," 1907; "Life of J. C. Mutis," 1911; Ed. "Arizaga's Bot. Travels, 1785," 1913. *Contrib.* on bilobites, meteorites, and Span. and Portug. flora since 1883.
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- Contrib.*—"Use of Tuberculin in Relation to Calf Vaccination" (*Med. Off. Rept.*, L.G.B. 1902—3); "Use of Chloroform in Prep. of Vaccine" (*Proc. Roy. Soc.*, 1903); "Action of Radium on Micro-org." (*Id.*, 1904); "Some Expts. on Immunity against Vaccinia in Animals" (*J. of Hyg.*, 1907).
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- Book.*—"System. Surv. of Org. Colour. Matters," 1903. *Contrib.*—40 on org. and colour chem. during 28 years to *Trans. Chem. Soc.*, *J.S.C.I.*, *Ber. chem. Ges.*, *J. Soc. Dyers and Col.*, *Z. Farb. Text. Chem.*, *Rev. Gen. Mat. Col.*
- Disc.* a number of new artific. dyestuffs, of thiazol, stilbene and sulphide classes; new dyeing process; identif. and anal. of dyestuffs in sub. and on fibre.
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Book.—"Monograph of Coccidae of Ceylon."
Contrib.—Numerous to *Trans. Entom. Soc.* and others.

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Books.—"A Man. of Bot.," 3rd edn.; "Intro. to Veg. Physiol.," 3rd edn.; "Hist. of Bot., 1860—1900" (Continuation of Sachs' "Hist. of Bot."); "Soluble Ferments and Fermentation," 2nd edn. 1901, and in *Ger.* 1901. *Contrib.*—Numerous in *Phil. Trans.*, *Proc. Roy. Soc.*, *J. Physiol.*, *Annals Bot.*, etc., since 1883.

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B. 1862, B.S. 1885, A.M. 1889 (Ind.). *Late Instr.*, 1885, Assist. Prof., 1886, Assoc. Prof., 1889, Prof. of Pure Math., 1891—93. Indiana Univ.

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Books.—"Exam. for Life Insur.," "Med. Dia." *Arts.* in Osler's "Mod. Med.,"; Forchheimer's Therap., etc. *Contrib.*—Numerous, on Control of Pernicious Vomiting; Micros. Widal Test; Unilateral Pleural Effusions; Chronic Congen. Asthenia; Thoracic Aneurysm; Gastric Neuroses.

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Books.—"Exper. Pharmacol.," Ed. Amer. Edn. of "Kirke's Textb. of Physiol." *Contrib.*—"Physiol. of King Salmon" (*Bull. U.S. Bur. Fish.*).

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Books on Diff. and Integ. Calc., Hydrostatics, Dynamics, Aviation; etc.

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Books.—"Text-bk. of Mat. Medica"; "Micros. Exam. of Foods and Drugs"; "Anat. Atlas of Veg. Powders" (with E. Collin).

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Book.—"Monog. of N. and Centr. Amer. Varieties of Senecio," 1901. *Contrib.* on new, or little-known plants from Mexico (*Proc. Amer. Acad.*, 1897, 1900, 1903); "Diag. and synonymy of Mex. and Centr. Amer. Spermatophytes" (*ib.*, 1904); and to *Field Mus. Bot. Ser.*, 1907, 1912, etc.

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B. 1866, N.E. Erie Co., Pa. Ph.B. 1889, M.D. 1892 (Penna.); Sc.D. (Pittsburgh) 1911. Soc.—Acad. Nat. Sci. Phila.; Coll. Physicians, Phila.; Amer. Phil. Phila.

Contrib.—"Placentation in domestic oat" (*Proc. Acad. Nat. Sci. Phila.*); on biol., and descrip. of new devices for lab. and mus. use.

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Books.—Transl. Guyau's "Educ. and Hered.," Fouillée's "Educ. from National Point of View," Duprat's "Morality," Poincaré's "Sci. and Hypothesis," Dastre's "Life and Death."

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Books.—"British Barrows," etc.

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Books.—"Geol. of Conn.," 1906; "Bibliog. of Geol. of Conn.," 1907; "Phys. and Comm. Geog." (jty.), 1910. *Contrib.* relating chiefly to Connecticut.

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Books.—"Great Rift Valley"; "Dead Heart of Austral."; "Geog.—Struct. and Phys."; "Cat. Fossil Bryozoa in Brit. Mus." 3 vols.; "Geog. of Vict." *Contrib.*—Over 100 Memoirs in various Geol., Geog., and Min. Serials.

Explors. in Brit. E. Africa and Spitzbergen. *Contrib.* to Geol. of Austral., Africa, W. Indies, and Brit. Isles.

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Publ. various books on Astron., Physiog., Phys., Exper. Sci., and Phys. Geog. *Inv.* Celestosphere, Standard Time Dial, Sundial Globe, etc.

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Contrib. on Genetics and Cytol.

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Contrib. to Inst. C.E.I., Inst. C.E.I., Inst. Mech. E., Inst. Nav. Architects.

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Contrib. on Elec. and Heat in *Phil. Trans.*, *Phil. Mag.*,; *Rept. Brit. Assoc.*, *Nature*, etc.

GRIGG, JOHN, Direc., Observ., Thames, N.Z. B. 1838, London. *Educ.* London. Commem. Meds., Astron. Soc. Pacific.

Contrib.—Monthly Astron. Notes to Otago *Daily Times*.

Disc. new comets, April 16, 1903; April 9, 1907.

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B. 1871, Cherbourg. *Educ.* Lyc. Cherbourg; Norm. Sch. Cluny; Fac. Sci. Lyons. D.Sc. (Lyons). *Soc.*—Roy. Sci. Upsala; Nat. Sci. and Math. Cherbourg; etc.

Contrib. to *Comptes Rendus*, *Ann. de Chim. et de Phys.*, *Bull. Soc. Chim. Fr.*, etc.

Mg-org. comp.

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B. 1860, Crépy-en-Valois. D.Sc. 1893; M.D. 1903; Pharm. 1st class, 1887. *Soc.*—Acad. Med. Paris; Fr. Biol.; Pharm. Paris.

Books.—"Chem., Microsc., and Parasitol. Diagn.," 1906, 3 edns.; "Diagn. of Bacteria by their Biochem. Functions," 1903. *Contrib.* on B. orthobutylicus, 1893; Mech. of denitrification, 1909; Cause of Camidge's reaction, 1909; Chromogen of urobilin, 1912; B. tartricus in tartrate ferment; Acetylmethylcarbinol in ferment.

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Contrib.—Repts. and monographs on sci. agric.

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Books.—"Work Division," 1889; "Hist. of Zool. in Austria from 1850 to 1900"; "Tendencies of Morphol. and Physiol.," 1901; "Textb. of Zool.," with Claus, 2nd edn. 1910. *Contrib.* on Anat. and Embryol. of Inverteb.

to Sitz-ber. Akad. Wien, Arbeit. Zool. Inst. Wien, Verh. Zool. bot. Ges., since 1875.

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Contrib. on dermat., syph. and other vener. dis.

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Books.—"Element. Bot."; "Trees and their Life Hist." *Contrib.*—Various to *Phil. Trans.*, *Trans.* and *J. Linn. Soc.*, *Annals Bot.*

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Books.—"Math. Problems"; "Polarisation Prisms"; "Ions and Electrons"; "Ether and Action at a Distance," etc.

Inv. Polarisation Photometer.

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Soc.—R.H. Med. Assoc. of Budapest; Ophthalm., Heidelberg. *Late* Chief Surg., St. Stephen's Hosp., Budapest.

Book.—"Handb. of Ophthalm." *Contrib.*—Numerous on Ophthalm. and Med. Education.

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Books.—Numerous on Miner. and Crystallog.

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Contrib. to *Pogg. Ann.*, *Wied. Ann.*, *Ann. d. Phys.*, *Elektrotech. Zschr.*

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B. 1840, Chesham, Bucks. *Soc.*—Brit. Astron. Assoc.

Contrib. on Variable Stars, etc., to *Astron. Register*, etc.

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Books.—Ed. of "Chemical Technol.," Vols. 2 and 3; "Calvert's Dyeing and Calico Printing"; "Miller's Chem.," Vols. 2 and 3; Fresenius' Quant. Anal., vol. 2. *Contrib.*—Numerous to *Proc. Roy. Soc.*, *J. Chem. Soc.*, *Ber. Chem. Ges.*; *Ed. J. Chem. Soc.*, 1884—99.

Disc. α - and β -naphthaquinone; carbon tetrabromide (with Bolas); Gardenin, picrorocellin, conimene, icacin, etc. (with J. Stenhouse). *Inv.* indiarubber corks and glass Liebig's condenser.

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Contrib.—Over 200.

Disc. of Specific Agglutination.

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Book.—"Essentials of Morbid Histol.," 1912. *Contrib.*—"Serum Diagnosis" (*Lancet*, 1896); "Motor Cortex in Apes" (with C. S. Sherrington) (*Proc. Roy. Soc.*, 1901); "Exper. Treatment of Cancer" (with H. G. Grünbaum) (*Lancet*, 1911).

Serum diag. of enteric fever.

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Books.—"Buddhist Art in India," 1901, Eng. trans., 1901; "Mythol. of Buddhism in Tibet and Mongolia," 1900; "Old Buddh. Sites in Chinese Turkestan," 1912. *Contrib.*—"Archaeol. Works in Idyktushari" (*Abh. Bayer. Akad.*, 1905); and numerous others on Tibet, etc.

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Books.—"Pepsins," 1875; "Physiol. of Ciliary Motion," 1883. *Arts.* on Voice and Speech in "Hermann's Handbk. d. Physiol.," 1879. *Contrib.*—Mechanism of Digestion, etc., to *Pflüger's Arch.*, since 1878.

Colorimeter; Pepsin estimation; Mouth barometer; Haemometer.

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Books.—"Alterations in Topog. of Wiener Walde and Wiener Becken"; "Karst Hydrog., Studies in W. Bosnia"; "Austria-Hungary"; "Historical Atlas of Austrian Alps," etc.

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Books.—"Sacrificial Stones of Ger."; "Outlines of Petrol. and Agric."; "Arsenic-containing Soil round Reichenstein"; "Characteristic Weathered Soil of Elstergebirg"; "Marsh Formn. on N. Sea Coast of Ger."; etc.

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Books.—"Icelandic Agric.," etc.

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Books.—"Med. Zool.," 1858; "Cat. of Reptiles and Fishes in Brit. Mus.," 11 vols.; "Reptiles of Brit. India"; "Fishes of Zanzibar"; "Study of Fishes"; "Fishes of the South Sea," 3 vols.; Reports on Shore, Deep-sea and Pelagic Fishes of the *Challenger*. *Contrib.* to Anat. of Hatteria and Ceratodus in *Phil. Trans.*, and numerous papers in *Proc.* of Zool. and Linn. Soc., *Annals and Mag. Nat. Hist.*, *Encyc. Brit.*, 9th and 10th edns.; *Avicultural Mag.*, etc.

Fdr. and 1st Ed. of *Zool. Record*.

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Book.—"Bacteriol. and Microscopy," 6th edn., 1906. *Contrib.* to Just's *Bot. Jahrb.*, Virchow; Eulenburg's *Real-Encyc.*, etc. Ed. *Hyg. Rundschau Jahrbes.*; *Mit. Kgl. Prüf. Anst. f. Wasserversorg.*, etc.

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Art.—"Vet. Remedica," in *Real-Encyc. of Pharm.*, etc.

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Books.—"Handb. of Geophys.," 2 vols., 1897—99; "Hist. of Geog.," 1904; "Comp. Knowledge of Moon and Earth," 1911.

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Contrib.—"Integration of a Differential Equation" (*Progr. d. Drit. Realsch., Berlin*, 1893); "Rational Tetrahedra with Congruent Sides," etc., to *Berlin Math. Ges.*

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Books.—"Loango Exped.," 1879; "In the High Alps," 1886, 3rd edn. 1892; "Travels in Andes of Chile and Argentina," 1888; "Emperor William II.'s Travels in Norway," 2nd edn.; "Mont Blanc," 1894; "Astron.-Geog. Calc. in Travelling," 1902; "Experiences in Franco-German War," 1907. *Contrib.*—"Travels through Arabian Desert" (*Petermann's Mit.*, 1877); "Memorial Lecture of Gustav Nachtigall" (*Verh. Ges. Erdk. Berlin*, 1885); etc.

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Contrib. to Acc. d. Sci. d. Turin. Lincei, and Nuovo Cimento, since 1880.

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Books.—"Diagnostic" (with Grimbert), 3 edns.; "Parasitol.," 1910; "Parasitic Inoculators of Dis.," 1911. *Contrib. to Arch. d. Parasit., Bull. Soc. Zool. Fr., Bull. Sci. Pharmacol., etc., especially on pathog. rôle of intest. worms.*

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Books.—"Nitrous Oxide," 1887; "Orthodontia," 1889, 1893, 1898, 1905; 3 Chaps. in "Amer. Syst. Dentistry," 1886; 3 Chaps. in "Amer. Text-bk. Operat. Dentistry," 1900, 1903, 1907, 1911. *Contrib.*—"Rept. on Dental

Nomenclature" (*Trans. Inst. Pedag.*, 1904); "Anomalies of Teeth and Maxillae" (*Dental Cosmos*, 1892); "Nat. Sci. as a Post-Graduate Study" (*Reformed Q. Rev.*, 1887).

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Books.—"Thermometers of Precision," 1889; "X-rays," 1896; "Nickel and its Alloys," 1898; "Metrical Convention," 1902; "Progress of Metric System," 1907; "Intro. to Mechs.," 1909. *Contrib.*—"Thermom. Studies" (*Bur. Internat. Weights and Measures*, 1886); "Heat Coefficients" (*ib.*, 1889); "Determin. of Volume of Kilog. of Water" (*ib.*, 1910).

Disc. non-expandible alloy, Invar; Inv. total compensating balance for chronometers; Disc. platinite, an alloy which can be melted in glass.

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Book.—"Notes on Path." *Arts.*—"Yellow Fever" in Keating's "Dis. of Children," and Wood's "Handbk. of Med. Sci." *Contrib.*—"Exper. Yellow Fever" (*Rev. Trop. Med.*); "Discov. of Filaria in the U.S." (*Phila. Med. J.*); "Uncinaria in Cuba" (*Rev. Trop. Med.*); "Infantile Yellow Fever" (*ib.*); "Trop. Dis." (*ib.*) Founder and Ed. *Revista de Med. Trop.*

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Books.—"Theory of Linear Diff. Eqns." with Wallenberg, 1911. *Arts. on Diff. Eqns. and Transformn. Groups in Pascal's Report. of Higher Maths., 2nd edn. Contrib.*—"Linear Eqns. of Finite Diff." (*Ann. Ec. Norm.*, 1906);

"Theory of Infinite Integ. Total Diff. Eqns." (*J. f. reine u. Angew. Math.*, vol. 122); "Theory of Diff. Eqns. of Fundamental Soln." (*ib.*, vol. 115).

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Books.—"Anal. of Urine," 4th edn. 1913; "Cholin and Neurin," 1896. *Contrib.*—30, chiefly to *Zeitschr. f. physiol. Chem.*

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Book.—"Evol., Racial and Habitual," 1905. *Contrib.*—"Diversity of evol. under one set of external conditions" (*Linn. Soc. J. Zool.*, 1872); "Divergent evol. through cumulative segregation" (*ib.*, 1887); "Intensive segregation" (*ib.*, 1889); "Isolation and selection: the need of clear definitions" (*Amer. Nat.*, 1908).

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Contrib.—"Effect of Mercurial Injections in Treatment of Locomotor Ataxia" (*Brit. Med. J.*, 1910); "Exophthalmic Goitre—Path. and Treatment" (*Lancet*, 1908); "Pernicious Anaemia and Allied Conditions" (*Brit. Med. J.*, 1907); "Acute Nephritis and Treatment" (*ib.*, 1906).

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Books.—"Gen. Theory of Monochrom. Aberration and its conseq. in Ophthalm." 1900; "Real Optical Images," 1906; "Opt. Images in heterog. Media, and Dioptric of Human Cryst. Lens," 1908; "Introd. to Methods of Dioptric of Human Eye," 1911. *Arts.* in "Encyc. Nordisk Familjebok." *Contrib.*—"Object. diff. diagn. and photog. image of paralysis of eye muscles" (*Trans. Swed. Acad.*, 1892); "Colours of Macula centr. retinae" (*Arch. f. Ophthalm.*, 1905); "Fact and Fiction in Theory of Optical Image" (*Arch. f. Optik*, 1907); "Reflexless Ophthalm." (*Arch. f. Augenheilk.*, 1911).

Inv. Instruments for ophthalmology without reflexes, etc.

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Contrib. on Magnetism, Heat and Light in *Abhandl. d. Phys. Tech. Reichsanst., Ann. d. Phys., Elektrotech. Zschr., Zschr. f. Instrumentk.*, etc.

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Books.—"Technique of Spec. Therap." 1906, and in Fr., Span., Ital.; "Textb. of Workman's Insurance Med.," jtly., 1912. *Arts.*—"Circuln. and Respir. Organs" in Eulenburg-Samuel's Textb. of Gen. Therap.

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Public. on Geol. and Biol. of Trinidad.

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Book.—"Theory and Construc. of Steam Engines," 1914. *Contrib.* to *Zsch. Ver. Deut. Ing.*

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Books.—"Man. of Phys. Measurements," 3rd edn., 1912; "Prim. and Second. Cells," 1903; "Coll. Phys.," 1911. *Contrib.*—"Silver Coulometer" (*Bull. Bur. of Standards*, 1905); "New determ. of E.M.F. of Weston and Clark Standard Cells by absolute Electrodynamicometer" (*ib.*, 1906); "Elastic properties of Pt.-Ir. wires" (*Phys. Rev.*, 1910).

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Book.—"Blood Vessel Surg., and its Applications," 1911. *Contrib.*—"Studies in Resuscitation" (*J. Exper. Med.*, 1906); "Physiol. Aspects of Blood Vessel Surg." (*J. Amer. Med. Assoc.*, 1908); "Anaesthetic Action of $MgSO_4$ " (*Amer. J. Physiol.*, 1910); "Graft Hybrids (from Engrafted Ovaries)" (*Ann. Rept. Amer. Breeders' Assoc.*, 1911).

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Books.—"Forest Management," 1903, 1911. *Art.*—"Wood Surveying" in Lorey's "Handb. d. Forstwiss.," 1912. *Contrib.*—Numerous.

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Books.—"Hist. of Ger. Math. Soc.," "Theory of Anal. Functions," "Activity of Instruc. Comm. of Ger. Soc. of Nat. and Phys.," etc. *Contrib.*—Numerous.

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Book.—Ed. of "Wurtz-Friedel's Dic. of Chem.," Transl. Hantzsch's "Stereochem." *Contrib.*—"Molecular Dissymmetry" (*Conf. Soc. Chim. Paris*, 1891); "New Researches on Atomic Weight of Nitrogen" (*Bull. Soc. Chim. Paris*, 1905); "Indust. Fixation of Nitrogen" (*Ib.*, 1909).

Stereochemistry of active compounds; Revision of atomic weights specially by phys.-chem. methods; Elec.-chem. process for production of synthetic nitric acid.

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Book.—"Animal Micrology," 1906. *Contrib.* on cytol., hered. and helminthol.

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Books.—"Theory of Navigation"; "New Navig. Tables." *Contrib.*—"Applic. of centesimal division of circle to navig." (*Ann. du Bur. des Longitudes*).

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Contrib. on Anat. of Plants.

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Books.—"Location and Exam. of Magnetic Ore Deposits by Magnetometric Meas.," "Investig. of Electro-thermic Processes for Iron Ores, and Steel in Europe" (Rept. of Special Comm.); "Rept. on Expts. made at Sault Ste. Marie, in the Smelting of Canadian Iron Ores by Electro-thermic Process"; "Investig. of Elec. Shaft Furnace, Domnarfvet, Sweden"; "Recent Adv. in Construc. of Elec. Furnaces for Production of Pig Iron, Steel and Zinc." *Contrib.* on Hydriodic Acid, Gypsum tablets, Hydrobromic Acid and Tetrachloride of Tin as blow-pipe reagents; Peat bogs as fuel.

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Books on Jurassic Brachiopoda of Ger., S. Tyrol, and Switz.; Tertiary Fossils; Geol. of Schleswig; Volcanoes; Uplift and Folding in N. Sea, Naples, Sicily, etc. *Contrib.* on Geol. of Canada to *Petermann's Mit.*, etc.

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- Books.*—"Treatise of Elem. Geom."; "Lects. on Motions of Waves"; "Lects. on Calculus of Variations" (1st vol.). *Contrib.*—"Properties of Whole Functions" (*J. de Math.*, 1893); "Surfaces of Neg. Curvature and their Geodesic Lines" (*ib.*, 1897); "Theorem of Whole Series" (*Acta Math.*, 1898); etc.
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- Books.*—"Introduct. to Embryol."; "Evolution in Art"; "Study of Man"; "Head Hunters, Black, White and Brown"; "Magic and Fetichism"; "Races of Man"; "Hist. of Anthropol."; "Wanderings of Peoples"; "Repts. of the Camb. Anthropol. Exped. to Torres Straits." *Contrib.*—Numerous on Zool. and Anthropol. in various J.
- HADFIELD, Sir ROBERT A.**, Kt., F.R.S., J.P.; Chairman and Managing Direc. of Hadfield's Steel Foundry Co., Ltd., Hecla and E. Hecla Works, Sheffield, Eng.; Chairman of Sheffield District Ry.; Direc. of Sheffield Gas Co., etc.
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- Book.*—"Shorter Working Day." *Contrib.* about 50 on alloys of iron with other elements, etc.
- Inv.* manganese steel, and other special steels; systematic study of alloys.
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- Books.*—"Monograph of Radiolaria," 4 vols., 1862—88; "Gen. Morphol.," 1866; "Repts. on Challenger Exped."; "Travel Pictures," 1905; "Systematic Phylogeny"; "Evolution of Man"; "Last Link"; "Riddle of the Universe"; and numerous others, all illustrated by himself.
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- Books.*—"Theory and Pract. of Cells and Fertilisation," 1899; "Song of Birds," 1900; "Deep-sea Radiolaria," 1908—09; "Hered. and Transmiss.," 1911, 2nd edn., 1912. *Contrib.*—"Colours of Bird Feathers" (*Arch. mikr. Anat.*, 1890); "Embryo Developm. of Cyclops" (*ib.*, 1897); "Chromosomes as Transmiss. Agents" (*Erg. Zool.*, 1907).
- HAENTZSCHEL, E. E. R.**, Prof. of Higher Math. and Mech., Tech. Sch., Berlin.
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- HAGEN, INGEBRIGT SEVERIN**, Fell. Norweg. Acad. Sci.; Bot., Trondhjem, Norway.
- Contrib.* on bot.
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Books.—"Synopsis of Higher Maths.," 3 vols.; "Atlas of Variable Stars," 6 series; "Index Operum L. Euleri"; and several subjects in "Cath. Encyc." *Contrib.*—"New Mech. Proof of Earth's Rotation" (*Publ. d. Spec. Vatic.* 1911), etc.

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Books.—"Domest. Animals," 1896; "World Econ.," 1900; "Age of Culture," 1905; "Evol. of Work," 1908; "Evol. of Ploughing," 1909.

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Mem. Imper. Russ. Inst. for Exper. Med., St. Petersburg, 1892.

Books.—"Zymases" (with Buchner); "Infant Mortality in Bavaria" (with A. Groth);

Enzymes in "Encyc. Med.,"; Immunity in Rolle-Wassermann's Handbk.; Cholera in Wolff Eisner's Handbk.; Protein and Endo-

tryptase in Lafar's Handbk. *Contrib.*—"Eck's fistula" (*Arch. f. Exp. Pharmakol.*); "Plasmin" (*Munich Med. Woch.*); "Leucocytes and the

Bactericidal Properties of Blood" (*Ib.*); "Cholera" (*Ib.*).

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Contrib.—Numerous on Chem. of Wine.

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Book.—"The Plant Cell." *Contrib.*—"Mitosis in Higher Plants" (*Knowledge*, 1909);

"Photomicrography as an Aid to Study of Cell-problems" (*Ib.*, 1910); "Mechanism of Nuclear Division" (*Ib.*, 1908); "Action of Alcohol upon Human Syst." (*Practitioner*, 1909).

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Coll., Hants., 1880—85.

Books.—"Coloured Anal. Tables," 1889; "Manual of Inorg. Chem." (with late Dupré),

1901. *Contrib.*—"Estim. of Minute Quantities of Carbon" (with Dupré) (*J. Chem. Soc.*, 1879, 1881); "Deliquescence" (*Proc. Chem. Soc.*, 1896, 1897); "Hydrochloric Acid in Gastric

Contents in Cancer" (with Copeman) (*Proc. Roy. Soc.*, 1908); "Ferro-silicon and Poisonous

Gases evolved therefrom" (38th Ann. Repl., L.G.B., 1908—09).

HALAVATS, GYULA v., Hung. Oberbergrat; Chief Geol., Roy. Hung. Geol. Survey, Budapest.

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B. 1853, Zsena, Hungary. *Soc.*—Numerous. *Books.*—"Water Question in Budapest,"

1912; "Environments of Dognacska-Gattaja, with geol. map," 1912; and numerous previously.

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Univ., 1902—04.

Books.—"Essays in Phil. Criticism," with Seth; "Life of Adam Smith"; Transl. Schopenhauer's "World as Will and Idea,"

3 vols., with Kemp; "Educ. and Empire," 1902; "Pathway to Reality," 1903.

HALE, GEORGE ELLERY, F.M.R.S.; Fell. and For. Sec., Nat. Acad. Sci.; Direc. of Mount

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Astrophys. J. (Chicago).

B. 1868, Chicago. S.B. (Mass. Inst. Tech.) 1890; Hon. Sc.D. (Pittsb.) 1897, (Yale) 1905, (Manc.) 1907, (Oxon.) 1909, (Cantab.) 1911;

LL.D. (Beloit) 1904, (Cal.) 1912; Hon. Ph.D. (Berlin) 1910. *Soc.*—Amer. Astron. and

Astrophys.; Amer. Phil.; Amer. Acad.; Amer. Phys.; Hon. Fell. Lond. Phys.; Hon. Mem. Roy. Inst. G.B.; For. Mem. Acad. Lincei, Roy.

Upsala, Ital. Spectros.; Corresp. Inst. Fr. and Acad. Vienna; Assoc. R.A.S. *Late* Direc. Ken-

wood Observ., 1890—96; Assoc. Prof. Astrophys., Univ. Chicago, 1892—97; Prof., 1897—

1905; Direc., 1895—1905, Yerkes Observ.

Book.—"Study of Stellar Evol." *Contrib.* to *Astrophys. J.*, *Publ. Yerkes Observ.*, etc.

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A.M. (Miami) 1897; A.M. 1899, Ph.D. 1902

(Harv.). *Soc.*—F.A.A.; Ger. Chem.; Amer. Chem.

Books.—"Lab. Outline of Gen. Chem." (july, 1907); "Calculins of Gen. Chem." 1909. *Contrib.*—"Relet. of Colour to Chem. Constit." (*Pop. Sci. Monthly*, 1908); "Dehydromucic acid and certain of its derivs." (*Amer. Chem. J.*, 1901); "Constit. of dehydroacetic acid" (*J. Amer. Chem. Soc.*, 1911); "Formn. of methathiazines from Thiurea" (*Ib.*, 1912); etc.

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B. 1864. M.A. (Oxon.). *Late* Direc. of Rothamsted Exper. Sta. (Lawes Agric. Trust). *Book.*—"Rothamsted Expts.," 1905; "Soil," 2nd edn., 1908; "Fertilisers and Manures," 1909; "Agric. and Soils of Kent, Surrey and Sussex," 1911; "Feeding of Crops and Stock," 1911; "A Pilgrimage of British Farming," 1913.

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Books.—"Algebra," 1896; "Trigonom.," 1908.

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HALL, CHRISTOPHER WEBBER, Assist. Geol., U.S. Geol. Surv.; Prof. of Geol. and Mineral., Minnesota Univ.; Ed., *Trans. Minn. Acad. Sci.*

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Books.—"Bact. Plant Dis.," 1902; "Cacao-Culture" (in press). *Contrib.*—"B. subtilis and B. vulgaris as Plant Parasites" (*Centralbl. f. Bakt.*, 1902); "Role of shade-trees in Cacao Culture" (*Bull. Dept. Agric. Suriname*, No. 7, 1906); "Witch-broom dis. in cacao" (july.) (*Ib.*, 16, 1909).

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47, Wimpole Street, London, W. B. 1847, Tottenham, London. *Educ.* Bruce Castle Sch.; St. Bart.'s Hosp. London. M.D. 1872, F.R.C.P. 1881 (London). *Soc.*—Roy. Med.; Med. Lond. (P.-P.); Huguenot. *Late* Cons. Phys., Westminster Hosp.; Censor, R.C.P., 1908—11; Pres., Life Assur. Med. Off. Assoc.

Books.—"Synop. of Dis. of Larynx, Lungs and Heart," 1878; "Dis. of Nose and Throat," 2nd edn., 1901; "Med. Exam. for Life Assur.," 3rd edn., 1903. *Arts.*—"Dis. of Mediastinum," in *Encyc. Med.*, 1901; "Dis. of Pleura and Mediastinum," in "Alcchin's Man. of Med.," 1902. *Contrib.*—"Causes and treatment of Asthma" (*Westminster Hosp. Repts.*, 1887—8); "Haemorrhages of Bright's Dis." (*Ib.*, 1909); "Blood-letting" (*Ib.*, 1911).

HALL, G(RANVILLE) STANLEY, Pres. and Prof. of Psychol., Clark Univ., Worcester, Mass., U.S.A., since 1888; Ed. *Amer. J. Psychol.*, since 1887, *Pedagog. Sem.*, *Amer. J. Religious Psychol.*, since 1904.

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Clinical Study of Dreams, etc.

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Book.—"A Yosemite Flora" with C. C. Hall, 1912. *Contrib.*—"Bot. Survey of San Jacinto Mountain" (*Univ. Cal. Publ. Bot.*, 1902); "Compositae of S. Cal." (*Ib.*, 1907).

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Books.—"Purin Bodies," 1902; "Methods of Morbid Histol.," 1903; Ed., "Metabolism and Pract. Med.," 1906. *Contrib.*—"On Purin Bodies, Typhoid Carriers, Morbid Anat.

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Books.—“Insectiv. Birds of Vict.”; “Key to Birds of Austral.”; “Useful Birds of S. Austral.”; “Nature Studies in A.” (jt. author); “Glimpses of A. Bird Life.” *Contrib.*—“Distrib. of Austral. Birds” (*Roy. Soc. J. Tas.*, 1911); “Birds of Kerguelen” (*Ibis*, 1898); “Educ. Value of Mus. Collections” (*Austral. Assoc. Adv. Sci. J.*, 1910). *Arts. to Emu*, Melbourne.

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Contrib.—“Develop. of Mesonephros and Muellerian Ducts in Amphibia” (*Bull. Mus. Comp. Zool., Harv. Coll.*, 1904).

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Book.—“Cat., Sci. and Tech. Periodicals in Melbourne Libraries, 1895,” 2nd edn., 1911. *Contrib.*—“Geol. of Castlemaine” (*Proc. Roy. Soc. Vict.*, 1894); “Graptolites of Vict.” (*Geol. Mag.*, 1899); “Pres. Address, Sect. C.” (*Austral. Assoc. Adv. Sci.*, 1899).

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Books, numerous on physiol., sexual hygiene, etc.

Nutrition, dietetics, etc.

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Books.—“X-Rays in S. Africa” (*I.Y. Hosp. Repts.*); “X-Ray Dermatitis” (X-Rays in Diagnosis). *Contrib.*—“Bullets and their Billets” (*Arch. Röntgen Ray*, 1902); “X-Ray Dermatitis” (*Brit. Med. J.*, 1905, 1909, and *Proc. Roy. Med. Soc.*, 1909); “X-Rays and Radium in Treatment of Cancer” (*Ib.*, 1911). *Ed. Archives of Röntgen Ray.*

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Books.—“Thousand Miles on an Elephant”; “Developm. of our Eastern Markets”; “Indian Taxation, Ancient and Mod.”; “India and her Neighbours”; “Indian Factory Legislation.”

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Books.—“Text-bk. Chem. Physiol. and Path.,” 1891; “Essentials of Chem. Physiol.,” 1893, 7th edn., 1909; “Handb. Physiol.,” 1896, 11th edn., 1913; “Biochem. of Muscle and Nerve,” 1904; “Chem. Side of Nerv. Activity” (Croonian Lect., R.C.P. Lond., 1903). *Arts. in Allbutt's “System of Med.”*, *Watt's “Dic. Chem.”*, etc. *Contrib. on Physiol. and Chem. to Lancet, Brit. Med. J., J. of Physiol., Q. J. Exper. Physiol., Q. J. Micros. Sci., Nature, Proc. Physiol. Soc., Proc. Roy. Soc., Phil. Trans., etc.*

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Books.—“Treatise on Gen. Path.,” 6th edn.; “Dermat.,” “Syph.” *Contrib.*—730. *Disc.* 26 dis. and 65 new mortal varieties.

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Books.—"Light Elec.," 1913; Ed. "F. Kohlrausch's Collected Works," 1911—1912. *Contrib. to Wied. Ann., Ann. d. Phys., Phys. Zeitschr., Ber. d. deut. phys. Ges.*, etc.

Disc. Hallwachs Light-Elec. Effect, 1888. *Inv. Diff. Spectrometer and Precision Quadrant Electrom.*

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Contrib.—"Astron. Observs.," in *Annals of Observ. of Strassburg, Edinburgh, and Cape*; "Spectros. Observ. of Rotation of Sun" (*Astron. Nachr. and Proc. and Trans. Roy. Soc. Edin.*, 1906—07); "System. Motions of Stars" (*Monthly Notices, Roy. Astron. Soc.*, 1909—10); *Miscell. Math. and Astron. Papers (Astron. Nachr. and Sc. Edin.*, 1890—1907).

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Books.—"Metrical Geom.: Treatise on Mensuration," 5th edn., 1910; "Elem. of Geom.," 6th edn., 1903; "Synthetic Geom.," 3rd edn., 1899; "Synthetic Project. Geom.," 4th edn., 1906; "Rational Geom.," 2nd edn., 1907, in Fr., 1911; Math. Ed. of "Century Dict.," new edn. in 12 vols.; Transl. of Saccheri, Lobachevski, Bolyai, Poincaré.

Halsted's Formula for all elem. solids, including sphere.

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Contrib.—"Polariz. of Röntgen Rays" (*Phys. Rev.*, 1910); "A Null Method for Measuring Relative Intensities of Röntgen Rays" (*Proc. Franklin Inst.*, 1911).

New method of determ. depth of complete scattering of cathode rays in metals.

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Book.—"Sci. Expts. on Sarcé Mountains in Sweden and Lapland." *Contrib.*—Numerous, since 1884, on Arctic Hydrography, Swed. Miner. Inv. of various hydrograph., geog., and metrol. meteorol. instruments.

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Books.—"Osmotic Pressure in Med.," 3 vols., 1902—04. *Art. on Isotones in "Dic. de Physiol."* *Contrib. to Proc. Dutch Roy. Soc., du Bois-Reymond's Archiv. f. Physiol., Biochem. Zeitschr.*

Introduced Phys. Chem. in Med. by researches on blood corpus., 1883.

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Book.—"Elem. Mech.," 1912.

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Book.—"Man. of Hyg.," 1902. *Arts.*—"Anthrax" in "Dangerous Trades," 1902; "Diphtheria," jtly., in "Allbutt's Syst. Med." *Contrib.*—"Typhoid Fever," jtly. (*Proc. Roy.*

Soc. Med., 1908); "Bact. problems considered from an epidemiol. point of view" (*Ib.*, 1909); "Typhoid carriers and contact infect." (*Ib.*, 1911).

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Contrib.—"Statocysts of Cephalopods" (*Zool. Jahrb.*, 1903); etc.

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Contrib. to Archiv. f. mikros. Anat., Anat. Anzeig., Anat. Hefte, Archiv. f. Anat., Zool. Jahrb., Upsala Lak. Forhandl., on Investig. in Synovials, Adipose Tissue, Connections of Blastomeres; Develop. of Ear, Liver, Tonsil; Anat., Regression and Develop. of Thymus Gland.

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Contrib. to tech. Swed. and Continental J.

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Book.—"Physiol. Chem." and in Eng. 6 edns.

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Books.—"Bearing of Isogonic Lines in Centr. Württ.," 1886; "Zero Meridian and World Time," 1888; "Geog. Map Projections," 1889; "Represent. of Earth Ellipsoid," 1891; "Trianguln. between Rhine and Bavarian Surveys," 1892; "Hammer-Fennel Tachymeter Theodolite," 1901; "Astron. Levell. of Württ., Merid. 9° 4'," 1901; "Tables, to six places, of $\log \frac{1+x}{1-x}$," 1902; "Textb. of Trig.

for Astron. and Geod.," 3rd edn. 1907; "Second Astron. Levell. of Württ., 8° 33'," 1909; "Textb. of Elem. Pract. Geom.," 1911; "Measuring and Reckoning in Pract. Geom.," 5th edn. 1912. *Contrib.*—150 to *Zsch. f. Vermess., Zsch. f. Instrumentk., Petermann's Geog. Mitt.*, etc.

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Books.—"Radium and other Radio-active Substances"; "Navigating the Air" (jtl.); "Chronol. of Aviation" (jtl.). *Contrib.*—Numerous.

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Books.—"Guide to Zool. Collections of Raffles Mus., Singapore," 1908. *Contrib.*—"Revis. of generic nomencl. in Bowerbank's Brit. Spongiadae" (*Trans. Liverpool Biol. Soc.*, 1894); "Exped. to Mount Kina Balu, Brit. N. Borneo" (*J. Roy. Asiat. Soc., Straits Br.*, 1903); "Collect. of coins from Malacca" (*Ib.*, 1903).

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Books.—"Atlas of Met.," 1887; "Handb. of Climatol.," 3 vols., 3rd edn. 1911; "Textb. of Met.," 2nd edn. 1906; "Distrib. of Atmosph. Press. in C. and S. Europe," 1887.

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Books.—"Lect. on Metal-Working at Roy. Tech. Coll., 1894—1911"; "Collected Researches of Danish State Testing Lab.," 1909; "Mech. Technol.," Vol. 1, 1899. *Contrib.*—"English Indust. and Adv. Tech. Educ." (*Engng.*, 1903); "Exper. Technol. of Deformation of Materials" (*Amer. Machinist*, 1906 *et seq.*); "Ann. Repts. Danish States Tech. Lab." (*Ingeniören*, 1897—1911); "Prac. Teaching in Tech. Coll. Copenhagen" (Internat. Cong. Secondary Teaching, Brussels, 1910).

Inv. porous metal for accumulators, 1912.

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Contrib. on geol., anthropol., etc.

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Book.—"Treatise on Diff. and Integ. Calc.," 1909.

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Books.—"Lects. on Bact.," 3rd edn. 1910; "Useful and Harmful Bact. in Dairying," 2 edns.; "Ann. Repts. of Milk Bact. Lab., Dorpat," 1900—1912. *Arts.*—"Inner Dis.," "Infect. Dis.," "Dis. of Poultry" in *Encyc. of Russ. Agric. Contrib.*—"Import. of Bact. in Dairying" (*Riga*, 1899); "Butter in Baltio and N.W. Prov. of Russ." (*Dorpat*, 1908); "Souring of Cream by Pure Cultures" (*Baltic Week.*, 1900); "Tuberc. of Cattle and its Prev." (*Witebok*, 1904).

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Books.—"Endocarditis," 1897; "Expers. on Frequency of Tuberc.," 1904; "Path. anat. of Poliomyelitis" (with Scheel), 1903—07; "Actinomycosis in Norway" (with Gröndahl), 1911. *Contrib.*, numerous on path. anat. and forensic med.

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Books.—"Metall. of Steel," 4th edn.; revised and enlarged 6th edn. of Roberts-Austen's "Intro. to Study of Metall." *Contrib.*—Numerous to Iron and Steel Inst., Faraday Soc., Soc. Chem., Ind., Inst. Mech. Engrs., etc.

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Books.—"Alcoholic Fermentation"; "New View of Origin of Dalton's Atomic Theory" and "Chem. for Adv. Students" (with Sir H. E. Rosen); Jt. Ed. and Revis. of "Treatise on Chem.," Vols. 1 and 2; "Pract. Org. Chem." (with F. C. Garrett). *Art.*—"Fermentation" in Thorpe's "Dict. App. Chem." *Contrib.* to

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Books.—"Elec. Ry. Engrng.," 1911. *Contrib.*—"Headlight Tests," with Prof. Topping (*Amer. Inst. E.E.*); "Corona losses between wires at high voltages" (*ib.*, 1912).

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Books.—"Text-bk. of Therap.," 14th edn.; "System of Therap.," 4th edn.; "Text-bk. of Med.," 2nd edn.; "Text-bk. Diagnosis," 6th edn. *Contrib.*—Numerous.

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Books.—"Supposed Invariability of Great Axes of Planetary Orbits" (*Annals of Observ., Paris*, 1885); "Mechanics of Society."

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Book.—"Outlines of Gen. Biol." *Art.*—"Zool." ("Appleton's Year Book, 1911"). *Contrib.*—"Medusae of Woods Hole" (*Proc. Bur. Fisheries*); "Early Develop. of Penarnia" (*Arch. f. Entwicklungsmech.*); "Variation of Hydromedusae"; "Behaviour of Tubicolous Annelids"; etc.

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B. 1873, Penna. *Educ.* Univs. Stanford, Chicago; Mass. Inst. Technol.; Phys. Chem. Inst., Karlsruhe. A.B. 1900, Ph.D. (Stan.) 1907. *Soc.*—F.A.A.; Amer. Chem. *Late* Instr. in Chem., Stanford Univ.; Research Assoc. Phys. Chem., Mass. Inst. Technol.; Prof. of Chem., Univ. of Montana, 1900—12.

Contrib.—"Smelter Smoke" (*J. Amer. Chem. Soc.*, 1907); "Arsenical Poisoning of Herbiv. Animals" (*ib.*, 1908); "Excess Potential and the Marsh Test" (*ib.*, 1910); "Solubility of Salts in Solutions of other Salts" (*ib.*, 1911).
Hypoth. of intermediate ions.

HARKNESS, JAMES, F.R.S. Can.; Prof. of Maths., McGill Univ., Montreal, Can. M.A. (Cantab. and Lond.).

HARLEY, VAUGHAN, Prof. of Path. Chem., Univ. Coll., London.

25, Harley St., London; and Walton Hall, Blotchley, Eng.

Educ. Edin. Univ.; Paris, Leipzig, Vienna, Budapest, Turin, Christiania, Strassburg. M.D. (Edin.); M.R.C.P. 1890. *Soc.*—F.C.S.; Physiol.; Path.; Roy. Med. *Late* Grocer Research Scholar.

Book.—"Chem. Investig. of Gastric and Intest. Dis." *Contrib.*—"Value of Sugar and Effect of Smoking on Muscular Work" (*J.*

Physiol., 1893); "Functions of Larger Intest." (*Proc. Roy. Soc.*, 1899); "Intest. Antiseptics" (*Brit. Med. J.*, 1899); "Influence of Sour Milk on Metabolism" (*Ib.*, 1910).

HARLOW, WILLIAM PAGE, Dean of Sch. of Med., Colorado Univ., U.S.A., since 1907; Pres., Assoc. of Amer. Colleges.

B. 1867, Dixon, Ill. *Educ.* Univs. Michigan, Colorado, Harvard, Hopkins, Berlin, Vienna. M.D. (Mich.) 1899; A.B. (Col.) 1907. *Soc.*—Amer. Assoc. Adv. Sci.; Amer. Med.; Colo. Sci.; Amer. Inst. Min. Engrs. *Late Prof. Med. Diag.*, Col. Univ., 1906; P.V.-P. Col. State Med. Soc., 1908.

Contrib.—"Differential Staining of Blood, etc." (*Amer. J. Med. Sci.*, 1904); "Clin. Observ. on Blood Stains" (*J. Amer. Med. Assoc.*, 1909).

HARMER, FREDERIC WILLIAM, J.P.; Geologist.

Oakland House, Cringleford, nr. Norwich, Eng. B. 1835, Norwich. *Soc.*—F.G.S. (Murchison Medallist); Hon. Mem. Geol. Belg.; Fr. Geol.; F. R. Met. S.; Norfolk and Norwich Nat. (Pres. 1877—79).

Contrib.—"Pliocene deposits of E. of Eng." (*Q. J. Geol. Soc.*, 1898—1900); "Influence of winds upon climate during Pleistocene epoch" (*Ib.*, 1901); "Pliocene and Pleistocene deposits of E. Counties" (*Proc. Geol. Assoc.*, 1908); "Pliocene Mollusca of G.B." (*Paleont. Soc.*, 1912).

First detailed survey of glacial deposits over an extended area (jtly. with S. V. Wood), 1864—70.

HARMER, SIDNEY FREDERIC, F.R.S.; Keeper of Zool. in Brit. Museum (Nat. Hist.); Fell. King's Coll., Cambridge.

58, Albemarle Rd., Beckenham, Kent, Eng. B. 1862, Norwich. *Educ.* Univ. Coll., Lond.; King's Coll., Camb. Sc.D. (Cantab.); B.Sc. (Lond.); F.Z.S. (P.V.-P.). *Late Assist. Tutor*, King's Coll., Camb., and Supt. Univ. Mus. of Zool.

Book.—Jt. Ed. of "Cambridge Nat. Hist." *Contrib.* on Zool. to *Q. J. Micros. Sci.*, etc.

HARMS, HERMANN, Sci. Official, Roy. Acad. Sci., Berlin; Mem. Leop. Carol. Acad. Ringstr. 44-III., Friedenau, near Berlin, Ger. B. 1870, Berlin. Ph.D.

Book.—"Genera Liphonogem." (jtly.), 1900—07.

HARNACK, ERICH, Prof. of Pharmacol., Univ. Halle-Wittenberg.

Königstr. 7, Halle, Ger. B. 1852, Dorpat, Russia. *Educ.* Erlangen; Dorpat. M.D. (Dor.) 1873. *Soc.*—Ger. Chem. *Late Assist.* to Schmieberg, Strassburg, 1873—80.

Publ.—Numerous.

HARPER, EDMUND WILLIAM, Hon. F.Z.S. London; Silver Medallist.

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B. 1859, Boonville, Mo. M.D. (Va.) 1892. *Soc.*—F.C.S.; Amer. Assoc.; Amer. Chem.; Amer. Electrochem.; Ger. Chem.; Texas Acad. Sci.; Chem. Ind. Lond.

HARPER, ROBERT ALMER, Mem. Nat. Acad.; Prof. of Bot., Columbia Univ., N.Y., U.S.A.

B. 1862, Leclair, Ia. A.M. (Oberlin) 1891; Ph.D. (Bonn.) 1896. *Soc.*—F.A.A.; Amer. Bot.; Ger. Bot.; Amer. Phil.; etc. *Late*

Prof. of Bot. and Geol., Lake Forest Univ., 1891, Univ. Wisc., 1898—1912.

HARPUR, WILLIAM, City Engur. and Surveyor, Cardiff.

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B. 1852, Ashby-de-la-Zouch, Eng. *Soc.*—Mem. Inst. C.E.; Inst. Mun. and Co. Engrs. (Mem. Counc. and P.P.); Surveyors' Inst.; Roy. San. Inst.; F. R. Met. S.

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Ph.D. *Soc.*—Leop. Carol. Acad.

Action of sodium on isoprene, 1911.

HARRIS, DAVID FRASER, Prof. of Physiol. and Histol., Dalhousie Univ., Halifax, N.S., Can.; Repres. of D. Univ. on Med. Counc. of Canada.

B. 1867, Edinburgh. *Educ.* Edinburgh Colleg. Sch.; Univ. Coll., London; Univs. Edinburgh, Glasgow, Berne, Zurich, Jena. B.Sc. (Lond.) 1890; M.D. (Glas.) 1895; D.Sc. (Birm.) 1911. *Soc.*—F.R.S.E.; Scot. Micros. (P.-P.); Physiol.; Biochem. Club; N.S. Inst. Sci. *Late Lect.* on Physiol., St. Andrews Univ.; Armitstead Lect., Dundee, 1895; Lect. on Physiol., Birmingham, 1909—1911.

Books.—"Functional Inertia of Living Matter," 1908; "Nerves," 1911; "National Degeneration," Ann. Lect. in Hyg., Midland Inst., Birmingham, 1909; "Physiol. and Hyg. of Sleep," *Ib.*, 1910. *Contrib.*—"Coloured Thinking" (*J. Abnormal Psychol.*, Boston, 1908); "Post-tetanic Tremor in several Types of Muscle" (*Proc. Roy. Soc. B.*, 1908); "Reducing Endo-enzyme in Liver and Kidney" (*Biochem. J.*, 1910); "Relations of Insomnia to Types of Sleep" (*Sci. Progress*, 1910).

HARRIS, GILBERT DENNISON, Prof. of Paleontol. and Stratig. Geol., Cornell Univ., Ithaca, N.Y., U.S.A.

B. 1864, N.Y. Ph.B. (Corn.) 1886.

HARRIS, J. ARTHUR, Bot., Dept. Exper. Evol., Carnegie Inst. of Washington.

Cold Spring Harbor, Long Island, N.Y., U.S.A.

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HARRISON, F. C., Princ. of Macdonald Coll.; Dean, Fac. Agric., McGill Univ., Montreal, Can.

B. 1871. *Educ.* Birmingham; Univs. Cambridge, Mich., Wis., Berne, etc. B.S.A. (Tor.) 1892; D.Sc. (McGill) 1909; Fell. McGill Univ. *Soc.*—F.R.S.C.; Amer. Pub. Health Assoc.; Amer. Bact. *Late Prof.* of Bact., Ont. Agric. Coll., 1896—1905, Macdonald Coll., 1905—10.

Book.—"Microbiology" (jtly.), 1912. *Contrib.*, numerous, to *Roy. Soc. Can.*, *Centraltbl. f. Bakt.*, *La Revue Gen. du Lait*, *Bulls. Ont. Dept. of Agric.*

HARRISON, HERBERT SPENCER, Curator of Horniman Mus., Forest Hill, London, S.E.

B. 1872, Wolverton, Bucks. *Educ.* King Edw. Sch., Aston, Birmingham; Roy. Coll. Sci., London; Freiburg. A.R.C.S. 1897, D.Sc. 1902 (Lond.). *Soc.*—Fell. Roy. Anthropol. Inst. *Late Demonstr.* and Assist. Lect. in Biol., Univ. Coll., Cardiff.

Books.—"Museum Handb. on Stone Implements, Weapons, Primitive Arts and Crafts." *Contrib.*—"Develop. and Succession of teeth in *Hatteria punctata*" (*Q. J. M. S.*, 1901); "Perilymphatic spaces of amphibian ear"

(*Intern. Arch. f. Mikros. Anat.*, 1902); "Homology of Lagena throughout the Verteb." (*Anat. Anz.*, 1902).

HARRISON, J., M.I.M.E., A.M.I.C.E.; Asst. Prof. of Mech. and Math., Imper. Coll. Technol., London, S.W.

HARRISON, ROBERT W. F., Librarian and Asst. Sec., Royal Society, Burlington House, Piccadilly, London, W.

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B. 1870, Germantown, Pa. *Educ.* Johns Hopkins Univ.; Bonn Univ. B.A. 1889, Ph.D. 1894 (Hopkins); Hon. M.A. (Yale) 1907; M.D. (Bonn) 1899. *Soc.*—Amer. Assoc. Adv. Sci.; Amer. Zool.; Anat., Physiol., Nat., Exper. Biol. and Med.; Conn. Acad. Arts and Sci.; Ger. Anat. *Late Lect.* Morphol., Bryn Mawr Coll., 1894—95; Instr. and Assoc. Prof. Anat., Johns Hopkins Univ., 1896—1907.

Contrib.—"Outgrowth of Nerve Fibres as a Mode of Protoplasmic Movement" (*J. Exper. Zool.*, 1910); and on Embryol. of Vertebrates (*Arch. f. mikros. Anat.*) and Cultiv. of Animal Tissues in Artificial Media.

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B. 1869, Philadelphia. *Educ.* Pub. Schs., Centr. High Sch. and Univ., Penna. A.B. (Centr. High Sch. Penna.); B.S. 1892, Ph.D. 1893 (Penna.). *Soc.*—Acad. Nat. Sci. Phila.; Amer. Phil.; Amer. Bot.; F.A.A. *Late Bot.* travels in N. Amer., Mexico, W. Indies, etc.; 1st Bot. to cross Everglades.

Books.—"Maize: a Bot. and Econ. Study," 1893; "Botanists of Phila. and their Work," 1899; "Phytoeog. Survey of N. Amer.," 1911. *Contrib.*—About 150.

HART, BERNARD, Physician for Ment. Dis., Univ. Coll. Hosp.; Lect. on Psychiat., Univ. Coll. Hosp. Med. Sch.

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B. 1879, London. *Educ.* Univ. Coll. Sch.; Univ. Coll. Hosp.; London and Paris. M.D. (Lond.); M.R.C.S., L.R.C.P. *Soc.*—Fell. Roy. Med.; Brit. Psychol.; Psycho-Med.; Medico-Psychol. Assoc.

Book.—"Psychol. of Insanity," 1912. *Contrib.*—"Psychol. conception of insanity" (*Arch. of Neurol. and Psychiat.*, 1911); "A case of double personality" (*J. Ment. Sci.*, 1912).

HART, EDWARD, Prof. of Chem. and Dean, Pardee Sci. Dept., Lafayette Coll., Easton, Pa., U.S.A.

B. 1854, Doylestown, Pa. *Educ.* Doylestown Sem.; Drown's Priv. Lab., Phila.; Johns Hopkins Univ.; Lafayette Coll. B.S. (Lafay.) 1874; Ph. D. (Hopkins) 1879. *Soc.*—Chem. Ind.; Amer. Inst. Min. E.; Amer. Inst. Chem. E.; Amer. Ceram.; Amer. Leather Chem.; Amer. Electrochem.; Ger. Chem.

Books.—"Handbook of Volum. Anal.," 1876; "Chem. for Beginners," 5th edn.; "Second Year Chem.," 1906. *Art.*—"Nitric Acid" in Thorpe's *Dict. App. Chem.*, 2nd edn. *Contrib.*—"Nitrosulphobenzoic acids and some derivs." (*Amer. Chem. J.*, I.); "Action of dilute acids on certain varieties of fused sulphide of iron" (*Trans. Amer. Inst. Min. E.*, XV.); "Points in distill. of nitric acid" (*J.*

Amer. Chem. Soc., XVII); "Purif. of glucinum salts" (*lb.*).

HART, EDWIN B., Prof. of Agric. Chem., Wisconsin Univ., Madison, Wis., U.S.A.

B. 1874, Sandusky, O. *Educ.* Univs. of Michigan, Marburg, Heidelberg. B.Sc. (Mich.) 1897. *Soc.*—Amer. Chem.; Biol. Chem. *Late Assoc. Chem.*, N.Y. Agric. Exper. Station, Geneva, N.Y.

Book.—"Gen. Agric. Chem." *Contrib. to Amer. Chem. J.*, *J. Amer. Chem. Soc.*, *J. Biol. Chem.*, on Mechan. Test for Casein in Cow's Milk.

HARTERT, ERNST, Direc., Zool. Mus., Tring, Eng.

B. 1859, Hamburg. *Educ.* Ger. High Sch. and Univ. M.A., Ph.D. *Late Zool.* Exped. to Africa, India, W. Indies.

Books.—"Birds of Palaearctic Fauna," etc. *Arts.*—Numerous on birds.

HARTING, JAMES EDMUND, Zool.

Edgewood, Weybridge, Eng.

B. 1841, London. *Educ.* London Univ.; and as a solicitor. *Soc.*—F.L.S., F.Z.S. *Late Librarian and Asst. Sec.*, Linn. Soc.; Travels in Europe on Ornith.; Commr. for Bd. of Agric. on Vole Plague in Scotland and Thessaly, 1893.

Books.—"Birds of Middlesex," 1866; "Handb. of Brit. Birds," 1872, new edn. 1901; "Our Summer Migrants," 1875; "Ostriches and Ostrich Farming," 1876; "Brit. Animals Extinct within Historic Times," 1880; "Bibliotheca Accipitraria," 1891; "Managem. of Hawks"; "Recreations of a Naturalist," 1906; *Ed. Zoologist*, 1877—96; *Naturalist Ed., The Field*; etc.

HARTLAUB, CLEMENS CORNELIUS, Curator of Zool., Roy. Biol. Inst., Heligoland, Ger.

B. 1858, Bremen. *Educ.* Bremen, Berlin, Leipzig, Freiburg. Ph.D., Prof. *Soc.*—Corresp. F.Z.S. *Late Assiat.*, Zool. Inst., Göttingen, 1890—91.

Book.—"Revision of Sertularellae," 1901. *Art.*—"Crasped. Medusae" in "Nord. Plankton."

Contrib.—"Manatus" (*Zool. Jahrb.*, 1886); "Hydroida" (*lb.*, 1905); "Blake-Comatulae" (*Mem. Mus. Comp. Zool. Harvard*, 1912); "Comatulid. Fauna of Indian Archipel." (*Nova Acta Leop. Carol.*, 1891); "Hydromedus. of Helgoland" (*Wiss. Meeresunters.*, 1897).

HARTLEY, Sir CHARLES AUGUSTUS, Engr. (ret.).

26, Pall Mall, London, S.W.

B. 1825, Heworth. *Soc.*—F.R.S.E.; M. Inst. C.E.; Hon. Mem. Roumanian Acad. *Late Cons. Engr.* on Danube, Scheldt, Port of Odessa, Mississippi, Suez Canal, Hughli, Madras Harbour, Port of Trieste, Don, Dnieper, Nile, Thames, Ribble, Durban Harbour, etc.

Books.—"Delta of the Danube"; "Pub. Works in U.S. and Canada"; "Inland Navigation in Europe"; "Hist. of Engrng. Works of Suez Canal"; "Theory and Pract. of Hydro-Mechanics."

HARTLEY, CHARLES PINCKNEY, Physiol. in charge of Corn Investig., U.S. Dept. Agric.

B. 1870, State of Ind., U.S.A. *Educ.* Kansas State Agric. Coll. M.Sc. 1899.

Chaps. in Year-Books of Dept. of Agric., 1902, 1903 and 1909. *Arts.*—"Maize" in Bailey's "Cyc. Agric."; "Injurious effect of Premature Pollin." (*Bull.* 22, B.P.I. of U.S. Dept. Agric.; *Farmers' Bulletins*, 174, 199, 229, 313, 400, 414, 415, U.S. Dept. Agric.); "Cross-

breeding Corn" (*Bull.* 218, B.P.I.). *Contrib.*—"Value of Corn Pollen from Suckers" (*Ann. Rept. Amer. Breeders' Assoc.*, 1906); "Corn Improvement by Selection" (*Rept. Kan. State Bd. of Agric.*, 1906); "Utiliz. of Corn Variations" (*Ann. Rept. Corn Improvers' Assoc.* 1908); "Corn Yields as influenced by Factors other than Heredity" (*Ann. Rep. Amer. Breeders' Assoc.*, 1911).

HARTLEY, HAROLD BREWER, Bedford Lect. on Phys. Chem. and Nat. Sci.; Tutor, Balliol Coll., Oxford.

B. 1878, London. *Educ.* Dulwich Coll. and Oxford. M.A. (Oxon.) 1904. *Soc.*—F.C.S.; Miner.

Contrib. to *J. Chem. Soc.*

HARTLEY, Sir WALTER NOEL, F.R.S.; late Prof. of Chem., Roy. Coll. Sci., Irel.; Hon. Fell. King's Coll., London.

(*See Obituary.*)

D.Sc. (R.U.I.). *Soc.*—F.R.S.E.; F.I.C. (V.-P., 1890—93).

Books.—"Air and Life"; "Quant. Anal." *Contrib.*—Numerous.

HARTMANN, FRITZ, Prof. of Gen. and Spec. Path., Graz Univ., Aust.

HARTMANN, HENRI, Prof. of Clin. Surg., Univ.; Surg., Hosp. LaMee, Paris.

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B. 1860, Paris. M.D.; Hon. F.R.C.S.

Books.—"Surg. Works," 3 vols.; "Operat. Gynaec."; "Surg. of Genito-Urin. Organs of Man"; "Surg. of Stomach"; "Surg. of Rectum."

HARTMANN, JOHANNES F., Prof. of Astron., Direc. of Observ., Univ. Göttingen.

Schillerstr. 68, Göttingen, Ger.

B. 1865, Erfurt. *Educ.* Univs. Tübingen, Berlin, Leipzig. Ph.D. *Soc.*—Ger. Astron.; Assoc. R.A.S.; Leop. Carol. Acad. *Late Assist.* and Observ. at Leipzig, Vienna, Potsdam.

Contrib. on Microphotometer, Spectrocomparator, Dispersion-formula, Method of objective test.

HARTMANN, KONRAD, Geh. Reg. Rat; Pres. of Senate, Imp. Insurance Bd. and Hon. Prof. of Accident Prevention, Tech. Sch., Berlin, Ger.

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B. 1853, Nürnberg. *Educ.* Munich. Hon. Dr. Ing. (Berlin).

Publ.—Numerous on protection of workmen.

HARTNESS, JAMES, Manager, 1909—12, Amer. Soc. of Mech. Engrs.

Springfield, Vermont, U.S.A.

B. 1861, Schenectady, N.Y. *Educ.* Cleveland Pub. Schs. Hon. M.E. (Ver.) 1910. *Soc.*—Fell. Amer. Soc. Adv. Sci.; Amer. Soc. M.E. (Life Mem.); Mem. Inst. M.E. (Life).

Books.—"Machine Building for Profit"; "The Flat Turret Lathe"; "Human Factor in Works Managem."

Inv. Turret equatorial telescope, Flat turret lathe, the Lo-swinging lathe.

HARTOG, MARCUS, Prof. of Zool. and Dean of Sci. Fac., Univ. Coll., Cork, Irel.

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B. 1851. *Educ.* N. London Colleg. Sch.; Univ. Coll., London; Trin. Coll., Cambridge. M.A. (Cantab.) 1878; D.Sc. (Lond.) 1882. *Soc.*—F.L.S.; Hon. F.R.H.S. (Mem. Sci. Comm.).

Book.—"Problems of Life and Reproduction," 1912. *Arts.*—"Protozoa" and "Rotifers" in "Cambridge Nat. Hist."; numerous in

Encyc. Brit., 11th edn., 1911. *Contrib.* on adelphotaxy (*B. A. Rept.*); mito-kinetism; struc. and morphol. of Cyclops (*Trans. Linn. Soc.*).

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Contrib.—Papers on Intest. Diverticula in *J. Med. Sci., Annals of Surg.*, 1910; "Exper. Intest. Obstruc." (*Amer. J. Med. Sci.*, 1912).

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B. 1851, Frankfurt a. M. *Educ.* Gymn. Frankfurt; Melanethon Gymn. Nuremberg;

Univs. Erlangen, Leipzig, Göttingen, Munich. Teachers' Exam. (Mun.) 1873; Ph.D. (Strass.)

1880. *Soc.*—Bamberg Nat. (Pres. since 1888). *Late Assist.*, Univ. Observ., Strassburg, 1874—

84; Leader of Venus Exped. III., Bahia, 1882; Observ. and Doz., Univ. Dorpat, 1884—85.

Books.—"Durchm. of Venus and Mars," 1879; "Estim. of Libration of Moon," 1880;

"Helioimetry at Dorpat Observ.," 1884—5; "Publ. of Remeis Observ." *Contrib.* numerous to

Astron. Nachr., Monthly Notices R.A.S., Ber. d. Naturf. Ges. Bamberg.

Disc. Comets 1879 IV., 1880 III., 1886 IX.; Nova Androm., Aug. 1885.

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M.B. 1898 (Toronto). *Soc.*—Coll. Physicians and Surg., Ont.; Amer. Assoc. Anat.; F.A.A.

Books.—Transl. Rignano's "Inheritance of Acquired Characters"; "Nature of Vital Processes according to Rignano," 1910.

Contrib.—"Gastric glands of dog" (*Amer. J. Anat.*, 1905); "Formn. of hydrochloric acid in Foveolae," *jtly.* (*Biol. Bull., Lancaster, Pa.*, 1912).

HARVEY, SIDNEY, Public Anal., City and County of Canterbury, Boroughs of Folkestone, Dover, Margate, Ramsgate; Agric. Anal., Co. of Canterbury.

Watling House, Canterbury, Kent, Eng.

B. 1834, Diss, Norfolk. *Educ.* King's Coll., Lond. Pharmaceut. Chem., 1864. *Soc.*—

F.I.C.; F.C.S.; Chem. Ind.; Pub. Anal. (P.V.-P.). *Late Pub. Anal.* Boroughs of Faversham, Deal, Sandwich, Broadstairs.

Contrib.—"Estimations of Nitrates in Water" (*Analyst*, 1886); "Chromate test for Lead in Water" (*ib.*, 1890); "Tabaric's test for Alcohol in Beer" (*ib.*, 1892); "Apparatus for estim. Gases in Water" (*ib.*, 1894).

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B. 1860, Helensburgh. *Educ.* Gram. Sch., Aberdeen; Univs. of Aberdeen, Edinburgh, Strassburg, M.A. *Soc.*—F.L.S. *Late Demonstr.* Univs. Aberdeen and Edinburgh; Examr. Univs. Aberdeen, Glasgow, Durham, Wales, Vict., and Pharm. Soc. of G.B.

Books.—"Primer of Biol.;" Transl. Jost's "Plant Physiol.;" "Seaweeds" in "Chambers's Encyc.;" *Contrib.*—Numerous on Anat. of Selaginella, Cystocarps of Catanella, etc., to *Annals of Bot., J. Linn. Soc., etc.*

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Books.—"Capercaille in Scot.;" "Hist. of Squirrel;" "Repts. on Migration of Birds" (jntly., for Brit. Assoc.); "Verteb. Fauna of Scotland," 11 Vols.; "Travels of a Naturalist in N. Europe," 2 Vols.

HARWOOD, WILLIAM A., Imperial Meteorologist, Simla, India.

B. 1888, Blackburn. M.Sc. (Vict.) 1909. *Late Lect.* Meteorol., Manchester Univ.

Contrib.—"Upper Air Temperatures registered outside and inside Balloons" (*Nature*, 1910); "Results of 25 Registering-balloons Ascents made from Manchester" (*Q. J. Roy. Met. Soc.*, 1910).

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Contrib.—"Changes on ions produced by radium" (*Proc. Roy. Soc.*, 1909); "Diffus. of ions into gases at low press." (*ib.*, 1912).

HASENCLEVER, MAX, Chem. Manufac. Chemische Fabrik Rhenania, Aachen, Prussia. *Soc.*—Chem. Ind., etc.

Contrib.—"Pres. Condition of Inorg. Chem. Indust." (*J. Soc. Chem. Ind.*, 1911, Hurter Memorial Lect.); etc.

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B. 1855, Holland, N.Y. C.E. (Cornell) 1890. *Soc.*—F.A.A.; Amer. C.E.; etc.

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HASSE, HENRY RONALD, Fielden Lect. in Maths., Manchester Univ.; Fell. of St. John's Coll., Cambridge.

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B. 1884, Gracehill, Co. Antrim. *Educ.* Manchester Univ.; St. John's Coll., Camb. M.A. (Cantab.); M.Sc. (Manc.). *Soc.*—Lond. Math.; Manchester Lit. and Phil.

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Book.—"Metabolism of Hen's Embryo," 1899. *Contrib.* on Treatment of Heart-Dis. with Chem. Light Baths; Metabolism of Embryo of same Intensity as that of Adult; Increased Depth of Respira. Movements under Influence of Ultra-violet Light; Improved Methods of Measuring Reaction of Living Blood; to *Skand. Arch. f. Phys., Biochem. Z., etc.*

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Contrib.—"Idiopathic Tetanus" ("St. Bart.'s Hosp. Repts.," Vol. 11); "Addison's Dis." (*ib.*, Vol. 12); "Two Unusual Cases of Rheumatism" (*Lancet*, 1875); "Case of Intest. Obstruct. due to Malignant Dis." (*Med. Times Gaz.*, 1875).

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Books.—"Petrol. of Igneous Rocks"; "Mineralogy"; "The Kolar Goldfield" (Memoir Geol. Surv. Ind.); "Mines and Mineral Resources of Natal" (Rep. to Govt. of Natal); Co-author of "Gold Mines of the Rand"; "Geol. of S. Africa" and "Types of Ore-Deposits." *Contrib.*—Various to *Q. J. Geol. Soc., Geol. Mag., Trans. Geol. Soc. S.A., Trans. Inst. M. M., Sci. Progress, Nature.*

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Book.—"Phys. and Chem. of Colloids."

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Books.—"Elec. Traction," 1899; "Explosives used in Mine Works," 1900; "Best Utilization of Energy of Wind Mills," 1902; "Estimation of Vanadium in Lead Ores"; "Three Lects. on Fire Damp," 1906—08. *Contrib.*—"On Law of Diffusion of Gases" (*Rev. Madrid Acad. Sci.*, 1906); "New Electrolyte for Wehnelt Current Breaker" (*An. d. Soc. Fis. y Quim.*, 1903).

Inflammability of fire-damp by incandes. wires; Elec. accumulators, rotatory ventilators, fire-damp tester, elec. heaters.

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Books.—"German Forests," 1907, 2nd edn. 1914; "Ger. Plant Geog.," 1911; and numerous others.

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Book.—"Magnetic Survey of Württ. and Hohenzollern"; "Magn. Charts of Ger. for 1912."

Inv. dip-meter for holes.

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Books.—"Engrng. Labs.," 1903; "Mech. Technol. of Fibrous Materials," 1907. *Arts.* on Karmarsch, Paper, Metal planing. *Contrib.*—Numerous.

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Books.—"Applied Geom.," 2 vols., 1902—10; Ed.: "F. Bernoulli's *Ars Conjectandi*," 1899; "G. Mongé's *Descrip. Geom.*," 1900; and "E. Sohering's *Collected Works*," 1902—09, 2 vols. *Contrib.* on Bernoulli's and Euler's Theorems and Weierstrass' σ -functions.

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Books.—"Pract. Physiol. Chem.," 4th edn., 1912. *Contrib.*—"Studies on Water-drinking," 1—14, in various Js., 1911—12; "Fasting Studies," 1—10, 1911—12; "Studies on Nitrogen, Sulphur, and Phosphorus 'Lag'" (*Amer. J. Physiol.*, 1900—03); "Morph. Changes in Blood after Phys. Exercise" (*ib.*, 1904); Assist. Ed., *Chem. Abstracts*.

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Books.—"Adv. Algebra"; "Higher Algebra"; "High Sch. Algebra." *Contrib.* on Hypercomplex Numbers, in *Trans. Amer. Math. Soc.*, *Math. Ann.*, *Amer. J. Math.*

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Books.—"Principles of Alter. Current Working," 1897; "Alter. Currents," 1905; "Continuous Current Engrng.," 1907; "Electrical Distribut. Networks and Transmiss. Lines," 1910. **Contrib.**—"On Impulsive Current Rushes in Inductive Circuits" (*Electrician*, 1894); "Hydrodynamical Methods of Solving Two-dimensional Magnetic Problems" (jtl.) (*Phil. Trans.*, 1900); "Hydrodyn. and Electromag. Investig. regarding Magnetic Flux Distrib. in Toothed Core Armatures" (jtl.) (*J. Inst. E.E.*, 1904); "A Graphical Treatment of Skin Effect" (*Ib.*, 1911).

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Books.—"Physiol. Action of Saline Cathartics," 1882; Transl. Von Ziemssen's "Handbk. Gen. Therap." (jtl.), 1884. **Contrib.**—"Nitrite of Sodium in Angina Pectoris" (*Practitioner*, 1883); "Chem. of Nitro-glycerine" (*Trans. Roy. Soc. Edin.*, 1883); "Typhus and Body Vermin" (*Pub. Health*, 1906).

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Book.—"Sketch of Geog. and Geol. of Himalaya and Tibet" (with Col. S. G. Burrard). **Contrib.**—Various, in Records and Memoirs of Geol. Surv. of India.

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Books.—"Temperature Chart"; "Test Type Case"; "Ophth. Charts"; "Ophth. Atlas for Recording Path. Conditions of Fundus by means of Superimposed Layers of Colour"; "Statistical Eyesight Tables." **Contrib.**—

"Rupture of Choroid with Perforation of Iris" (*Ophth. Trans.*, 1893).

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Books.—Amer. Ed. of Wells on "Dis. of Eye," 1873; "Calendar of Franklin Papers," 6 vols., 1907; "Chronol. of Benjamin Franklin," 1904. **Art.**—"Blindness, its Frequency, Causes and Prevention" in "Syst. of Dis. of Eye," 1897.

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Books.—"Farm Develop.," "Breeding Plants and Animals"; "Rural Sch. Agric." **Contrib.**—Ann. Repts., Amer. Breeders' Assoc., Vols. 1—8; Amer. Breeders' Mag., Vols. I and III.; "Breeding Wheat," *Bull.* 62, Minn. Exper. Sta.; "Plant Breeding," *Bull.* 29, Div. Veg. Path., U.S. Dept. Agric.; and on farm management and circ. educ.

Eugenics; vocational educ., 1906—12.

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Contrib.—"Life-hist. of Sphaerella lacustris" (*Mem. Torrey Club*, 1899); "Ultrichaceae and Chaetophoraceae of U.S." (*Ib.*, 1902).

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Contrib.—"Pain in Visceral Dis." (*Brain*, 1893, 1894, 1896, 1901); "Path. of Herpes Zosta" (*Ib.*, 1900); Papers on the afferent

- Nerv. System (*ib.*, 1905—06, 1908, 1911); "Nature of Parasyphilis" (*Brain*, 1913).
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Book.—"Breeding Industry," 1906. *Contrib.*—"Embryol. of Mole," 1881—87; "Transplantation of mammalian ova," 1890—97; "On menstruation, abortion, barrenness, fertility and artificial insemination," 1893—99; "Sexual season and comp. physiol. of generative syst.," 1900—12; "Sex and influence of extraneous forces on proportion of sexes produced by man and other animals," 1907—12.
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Books.—"Handb. to Theory of Drug Prescription," with Ewald, 1911; "Detect. of Drugs and Poisons in Urine"; "Urine," 1911. *Contrib.*—"Pelote, 1 and 2" (*Arch. exper. Pharmacol.*, 1894, 1898); "Arsenic in Animal Bodies" (*Arch. internal. Pharmacodyn.*, 1905); "Reducing Constits. of Cells" (*Med. Naturiv. Arch.*, 1908).

Disc. Chloralose, 1889; Pellotin, 1894.

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Books.—"Theory of Diff. Equations," 1894; "Textb. of Anal. Geom." (with Kaehler), 1905. *Contrib.*—Numerous.

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Books.—"Old Metal Drums of E. Asia," 1903, 2 vols. *Contrib.*—Numerous on Prehist. and Ethnol.

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Books.—"Intro. to Zool.," 1910; "College Zool.," 1912. *Contrib.*—"Origin and early hist. of germ cells in some chrysomelid beetles" (*J. Morph.*, 1909); "Effects of centrif. force upon eggs of some chrysomelid beetles" (*J. Exper. Zool.*, 1909); "Expts. with chrysomelid beetles" (*Biol. Bull.*, 1910, 1911); "Germ cell determinants and their significance" (*Amer. Nat.*, 1911).

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Books.—"Plasma and Cells," 2 vols., 1907—11. *Contrib.*—"Centrosomes" (*Arch. f. mikr. Anat.*, 1894); "Albumens and aniline Colours" (*Pflüger's Arch.*, 1902).

Iron haematoxylin, 1892.

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Books.—"Mechanism of Mountain Formation"; "Glaciers"; "Geol. of Alps"; "Disloc. of Earth's Crust"; and 11 others with reliefs, etc. *Contrib.*—250 to *Vierteljahrsschr. d. Nat. Ges.*, Zurich; *Zeitschr. d. geol. ges.*, etc., on Theory of Deformation of Rocks in Mountain Making; Classific. of Mountain-slides and Falls and their Theory; Disc. Great Mineral Spring in St. Moritz; Theory of Lake-formation on Mountain Borders.

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Books.—"Text-bk. of Bacteriol.," 1894, 4th edn., 1911; "Text-bk. of Hyg.," 1903. *Contrib.*—Various.

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Book.—"Culture of Seed Plants," 1910. *Contrib. to Jahrb. f. wiss. Bot., Ber. d. bot. Ges., Sitz. d. Acad. Vienna, Flora*, etc.

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Contrib.—"Beriberi" (*Med. Rec.*, 1912); "Sanitation in P.I. since Amer. occupation"

(*J. Amer. Med. Assoc.*, 1909); "Leprosy in P.I." (*Med. Rec.*, 1907); "Outbreak of plague in Manila during 1912" (*J. Sci.*, 1913).

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Books.—"Post-mortem Technique"; "Amer. Text-bk. Path.," Ed. and Contrib. *Arts.* in "Modern Medicine," etc. *Contrib.*—"Exper. Measles" (*J. Infec. Dis.*, 1905); "Phagocytosis and Opsonins" (*J. Amer. Med. Assoc.*, 1906); "Is Scarlet Fever a Streptococcus Dis.?" (*ib.*, 1907); "On Formation and Fate of Antibodies" (*Harvey Lects.*, 1909—10).

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Publ.—Numerous on Ophthalm. since 1883; "Nerves of Conjectiv. and Sclera," 1870; etc.

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Books.—"Land and People of Norway," 25 vols.; "Norwegian Mining Law"; "Prehist. Norway." *Contrib.*—"Ice Fjords of N. Greenland" (*J. Geol. Soc.*, 1879); "Craters of Volcano Lakes" (*Prog. Kristiania Univ.*, 1886); "Glac. Formation of N. Europ. Plains" (*Z. f. deut. geol. Ges.*, 1879); "Glacierisation of Shetland and Orkneys" (*ib.*).

Measured glacier movement of N. Greenland, up to 20 metres in 24 hours.

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Contrib.—Over 100 in *Abh. Ber. Zool. Mus. Dresden, Ann. Soc. Entom. Belg., Deut. Entom. Zeitschr., Entom. Z. Stettin, Wiener Entom. Z.*, etc.

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Books.—"Ger. Met.," 1883; "Snow Crystals," 1893; "Writings on Met. and Terrest. Magnetism," 1—15, 1893—1904; "Precipitation in N. German River-beds," 1906; "Met. Research on Summer High-water of the Oder," 1911, etc. *Contrib.*—Many on Met. and Terrest. Magnetism to *Met. Zeitschr.*, etc.

Inv. self-regist. rain- and snow-gauges; airometer.

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Books.—"Paridae, Sittidae, and Certhiidae," Part 18 of "Animal World," Berlin Acad. Sci. *Contrib.*—"Birds of Rio Madeira" (*Novit. Zool. (Tring)*, 1910); "Revision Brazilian Birds described by Spix" (*Abh. Bayer Acad. Wiss.*, 1906).

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Books.—"Theory of Higher Geodesy," 2 vols., 1880, 1884; "Compensation by Method of Least

Squares," 2nd edn., 1907. *Art.*—"Gravity and Mass—Distrib. of Earth" in "Encyk. math. Wiss."; "Figure of Earth" and "Geodesy" in "Encyc. Brit."

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Books.—"Dis. of Stomach," 3rd edn.; "Dis. of Intestines," 2 vols.; "Man. of Pract. Physiol."

Röntgen rays with bismuth substitute for examn. of digestive tract.

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Book.—"Methods of Gas Anal." and in Eng. *Inv. Apparatus for gas anal.*

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Contrib. to Zeits. f. phys. Chem., 1893, *Bull. and Mem. Acad. Belg.*, 1896—1912, *Soc. Sci. Brussels.*

Elec. synth. of stearic acid and hydrogen peroxide; Elec. deodoris. and polymeris. of fish oils.

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Books.—"Bot. of Challenger Exped."; "Bot." of Salvin and Godman's "Biol. of Central Amer."; "Flora of China," Vols. 23, 26, 36 (*J. Linn. Soc.*); "Handbk. of Hardy Trees," etc. *Contrib.*—"Insular Floras" (*Sci. Progress*, 1894—96); "Flora of Lord Howe Is." (*Ann. of Bot.*, 1896); "Julianiaceae" (*Phil. Trans.*, 1897); "New Plants" (*Hooker's Icones Plantarum, Bot. Mag., Kew Bull.* etc.), since 1885.

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Books.—"Introduct. to Anal. Chem." (with M. A. Parker); "Report on Chem. Indust. of

W. of Scotland," 1901. *Contrib. to Trans. Chem. Soc., J. Chem. Ind., Trans. Roy. Soc. Edin., Analyst.*

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Contrib.—"Geol. of Aroha Subdivision, Hauraki" (*N.Z. Geol. Surv. Bull.*, 1913), and to *Trans. N.Z. Inst.*

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Book.—"Report on Anomura Collected by H.M.S. Challenger." *Contrib. to Trans. Linn. Soc. (Zool.), Annals and Mag. Nat. Hist., J. Asiat. Soc. Bengal, Records Indian Mus.*, etc., on Decapod Crustacea, etc.

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Contrib.—"Mollusca of Colo." (*Univ. Colo. Studies*, 1907); "Foothills Formations of N. Central Colo." (*1st Rept. Colo. Geol. Surv.*, 1908); "Extinct and Exist. Glaciers of Colo." (*Univ. Colo. Studies*, 1910); "Sandstone of Fossil Ridge in N. Colo. and its Fauna" (*Ib.*, 1908).

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Art. on Gen. Phys. and Chem. Characteristics of Urine, in Neubauer-Hupper's *Handb. d. Harnanalysc*, 11th edn. *Contrib. to Amer. J. Physiol., J. Biol.-Chem.*, etc., on regulation of neutrality in organism, etc.

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Book.—"Mat. Med. and Pharm." *Contrib.*—"Factors of Ureter Pressure" (*J. Physiol.*, 1905); "Action of drugs on salivary secretion" (*J. Pharm.*, 1910).

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Contrib.—Numerous research memoirs.

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Books.—"Elem. Study of Chem."; "Gen. Course in Chem.," 1912; "Lab. Manual." *Contrib.*—"Action of Sulphurous Acid upon Sulphides of Fe, Zn and Mn," jtly. (*J. Amer. Chem. Soc.*, Vol. 35); "Hydrolysis of Ethyl Acetate by Neutral Saline Solutions," jtly. (*Ib.*, Vol. 35).

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Arts. in "Standard Cyc. of Agric.," Portions of Stephen's "Book of the Farm," 5th edn. *Contrib.* to *J. Soc. Chem. Ind.*, *Trans. Highland and Agric. Soc. Scoll.*, *J. Agric. Sci.*, *Analyst*, etc.

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Books.—"Microsc. Diagn. of Tumours," 1906. *Art.*—"Mech. Causes of Dis." in Marchand and Prehl's Hdb. d. Path. *Contrib.* on tuberc., tumours, diphth. bac., to *Virchow's Arch.*, *München. Med. Woch.*, *Zsch. f. Krebsf.*, etc.

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Books.—"Statics of Rigid System," 1886; "Graphic Statics of Rigid System," 1911. *Art.* in *Encyk. d. Math. Wiss.*, 1903.

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Books.—"Graupapagei," 1895; numerous on Birds of C. Europe. *Art.*—"Birds" in *Handb. d. Naturwiss.*

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Book.—"Trees of G.B. and I." (with H. J. Elwes, F.R.S.). *Contrib.* in *Kew Bull., Gardeners' Chron.*

Explorer of flora of China, Formosa and Hainan; introd. Liliun Henryi and other Chinese plants.

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Books.—"Aesthetic rapport"; "Chromatic Circle," 1889; "Harmonies of Forms and Colours," 1891; "Smells," 1892; "Theory of Ellipt. Functions," 1895; "Measure of Intellectual and Energetic Capacities," 1906; "Sensation and Energy," 1911; "Memory and Habit," 1911. *Contrib.* on Physiol. Instruments, Electric Silk, Phosphorescent Zinc Sulphide, etc.

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Book.—"Plant Alkaloids," 1913. *Art.*—"The Veg. Alkaloids," in Allen's "Commerc. Org. Anal." *Contrib.*—"Constituents of Sandarac Resins" (*Trans. Chem. Soc. Lond.*, 1901); "Cyanogenesis in Plants" (*Sci. Progress*, 1906); and to *Proc. Roy. Soc.*, etc.

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Books.—"Theory of Algeb. Functions with the Abelian Integrals," 1902; "Theory of Algeb. Numbers," 1909; "Theory of Numbers," 1912; Ed., "Leopold Kronecker's Works and Life." *Contrib.*—50.

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B. 1851, Braila, Roum. D.Sc., C.E. *Late Hon. Direc.*, Meteorol. Inst. and Service of Weights and Measures of Roumania; Prof. of Phys.

Books.—"Ann. of Roumanian Meteorol. Inst.," "Climatol. of Roumania"; "Bucarest Climatol.," "Cosmic Phys.," "Climatol. Atlas of Roumania"; etc.

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Book.—"Notes of Maritime Met." *Contrib.*—"Comparison of Changes in Temp. of Water of N. Atlantic and in Strength of Trade Winds" (*Brit. Assoc.*, 1909); "Climatol. of S. Victoria Land and adjacent Seas," Part 1 (*Roy. Soc.*, 1908); "Effect of Labrador Current on Surface Temp. of N. Atl., etc." (*Geophys. Mem.*, *Met. Off.*, 1911); "Relat. between Temp. Press. and Air Circ. over S. Atl." (*Brit. Assoc.*, 1905).

Inu. Elec. artificial sea horizon.

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Book.—"Animal Ontogenesis," 1901. *Art.*—"Animal Embryol." in Handwörterb. d. Naturwiss., 1913. *Contrib.*—Numerous on embryol., regeneration and heredity to *Arch. f. Entwickl.-mech.*

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Books.—"Tunicata of Challenger Exped.," 3 vols.; "Ceylon Pearl Fisheries, etc.," 5 vols., 1903—06; "Fauna of Liverpool Bay," 6 vols. *Art.*—"Tunicata," in *Encyc. Brit.*, and about 50 other publications. *Contrib. to Nature, J. Linn. Soc., Repts. of Brit. Assoc., Trans. Roy. Soc. Edin.*, etc., during last 25 years.

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Books.—"Obstet. Operations"; Ed. "Encyc. of Obstet. and Gynaec.," jtly. with Max Sänger. *Art.*—"Puerp. Fever" in Winckel's Handb. of Obstet. *Contrib.*—100.

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Books.—"Conversion Tables"; "Wiring Computer"; "Dynamo Elec. Machines"; "Paris Expos. of 1889." *Contrib.*—"New Type of Elec. Furnace" (*Trans. Amer. Electrochem. Soc.*, 1911); "Proportioning Electrodes for Furnaces" (*Trans. Amer. Inst. E.E.*, 1911); "Laws of Electrode Losses in Elec. Furnaces" (*Trans. Amer. Electrochem. Soc.*, 1909); "Pinch Phenom." (*ib.*, 1907).

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Book.—"Essentials of Phys. for Coll. Students," 1912. *Art.*—"Energetics" in New Internat. Encyc., 1902. *Contrib.*—"Modern views and probl. of phys." (*Pop. Sci. Monthly*,

1894); "Clearance in a compressor and its relation to volumetric efficiency" (*Compressed Air*, 1907); "Distortion and oscillation of helical springs" (*N.Y. Acad. Sci.*, 1906 and 1909); "Orthopedic Photography" (*Ib.*, 1909).

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Book.—"Treatise on Geometrical Optics."

HERMANN, LUDIMAR, Geh. Med. Rat; late Ord. Prof. of Physiol., Univ. Königsberg, Ger. (resigned 1913).

B. 1838, Berlin. M.D.
Books.—"Textb. of Exper. Toxicol."; "Handb. of Physiol.," etc.

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Books.—"Malaria: Cause and Control" (in press); "Lab. Guide to Study of Parasit." (in press). *Contrib.*—"Ecol. and exper. Study of Sarcophagidae" (*J. Exper. Zool.*, 1907); "Reactions of Sarcoph. Flies to Light" (*Ib.*, 1911); "Housefly in relat. to pub. Health" (*Univ. Cal. Expt. Station Bull.*, 1911).

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Books.—"Echinoderms"; "Concrete Zool." *Contrib. to Arch. Zool. Exper.*, 1889, 1893; *Bull. Soc. Zool. Fr.*, 1895—1911; *Comptes Rendus*, 1887—1911; *Comp. Sc. Monaco*, 1902; *Bull. Inst. Oceanog.*, 1905, 1909.

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Inst. N.Y. State Comm. in Lunacy, 1897—01; Prof. of Zool., Denison Univ., 1898—1907.

Arts. on Neurol., in "Baldwin's Dict. Phil. and Psych.," and "Wood's Ref. Handb. of Med. Sci.," *Contrib.*—over 80, chiefly on Neurol.

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Books.—"The American Lobster," 1895; "Home Life of Wild Birds," 1901, revised, 1905; "Nat. Hist. of Lobster," 1911. *Contrib.*—"Alpheus: a Study in Develop. of Crustacea" (*Mem. Nat. Acad., Washington*, 1893); "Torsion of Crustacean Limb" (*Biol. Bull.*, 1905); "Life and Behaviour of the Cuckoo" (*J. Exper. Zool.*, 1910); "Nests and Nest-building in Birds" (*J. Animal Behaviour*, 1911).

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Contrib.—"Develop. of Malpighian Bodies of Kidney" (*J. Path.*, 1900); "Spinal Origin of Cervical Sympathetic Nerve" (*J. Physiol.*, 1903); "Relation of Liver Cells to Blood-vessels and Lymphatics" (*Proc. Roy. Soc. B.*, 1906); "Histol. Appearances of Mammalian Pituitary" (*J. Exper. Physiol.*, 1908).

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B. 1853, Görlitz. Educ. Gynn. Görlitz; Univs. Halle, Berlin, Breslau. Ph.D. (Bres.) 1880. Late Assist., Phys. Inst. Univ. Göttingen 1880; Sci. Sec., Ger. Polar Comm., 1882—84.

Book.—"Weather Prognosis of Sea," 1904. *Contrib.*—"Motion, especially Waves, of Air-Ocean" (*Verh. Deut. Naturf. u. Aerste Wien*, 1894); "Weather Progn. and Atmosph. Press. Distrib." (*Globus*, 1896); "Periodicity of Atmosph. Press." (*Ann. d. Hydrog.*, 1907).

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Contrib. on Amalgamation, Slags, Sampling, Ore Crushing.

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Contrib.—"Spectrosc. Observ. of Sun and Nebulae" (*Proc. Roy. Soc.*).

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Books.—Jtly. with Richard v. Hertwig (*q.v.*).

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Books.—“Studies on Rhizopoda,” 1874; “Histol. of Radiolaria,” 1876; “Organism of Radiol.,” 1878; “Actonia of Challenger Exped.,” 1881; “Textb. of Zool.,” 12th edn. 1912; and jtly. with O. Hertwig: “Nervous Syst. and Sense Organs of Medusa,” 1878; “Org. of Medusa,” 1878; “Studies on Germ Theory,” 1879—81.

HERTZSPRUNG, EJNAR, Observer, Astrophys. Observ., Potsdam, Ger., since 1909.

B. 1873, Frederiksberg, nr. Copenhagen. *Educ.* Copenhagen. Dipl. Engr. 1898. *Late* Extraord. Prof., Göttingen Univ., 1909.

Contrib.—About 20 on applic. of photog. in astron., theoret. astrophys., etc. in *Astron. Nachr.*, etc.

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Books.—“Chem. Technol. of Org. Comps.,” 1912; Ed. “Chem. Constitution and Phys. Properties,” 1913. *Art.*—“Phys. Chem. of Ferments” in Oppenheimer’s *Ferments*, 1910, 1913.

HESCHELER, K., Prof. of Zool. and Comp. Anat., Zurich Univ., Switz.

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B. 1845. *Educ.* Univ. Petersb. Dr. Phys. (Petersb.) 1882. Soc.—Phys.-Chem. Russ.; Phys. Fr.

Book.—“Treatise on Elec. and Magnetism.” *Contrib.* on calorim. by mixing at constant temp.; photom. by 3 spot screen, hygrom.; etc.

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Books.—“Textb. of Zool.,” 1870; “Evol. of Bot.,” 1871; “Injurious and Useful Insects,” 3 vols., 1872—82; “Scenes from Aquaria,” 2 vols., 1876—77; “Animal World of Ger.,” 2 vols., 1888—90; etc. *Contrib.*—Numerous.

HESS, K. v., Geh.-Hofrat; Ord. Prof., since 1912, of Ophthalm., Munich Univ., Bavaria.

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Books.—“Path. of the Lens”; “Refraction and Accommodation”; “Physiol. Optics”; “Comp. Physiol. of Eye”; “Path. of Eye,” etc.

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Book.—“Life of Lower Animals,” 1908. *Art.*—“Animal Bodies as Separate Organisms,” in Hesse and Doflein’s “Tierbau und Tierleben.” *Contrib.*—“Light-perceptive Organs in Lower Animals,” 8 parts in *Zeitschr. f. wiss. Zool.*, 1894—1904.

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Soc.—Extraord. Mem. Heidelberg Acad. Sci.; Hon. Mem. Sächs.-Thur. Erdk.

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Books.—“Intern. Milit. Med.,” 1871; “Dis. of Brain Arteries,” 1874; “Textb. of Children’s Therap.,” 2 vols., 1903, 3rd edn. 1911. *Art.*—“Brain Syphilis”; “Hydroceph.” in Eulenburg’s *Encyc.*

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Books.—"Anaesthetics and their Adminis.," 3rd edn.; "Adminis. of Nitrous Oxide and Oxygen for Dental Operations," 3rd edn. *Art.*—"Anaesthetics," *Quain's Dict. of Med. Contrib.*—"Clin. Observ. upon Respiration during Anaesthesia" (*Trans. Roy. Med.-Chir. Soc.*, Vol. 74); "Effects produced by Adminis. of Def. Mixtures of Nitrous Oxide and Air, and Nitrous Oxide and Oxygen" (*ib.*, Vol. 82); "Clin. Observ. on Anaesthet. Effects of Methyl Oxide, Ethyl Chloride, and so-called Somnoform" (*Lancet*, 1904); "Aesthetics of Anaesthetics" (*ib.*, 1910).

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Contrib. on Struct. of Azo-compounds and their Derivs.; Relationships between Absorp. and Fluores. of Org. Compounds and their Chem. Constitution.

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Books.—"Manual of Bact.," 4th edn., 1911; "Manual of Path.," 3rd edn., 1912; "Serum and Vaccine Therapy," 2nd edn., 1910. *Contrib.*—"Milroy Lects. on Disinfection" (*Lancet*, 1909); "Immunization by means of Bact. Endotoxins" (*Proc. Roy. Soc.*, 1909, 1911).

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Books.—"Elec. Measurements," 1892; "Physics in 19th Cent.," 1900. *Contrib.*—"Passage of Elec. through Gases" (*Ann. d.*

Physik); "Phys. Properties of Solutions"; "Clear Water" (with F. Kohlrausch), 1889—1910.

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Book.—"Rules and Definitions in App. Mechanics." *Contrib.*—"Engine Governors" (*Proc. Inst. C.E.*, 1890).

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Book.—"Geol.: Chapters in Earth Hist.," 1910. *Contrib.* on stratig. and palaeobot.

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Camb. Phil.; Lond. Math.; Phys. Lond. *Late* Fell. St. John's Coll., Cambridge; Princ. of Univ. Coll., Sheffield, and 1st Vice-Chancellor of Univ.

Book.—"Elem. Dynamics." *Contrib.*—"Repts. on Hydrodynamics" (*Brit. Assoc. Repts.*, 1881—82); "Researches in Vortex Motion" (*Phil. Trans.*, 1884—85); "Toroidal Functions" (*ib.*, 1881); "Crit. Study of Spectral Series" (*ib.*, 1910 and 1912).

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Books.—"A Naturalist in N. Celebes"; "Fauna of Deep Sea"; "Story of Life in the Seas." *Arts.*—"Heterokaryota and Lobosa" in Lankester's "Treatise on Zool."; "Coelenterata" in "Camb. Nat. Hist." *Contrib.*—"Medusae of Millepora" (*Q. J. Micros. Sci.*, 1891); "Anat. of Alcyonium" (*ib.*, 1895); "Dendrocometes paradoxus" (*ib.*, 1901); "Dendrosoma radians" (*ib.*, 1909).

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Arts.—"Dicotyledons"; "Cat. of African Plants coll. by Welwitsch in 1853—61," 1896—1900; Several Natural Orders in "Flora of Trop. Africa"; "Flora of Brit. India"; "Flora Capensis"; "Lorentz Bot. of New Guinea." *Contrib.*—"Monograph of Eben-

ceae" (*Trans. Camb. Phil. Soc.*, 1873); "African Species of Genus Coffea" (*Trans. Linn. Soc.*, 1876); "Solanaceae, Acanthaceae, Gesneraceae, Verbenaceae" (*Vidensk. Meddels, Kjöbenhavn*, 1877); "Sagittaria heterophylla Pursh in Devon" (*J. Bot. Brit. and For.*, 1908).

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Contrib.—"Strength of iron hooks" (*Building and Engrng. J.*, 1889); "The Von Schmidt Dredge" (*Proc. Inst. C.E.*, 1890); "Built-up columns" (*Austral. Assoc. Adv. Sci.*, 1911); "Trussed beams" (*Ib.*, 1909).

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Contrib.—"Action of metals on nitric acid and electrolysis of nitric acid" (*Amer. Chem. J.*, XV, XVII, XVIII, XXI); "Action of chlor-carbonic ether on sodium-acetone" (*jtly.*) (*Ib.*, XIII); "Certain compounds of chromium" (*Ib.*, XXVI); "Changes in excretion of carbon dioxide, resulting from bicycling" (*jtly.*) (*Amer. J. Physiol.*, 1904).

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Books.—"Topog. Anat."; "Tuberc. and Scrofula"; "Gen. Surgery."

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Books.—Numerous, chiefly on Meteorol.

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Books.—"Plan of Central Nervous System," 1885; "Physiol. Notebook," 1893; "Amer. Syst. of Dis. of Eye" (*jtly.*); "Intro. to Science," 1900; "Primer of Physiol.," 1901; "The Body at Work," 1908; "Central Nervous Organs." *Contrib.*—"Rotation of Brain" (*Brain*); "Chrome-Silver Method" (*Ib.*, 1896); "Brain of Ornithorhynchus" (*Phil. Trans.*, 1893); "Hippocampus" (*Ib.*, 1893).

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Books.—"Filtration of Water"; "Trade Nuisances"; "Common Adulterations of Food"; "Filtration of Sewage through Coal"; "Repts. on Health of Co. of Warwick," 1889—1909. *Contrib.*—"The Health Visitor from the Co. Council. Point of View" (*J. Roy. San. Inst.*, 1906); "Co. San. Administ." (*C. C. Assoc. Circ.*, 1908); "The Sanatorium and Phthisis in Relation to Destitution" (*Trans. Cong. on Destitution, Lond.*, 1911); "Evol. of the M.O.H." (*Publ. Health*), 1911.

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Book.—"Lab. Guide for Qual. Anal.," 1911. *Contrib.*—"Rel. solubility of silver halides" (*J. Amer. Chem. Soc.*, 1908); "Solub. of salts in concentrated acids" (*Zsch. phys. Chem.*, 1909); "Modification of Volhard's Method" (*J. Amer. Chem. Soc.*, 1907); "Inconstancy of solubility product" (*Ib.*, 1910).

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Contrib.—"Measur. of Cloud Altitudes" (*Mem. Met. Dept. India*, 1899); "Hydrolysis of Ammonium Salts" (*J. Chem. Soc.*, 1906); "Conductiv. of Hydrofluoric Acid" (*Proc. Roy. Soc.*, 1909).

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Contrib.—On Develop. of Monotremes Marsupials.

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Books.—"Physiol. and Path. of Cereb. Circulation," 1896; "Man. of Human Physiol.," 1899. *Contrib.*—"On Intracranial Pressure" (*Proc. Roy. Soc.*, 1893); "Influence of Gravity on Circulation" (*ib.*, 1894); "Formation of Heat in Salivary Glands" (*J. Physiol.*, 1894); "Metabolism in Brain and Muscle" (*ib.*).

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Book.—"Contents of 5th and 6th Bks. of Euclid with a Note on Irrational Numbers," 1st edn., 1900, 2nd edn., 1908. *Contrib.*—"On

a Spherical Vortex" (*Phil. Trans.*, 1894); "On the 5th Bk. of Euclid's Elements" (*Camb. Phil. Trans.*, 1897 and 1900); "On the *c*- and *p*-discriminants of Ordinary Integrable Differential Equations of the First Order" (*Proc. Lond. Math. Soc.*, 1888); "On Continuations of certain Fundamental Power Series" (*ib.*, 1902).

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Book.—"Anal. of Silicate and Carbonate Rocks," several edns., and in Ger.

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Contrib.—"Mass Influence in Electrotech. Inst." (*Elek. Kraftbetriebe*, 1911); "Graphic methods for Mass Influence in Electrotech., and analogy to Mech." (*ib.*, 1906); "Three-phase Moore install. at Breslau" (*Elektrotech. Zeitschr.*, 1911).

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Books.—"Math. Crystallog.," 1903; "Finite Groups," 1908; etc.

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Contrib. on Radioactivity, Electrons and Constitution, Electromagnetic Influence of Elect. Convection, in *Ann. d. Phys., Phys. Zeitschr., Giessen Ber. d. Nat. Ges., Freiburg Ber. d. Nat. Ges.*, 1878—1911.

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Books.—"Astron.," 1911; "Map Projections," 1912. *Contrib.*—"Solar Parallax Papers," Nos. 1—9; *Monthly Notices, R.A.S.*, 1901—10, and many others.

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Books.—"Chem. Atomistics," 1908; "Tints of Iron Gall," 1909; "Caoutchouc and its Testing" jtlly. with Memmler, 1910.

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Books.—"Handb. of Mineral.," 2 vols., 1889—1911, 3rd in press. *Contrib.*—Numerous to Poggendorff, Groth's "Zeitschr. f. Krystall.," etc.

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Books.—Treatise on Chem. Anal. and Hist. of Chem. *Contrib.* on Crystallographic Chem. in several J.

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Books.—"Fungus Medull. Retinae," 1869; "Clin. Observa.," 1874; "Pract. Ophthalm.," 3 vols., 1876—78; "Math. Basis of Med. Stat.," 1874; "Electromagnet in Ophthalm.," 1885; "Magnet Operation in Ophthalm.," 1899; "Ophthalm. Dict.," 1887; "Arabian Oculists," 2 vols., 1904, 1905; "Intro. to Ophthalm.," 1892, 1902; "Hist. of Ophthalm.," 4 vols., 1899—1912; "Treatm. of Myopia," 1910, in Eng. 1912.

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Books.—"Erysipelas," in Keating's "Encyc. of Dis. of Children"; "Cure of Tuberc. by Oxytuberculine, 1897. *Contrib.*—"Hysteria in Male" (*Occid. Med. Times*, 1890); "Memory" (*Pac. Med. J.*, 1881); "New Treatment of Hysteria" (*Id.*, 1891); "Treatment of Pul. Tuberc." (*Med. News*, 1897).

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Books.—"Elem. Geol.," "Geol., Me., N.H., Vt.," "Hawaii and its Volcanoes," 1909, 2nd edn., 1911. *Contrib.*—Over 150 on crystalline rocks in New Eng.; glacial geol.; Ichnology, etc.
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Book.—"Depths of the Ocean," with Sir J. Murray, 1912.
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Books.—"Earthquakes," 1907, transl. into German, 1910; "Characteristics of Exist. Glaciers," 1911. *Contrib.*—130 titles in Amer. and Foreign J. Prepared Geol. Map of Large Areas of Wis. and Conn. for U.S. Govt.
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Books.—"Theory of Functions of a Real Variable"; "Treatise on Plane Trig." *Contrib.*—Numerous to *Proc. Lond. Math. Soc.*, etc.
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Book.—"Textb. of Arith. and Geom. for Gymns." *Contrib.*—"Simpson's meth. of mech. quadrature" (*Wiener Ber.*, 1884); "Sol. of dynam. problems by Hamilton's partial diff. eqn." (*Ib.*, 1879); "Decomp. of algeb. forms in linear factors" (*Ib.*, 1904); "Estim. of quadratic parts of algeb. forms" (*Ib.*, 1907).
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Books.—"Revis. of Genus Hibiscus," 1900; "S. Oran, Flora and Phytogeog.," 1904; "Plantae Bogorienses," 1904; "Sertum Madagascar," 1908; "Fr.-Dutch-Malay Dic.," with Long, 1910; "Philosophy of a Naturalist," 1911; "Plantae Hochreutneranae," 1912. *Contrib.* on geotropic sensibility; new genera *Briquetia*, *Neobrittonia* and *Bakeridesia*; etc., to *Rev. gen. de Bot. de Paris*, *Bull. Soc. Bot. Belg.*, etc.
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Hemenway Archaeol. Expert to Arizona and New Mexico, 1886—89; Librarian and Ed. Bureau of Amer. Ethnol., 1893—1900; Assit. in Charge of Offices and Act. Cur., Internat. Exchanges, 1901—05.

Book.—Ed. "Handb. of Amer. Indians," 2 vols., 1907—11.

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Art.—"Physics," in *Internat. Encyc.*

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Books.—Transl. Strecker-Kensington's "Org. Chem.,"; Valentin-Hodgkinson's "Pract. Chem.," *Art.*—"Explosives," in *Times Encyc. Brit. Contrib.* to *Liebig's Annalen, Berlin Ber., J. Chem. Soc., Brit. Assoc. Repts.*

Inv. Explosives and methods of carburising iron, preserving guns.

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Books.—"Milk Production and Control"; "Economics of Milk." *Contrib.*—Numerous to *Chem. Zeit., Jahresber. üb. Tierchem., Milchzeit., etc.*

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Book.—"Crustacea collected by the *Challenger*," 2 vols. *Contrib.* on Anat. of Oyster, Cirripedia, Pycnogenida; Fisheries, Salmon, Mussels, etc.

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Contrib. on geol. of Spitzbergen, etc.

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Books.—"Prim. Hist. of Man," 1891; *Prim. Hist. of Art*," 1898; "Diluvial Man in Europe," 1903; "Natural Hist. of Man," 1909. *Contrib.*—"The first Pottery in Cent. Europe" (*Internat. Prehist. Cong., Monaco*, 1906); "Burial Ground of Hallstatt" (*ib.*).

Chron. Order of Palaeolithic Age and of first Iron Age in C. Europe.

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Books.—"Paroxysmal Tachycardia," 1900; "Path. and Therap. of Cardiac Neurosis," 1901; "Cultiv. of Health Trips in Rhein Prov. and Westphalia," 1902; "Phys. Ex. in Practice," 1898; "Functional Diagn. and Therap. of Dis. of Heart and Blood-vessels," 1911. *Contrib.*—Numerous.

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Books.—"Etiol. of Syph.," 1906; "Atlas on Etiol. and Exper. Syph.," 1908. *Art.* on Etiol. of Syph. in *Handbk. d. Geschlechts Krankh.*, 1912. *Contrib.*—Numerous on Animal Syph., Vein Syph., etc.

Disc., jtly., *Spirochaeta pallida*, the cause of syphilis.

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Books.—"Exper. Studies on Diabetes," jtly.; "Lect. on Gen. Therap.," "Atlas of Anat. of Mediastinum."

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Books.—"Metall. of Lead"; "Metall. of Iron and Steel"; "Metall. of Copper." *Arts.*—"Lead and Silver," *Encyc. Brit. Supplem.*; Ann. Revs. on "Metall. of Lead," *Mineral Ind.*, since 1892. *Contrib.*—"Gold Mining in Black Hills" (*Trans. Amer. I. Min. E.*, 1888); "Fusibility of Fireclays" (*Ib.*, 1894, 1895); "Formation temperatures of ferro-calcic silicates" (*Ib.*, 1899); "Decomp. of metallic sulphates" (*Ib.*, 1912).

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Books.—"Textb. of Biochem.;" "Anal. of Urine." *Contrib.* num. to *Deutsche Revue.*

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Books.—"Textb. of Women's Dis.;" "Gynaec. Operations"; "Human Placenta"; "Jaundice in Newly-born"; "Fibromyosis and Pregnancy"; "Anat. and Developm. of Human Placenta"; "Prophylaxis of Puerperal Dis."

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Public. on Physiol. Chem. and Pharmacol.

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Contrib. to Trans. Amer. Inst. Min. Engngs., Mineral Industry. etc.

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Elec. appli. and appar.; Intern. combust. engines.

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Books.—"Indian Borderland"; "India"; "Gazetteer of India"; "Tibet"; "Gates of India"; "Country of King's Award." *Arts.* in *Encyc. Brit. Contrib. to Geog. J.*, etc.

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Contrib.—"Purified Ammon. Liquor and its Use in Gas Purific." (*Trans. Inst. Gas Engngs.*, 1895); "Enrichment of Coal Gas" (*Proc. Inst. C.E.*, 1896—97); "Coke Handling Plant" (*Trans. Inst. Gas Engngs.*, 1900); "Pres. Address" (*Ib.*, 1902—03).

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Book.—"Elem. Geom." 1901. *Contrib.*—"Ruled surfaces of fourth order" (*Amer. Math. J.*, 1893).

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Contrib.—Various in *Miner. Mag.*, *Geol. Mag.*, *Q. J. Geol. Soc.*, *J. Roy. Anthropol. Inst.*, *Records and Memoirs, Geol. Surv. of India*, *J. Asiatic Soc.*, Bengal.

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Books.—"First Signs of Insanity"; "Ment. Symptoms of Brain Dis.," "Hypnotism and Suggestion." *Contrib.*—"Cerebral localisation of Melancholia" (*J. Ment. Sci.*, 1901); "Human Brain" (Cassell's *Pop. Sci.*, 1903); "Oper. treatm. of Insanity" (*Lancet*, 1907); "Change of life in Man" (*Neurol. Centralbl.*, 1910).

Investig. into localis. of ment. functions in brain and expts. in hypnotism and suggestion.

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Books.—"Text-bk. of Chem.," trans. in Ger., Fr., Eng., Ital., Russ., Polish; "Direct Substitution in Benzene Nucleus"; "Lab. Man. of Org. Chem.," trans. in Ger., Ital., Russ., Eng. *Contrib. to Recueil trav. chem. des Pays-Bas, Ber. deut. Chem. Ges., J. f. Prakt. Chem.*, since 1887.

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Arts.—"Cretaceous Flora of S. N.Y. and New Eng." (Monog. U.S. Geol. Surv., 1850); "Studies of Cretaceous Conif. Remains from Kreischerville, N.Y.," "Mem. N.Y. Bot. Gard.," Vol. 3, with E. C. Jeffrey; "Paleobot." (*New Internat. Encyc.*, 1903; *Encyc. Amer.*, 1904). *Contrib.*—"Relation between Forestry and Geol. in N.J." (*Amer. Nat.*, 1899); "Amber in Eastern U.S." (*Ib.*, 1905); "Kenai Flora of Alaska" (*Amer. J. Sci.*, 1911).

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Book.—*Ed. Observ. Mag.*, 1893—1912. *Arts.* on Astronomers in Nat. Dic. Biog. *Contrib. to English Mechanic.*

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Books.—"Swed. Cambr.-Silurian Hyolitidae and Conularidae," 1893; "Organis. of Eurypterus Fishery," 1897. *Contrib.*—"Didymograptus, Tetragr. and Phyllogr." (*Geol. Mag.*, and *Forh. Geol. Foren.*, 1895); "Inner Struc. of a Silurian Cephalopod" (*Kayser's Palaeont. Abh.*, 1885).

Methods of prep. of fossils.

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Contrib. to "Engrng. Contracts and Specifics.," 1895; Engrns' Club of St. Louis; Amer. Water Works Assoc.; Amer. Soc. M.E.

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Books.—"Lovisa-Vesijarvi Ry.," 1905; "Gellivare-Riksgransen Ofoten Ry.," 1904; "Construc. of Ry. Cuttings and Embankments," 1900; "Railway Stations," 1902.

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Book.—"Norweg. Plants," 1903. *Contrib.* numerous on Bot.

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Books.—"Zool.," 1885—96; "Lepidoptera," 1895; "Nervous Sysys. of Arthropods," 1896; "Spinal Ganglia," 1898—99; "Nerve Cells," 1899—1900; "Ovocytes," 1900; "Morph. of Cells," 1901; "Fine Struct. of Transverse Muscle Fibres," 1907—10; "Trophospangien der Zelle," 1902—07.

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Contrib.—"Exper. on beri-beri and scurvy" (*J. Hyg.*, 1907; *Zschr. f. Hyg.*, 1912).

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Book.—"The Concept of Consciousness," 1913. *Art.*—"Place of Illusions in a Realistic Universe" in "The New Realism," 1912. *Contrib.*—"Classif. of psycho-physic methods" (*Psychol. Rev.*, 1904); "Ocular Nystagmus and localiz. of sensory data during dizziness" (*ib.*, 1909).

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Books.—"Dis. of Infancy and Childhood," 1896, 6th edn., 1911; "Care and Feeding of Children," 1894, 6th edn. 1912. *Art.*—"Diarrheal Dis.," in Keating's "Cyc. of Dis. of Children."

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Contrib. on ophthalm., etc.

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Books.—"Lightning Conductors," 1878; "Improvem. in Danger from Lightning," 1880. *Contrib.*—"A new Elec. Machine" (*Pogg. Ann.*, 1865, 1867); "Elec. Shadows" (*Gött. Akad. Ber.*, 1881); "Lichtenberg's Figures" (*Phys. Zschr.*, 1905); and others since 1862.

Inv. Holtz Elec. Machines.

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Contrib. on Physiog., etc., to *Science*, *Bull. Amer. Geog. Soc.*, etc.

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Book.—"Handb. to Med. Europe."

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Books.—"Pharmacographia Indica" (jtly.); "Mat. Med. for India." *Contrib.*—Many, on Phyto-chem., in *J. Asiat. Soc. Bengal*, etc.

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Books.—"Man. of Brewing, Sci. and Tech." (and in French); "Solutions in Chem.;" "Matric. Chem." *Contrib.*—"Gravimetric

Determ. of Minute Quantities of Arsenic" (Roy. Com. on Arsen. Poisoning Rept.); "Bronzing and Metal. Albuminates" (Rept. of Com. on Bronzing, etc.); "Testing of Creosote" (*J. Soc. of Chem. Ind.*, 1911).

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Contrib.—Several on Design of Works, and Tech. Chem., in *Soc. Chem. Ind., J. Gas Lighting*, etc.

Research on Azo Bodies, Pyridine, and Coal-tar Constituents.

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Soc.—Lond. (Eng.) Math.; Amer. Assoc. Adv. Sci.

Contrib. to *Math. Visitor, Analyst, Annals of Maths., Amer. Math. Monthly*.

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Book.—"School Hyg." (with E. A. Browne).
Arts.—Relating to Health of Cities. *Contrib.*—Various Repts. upon health of Liverpool.

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Books.—"Dent. Microscopy," 2nd edn. 1899; "Histol. and Path. Histol. of Teeth and Associated Parts," 1903; "Introd. to Dent. Anat. and Physiol., Descrip. and Applied," 1912. *Contrib.*—"New meth. of preparing sections of teeth and bone to demons. the hard and soft tissues in combination" (*Trans. Odont. Soc.*, 1891); "Path. Histol. of dent. tissues" (*Tijdsch. v. Tandheelk.*, 1896); "Healing processes in dent. pulp" (*J. Brit.*

Dent. Assoc., 1898); "Two Odontocetes and some other cysts" (*Proc. Roy. Soc. Med.*, 1910).

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Books.—"Soil Fertility and Permanent Agric."; "Soil Fertility Lab. Manual"; "Story of the Soil." *Contrib.*—"Div. of Soil Particles in Mech. Anal." (*Proc. Assoc. Offic. Agric. Chem.*, 1898); "Determ. of CO, CH₄, and H by Combustion" (*J. Amer. Chem. Soc.*, 1899); "Improvement in Chem. Compos. of Cone Kernel" (*ib.*, 1909); "Quant. Method for Determ. Acidity of Soils" (*Proc. Assoc. Offic. Agric. Chem.*, 1902).

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Arts.—"Chem. of Urine," in Schaefer's "Text-bk. of Physiol."; "Relation between Chem. Constitution and Physiol. Action," in Hale White's "Pharmacol.," etc. *Contrib.* on Biochem. Subjects to *J. Physiol., Proc. Roy. Soc.*, etc.

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Books.—"Exper. Electro-Chem.," 1905; "Standard Lightning Protec.," 1907; "Electrolyt. Conduction," 1904.

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Books.—"Marbles and other Limestones"; "Elements Phys. Geog."; "Sandstones of Indiana"; "Indiana Oolitic Limestone"; "Clays of Pennsylvania," 3 parts. *Contrib.*—Numerous.

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Contrib.—"Dynamo Elec. Machinery" (with Dr. J. Hopkinson) (*Trans. Roy. Soc.*, 1886); "Portrush Elec. Rail." (*Soc. of Arts*, 1883); "Elec. Trams." (*Inst. C.E.*, 1887); "Elec. Rail." (*ib.*, 1893, and *Roy. Inst.* 1893).

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Books.—"Brit. Freshwater Rhizopoda," with Cash, 2 vols., 1905—09; "Bibliog. of Tunicata," 1912; Ed., Alder and Hancock's "Brit. Tunicata," 3 vols., 1905—12. *Arts.*, num. on geol., climate, and nat. hist. of Herts. *Contrib.*—"Dicellograpsus, a New Genus of Graptolites" (*Geol. Mag.*, 1871); "Morphol. of Rhabdophora" (*Ann. Nat. Hist.*, 1882); "Rainfall in Brit. Empire, 1877—1896" (*Q. J. Roy. Met. Soc.*, 1898); "Dates of Public. of Gmelin's Edn. of Systema Naturae of Linnaeus" (*Proc. Zool. Soc.*, 1908).

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Books.—Numerous on Engrg.

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Books.—"Cat. of Library of Anat. Inst.," 1896; "3rd Gen. Index of Norweg. Mag. of Med., 1871—1900," 1901; "Textb. of Hum. Anat., Physiol., and Soteriol. for Secondary Schs.," 1900, 4th edn., 1910; "Elements of

Develop. of Hist. of Anat.," jtly. with L. Faye, 2 vols., 1904 and 1905; "Leonardo da Vinci's Book of Anat.," jtly., 1911—12, and in Eng. *Contrib.*—"First 50 promotions of Doctors of Med. at Roy. Univ. Fredericiana" (*Norsk Mag. f. Laegev.*, 1906); "Leonardo da Vinci, Anatomist" (*ib.*, 1907); "Art of embalming in ancient and modern times" (*ib.*, 1909); "Passages in hist. of med. of Japan" (*ib.*, 1912).

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Books.—"Two Years in the Jungle," 7th edn.; "Amer. Nat. Hist.," 3rd edn.; "Taxidermy and Zool. Collecting," 6th edn.; "Exterm. of the Amer. Bison"; "Camp-Fires in Desert and Lava"; "Our Vanishing Wild-Life," 1912.

Founded National Zool. Park, 1887—90; Wichita National Bison Range and Herd, 1905; Montana National Bison Range, 1907—08; National Collection of Heads and Horns (N.Y. Zool. Park); Snow Creek Game Preserve, Montana, 1911.

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Contrib.—"Method of spreading of Olive Knot Dis.," jtly. (*J. Phytopath.*, 1912); "Root rot of Citrus trees" (*Proc. 37th Fruit Growers' Conv.*, 1910); "Bud rot and some other coconut troubles in Cuba" (*Bull.* 15, Centr. Agron. Sta. Cuba, 1908); "Soil sterilizing, Bordeaux mixture and poisons for tobacco seedbeds" (*Circ.* 30, *ib.*, 1908).

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Books.—"Micros. Studies in Marine Zool.," 1901; "Rept. on Marine Zool. of Okhmandal in Kattiarwar," 1909; Madras Fishery Bulls.: No. 4, "Gen. Investig.," 1910, No. 5, "Oyster Culture," 1910, No. 6, "Marine Fish-farming," 1911, No. 7, "Sacred Chank of India," 1913; various rept. on edible oyster and pearl oyster fisheries in India. *Arts.*—Various, in Herdman's "Rept. on Pearl Oyster Fisheries of Gulf of Manaar," etc.

Origin and artificial produc. of pearls; Life-hist. and anat. of Ceylon pearl oyster; many new genera and species of marine cestode parasites.

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Books.—"Bacteriol. Exam. of Water" ; Jt. Ed., "Theory and Pract. of Hyg.," 2nd edn. *Contrib.*—"Comp. Study of Varieties of B. Coli Isolated from Typhoid and Normal Dejecta" (*J. Hyg.*, Vol. 1, 1901); "Agglutin. Test as a Means of Diag. between B. Typhosus and Coliform Organisms" (*Brit. Med. J.*, 1900); "Enquiry into Influence of Soil, Fabrics and Flies in Dissem. of Enteric Infection" (with Maj. Firth) (*Ib.*, 1902); "Saprophytic existence of M. Melitensis" (*Repts. Mediter. Fev. Comm.*, 1903).

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Arts. in Heath's "Dict. of Surg." and Allbutt's "Syst. Med.;" "Functions of the Marginal Convolution" (with Prof. Schäfer) (*Proc. Roy. Soc.*, 1884, and *Phil. Trans.*, 1888); "A Minute Anal. of Movements produced by Stimulating Ferrier's Cortical Arm Centre" (*Ib.*, 1886—87, and *Ib.*, 1887—88); "On the Thyroid and Pituitary Bodies" (Brown Lect.); "Pathogeny of Epilepsy and Canine Chorea" (*Ib.*, 1885—86). *Contrib.*—"Funct. of Thyroid Gland" (Brown Lect.) (*Proc. Roy. Soc.*, 1885—86); "Brain Surgery" (*Brit. Med. J.*, 1886—87—90); "Trigeminal Neuralgia" (*Clin. J.*, 1902).

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Art.—With Sir G. H. Darwin, "Motion of Hydrosphere" in "Encyc. d. Math. Wiss." *Contrib.*—Various in *Trans. Roy. Soc.*, *Monthly Notices R.A.S.*, *Cape Observ. Publ.*, etc.

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Book.—"Human Mech., its Physiol. and Hyg. and Sanitation of its Surroundings," with Sedgwick, 1906. *Contrib.*—"Escape of heart from Vagus inhibition" (*J. Physiol.*, 1895); "Ergograph. studies in neuro-muscular fatigue and muscular soreness" (*Amer. J. Physiol.*, 1901—2); "Influ. of alveolar tension of oxygen on respiration" (*Ib.*, 1910); "Influ. of muscular activity on alv. tensions of oxygen and carbon dioxide" (*Ib.*, 1912).

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Books.—"Evol. of the Sciences"; "Sky and Atmosphere"; "Matter."

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Contrib.—"Neurones and supporting elements of brain of a Selachian" (*J. Comp. Neurol.*, vol. 11); "Animal cell in light of recent work" (*Proc. Ia. Acad. Sci.*, vol. 11); "Gen. methods for study of nervous syst." (*J. App. Micr.*, vol. 4); "Intracellular canaliculi of liver" (*Sci.*, vol. 15).

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Numerous Repts. on lead poisoning, sewage disposal, water supply, oysters, milk, water-cress, etc. to Loc. Govt. Bd., Sewage Comm., L.C.C., Metrop. Water Bd., and Med. and Sci. J.

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Books.—"Submarine Boats," 1888; "Textb. in Technol. for Dockyard Sch. of Copenhagen," 1889; 2 Books on Phys. Ex. *Contrib.* on nav. archit., armament of warships, strategy, in *Trans. I.N.A. London, Amer. Soc. N.A. and Mar. E.*, etc.

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Contrib. to *Bulls.* 66, 117, 108, 68 Bur. of Chem.; "Microscope in Food Adult." ("U.S. Dept. Agric. Yearb., 1907").

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Contrib.—"Metabolism in Scurvy" (*Arch. Internat. Med.*, 1912); "Cells of blood, peritoneum, etc. to various toxins" (*J. Med. Research*, 1907); "Myxoedema" (*J. Amer. Med. Assoc.*, 1907); "Tetany" (*Amer. J. Med. Sci.*, 1906).

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Book.—"Test of Metals, etc., for Indust. Purposes," Repts. 1881—1909, U.S. Govt. *Contrib.*—"Tests of Large Steel Columns" (*Amer. Soc. C.E.*, 1911); "Strain Measurements of Steam Boilers" (*Amer. Soc. M.E.*, 1911); "Struc. Condition of Metal of Steel Rails" (*Interstate Commerce Comm., Wash.*, 1912).

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Books.—"Insect Book," 1901; "Mosquitoes," 1901; "Housefly Dis. Carrier," 1911; Many Govt. Repts. and Bulls. *Contrib.*—Many.

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Book.—Ed., "Gray's Anat."

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Books.—"Metallurg. of Steel"; "Iron, Steel and other Alloys"; "Metallurg. Lab. Notes"; "Copper Smelting." *Art.*—"Iron," *Encyc. Brit.*, 11th edn. *Contrib.*—Over 150.

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Books.—"Study of the Sky"; "Elements of Descrip. Astron." *Contrib. to Publ. Cincinnati Observ., Astron. Nachr., Astron. J., Monthly Notices, R.A.S., etc.*, on Measures of Double Stars, Nebulae, Comets and Asteroids.

Disc. of nebulae and double stars; new methods of solving Kepler's Problem.

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Books.—"Bibliog. of Metals of Platinum Group"; "Inorg. Chem."; "Inorg. Chem. according to Periodic Law" (jtly.); Transl. Blochmann's "Guide to Prep. Work in Inorg. Chem." *Art.*—"Chem.," in "New Internat. Year Book," 1911. *Contrib.* on Ruthenium, etc.; numerous, in *J. Amer. Chem. Soc., Amer. Chem. J., Pop. Sci. Monthly, Science, etc.*

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Books.—"Sabula Draw by Graphics"; "Continuous Girder"; "Treatise on Arches"; "Retaining Walls for Earth"; "Design of Simple Roof Trusses in Wood and Steel"; "Symmet. Masonry Arches"; "Diagrams, Formulas and Tables for Engrs. and Architects." *Contrib.*—"Expertl. Verific. of Arch Formulas" (*Rly. Age Gazette*, 1909); "Expertl. Determ. of Draw Br. Reactions" (*Engng. News*, 1899); "Hist. of the Stone Arch" (*J. Assoc. Engng. Soc.*, 1898); "Bridge Deflections" (*Ib.*, 1890).

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Book.—"Hepaticae and Anthocerotae of Cal." 1899. *Art.*—"Botany," in "Internat. Year Book," 1898. *Contrib.*—"Anthocerotaceae of N. Amer." (*Ib.*, 1898); "Phycolog. Studies," 1—5 (*Ib.*, 1905—11); "New Amer. Coralline Algae" (with M. Foslie) (*Bull. N.Y. Bot. Gard.*,

1906); "Building of Coral Reefs" (*Science*, 1912).

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Contrib. on fasting studies.

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Books.—"Textb. of Physiol.," Ed. of "Amer. Textb. of Physiol." *Art.*—"Med. Educ. in U.S.," *Brit. Encyc.*, last edn. *Contrib.* on genesis of blood-corpuscles; action of inorg. salts on the heart-beat; physiol. of pituitary gland and of sleep; coag. of blood, new method of preparing thrombin, new theory of the causes of coag.; etc., to *Amer. J. Physiol., English J. Physiol.*, etc.

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Books.—"Art. of Educ.," "Work and Life." *Art.* in Monroe's "Cyc. of Educ." *Contrib.* to *Pop. Sci. Monthly, Amer. J. Sociol., Internal J. Ethics, Educ. Rev.*, etc.

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Books.—"Peren. Sow Thistle and other Weed Pests"; "Fungous Dis. of Veg. Crops in Ont.," "Weeds of Ont." *Contrib.*—Various Farm Journals, on Forcing Plants by Etherization, etc.

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Books.—"Geog. of Newfoundland"; "Geol. Map of Newfoundland"; "Hist. of Aborigines of Newfoundland." *Contrib.*—Numerous.

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Hon. D.Sc. (Vict.) 1902; M.Sc. (Lond.) 1868; M.B. 1866; F.R.C.S. (Eng.) 1868. *Late* Bradshaw Lect., 1899; Hunt Orator, 1903; Mem. Senate, Lond. Univ., and Surg., Nat. Truss Soc.; P.P. Roy. Coll. Surg., Eng., 1901—03.

Arts.—"Injuries of Chest," "Femoral Aneurysm," "Gastrostomy," etc., in Heath's "Dict. of Pract. Surg.," 1886. *Contrib.*—"Spec. of Erectile Tumour of the Foot" (*Guy's Hosp. Repts.*, 1869); "Operation of Tracheotomy in Childhood" (*ib.*, 1875); "Cure of Varicose Veins by Excision" (*ib.*, 1877); "Excis. of Knee" (*ib.*, 1893).

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Arts.—"Syst. of Blood and Lymph. Vessels" in "Textb. of Histol.," 1901; "Injection of Blood and Lymph. Vessels" in "Encyc. Micr. Tech.," 1902. *Contrib.*—"Lymph. syst. of tadpoles" (1905 and 1908); "Of Salamanders" j'tly. (1912).

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Books.—"River Discharge" (with Nathan C. Grover); *Repts.* on Water Supply of U.S. Geol. Surv. *Contrib.*—"Comparison between Rainfall and Runoff in North Eastern U.S." (*Trans. Amer. Soc. C.E.*, 1907); "Use and Care of the Current Meter" (*ib.*, 1910); "Papers on Stream Flow" (*Engng. News*, 1904—10).

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Books.—"Double and Multiple Stars," 1905. *Contrib.*—"Spherical Conic Section and its Tangent Surface" (*Zeitschr. f. Math. u. Phys.*, 1900); "Conchoidal Surfaces" (*Monatsh. f. Math. u. Phys. Wien.*, 1903).

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Books.—"Photog. Screens"; "3-Colour Photog.," "Colloid Emulsions"; etc. *Contrib.*—Numerous, to *Photog. Korresp.*, etc.

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Books.—"Researches on Nemertea," 1874—81; "Proneomenia Sluiteri," 1880; "Embryol. of Lineus obscurus," 1885; "Repts. on Challenger Nemertea," 1887; "Studies in Mammal. Embryol.," in Eng., 1889—1912; "Descent of Primates," in Eng., 1897; "Descent of Annelids and Chordata," 1904; "Embryol. of Nycticebus tardigrad.," 1907; "Ontog. of Mammals," 1909. *Contrib.*—"Foetal membranes of Verteb." (*Internat. Cong. Zool., Boston*, 1907); "Darwinism and Wallaceism" (*Contemp. Rev.*, 1908, 1909).

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Labs., Prague, 1897—1912; Dean, Med. Fac., 1901.

Book.—"Princ. of Bact.," and in Eng., 1899. *Contrib.*—"Relation of putrefact. to parasitic bacteria" (*Lancet*, 1889); "Causes of infect. dis." (*Monist*, 1898); Harben Lects. (*J. of State Med.*, 1903); "Remarks on Tuberc." (*Ib.*, 1904); and 200 others.

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Books.—"Comp. Study of Colapt. of Antilles and N. Amer.," 1896; Chaps. on Nat. Hist. in "Manual parm. los Maestros." *Contrib.*—"Clin. manifest. of Syph. of the Tongue" (*Esc. d. Med., Habana*, 1894); "Lismognogia" (*Rev. Fac. Lett. y Ciencias*, 1907); "Minerals and Mineralogy" (*Rev. de Ci.*, 1901).

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Contrib.—25 on Physiol. of Blood Circulation (*Pflügers Archiv*, 1888—1912); "Microsc. of gland thyr. and muscle contraction, etc." (*Ib.*, 1894 and 1908).

Disc. cholesterolin-esters in blood, 1896.

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Contrib. on path., parasitol., gynaecc., med. educ.

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Book.—"Treatise on Hydraulics" (jtl.), 1911. *Arts.*—"Roads," and "Toll-Roads," in "Cyc. of Amer. Govt." (in press).

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Contrib.—Surface tension and solubility; Nature of precipitates; Silver and cadmium coulometers; Inclusions in electrolytic deposits; etc., in *Zeitschr. f. Phys. Chem.*, *Zeitschr. anorg. Chem.*, *J. Amer. Chem. Soc.*, *Phys. Rev.*, *J. Phys. Chem.*, etc.

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Books.—"Coal Fields of Britain"; "Phys. Geog. and Geol. of Irel."; "Volcanoes Past and Present"; "Our Coal Resources"; "Monog. on Sub-oceanic Physiog. of N. Atl. Ocean"; "Reminiscences"; "Geol. of Mt. Seir, Sinai and W. Palestine." 1885. *Arts.* in Hastings' Bible Dic. *Contrib.* on Geol. of Palestine, Arabia, Nile Valley, etc.

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Contrib.—"Use of Interferometer in study of Elec. Waves" (*Phys. Rev.*, 1907); "Pressure of light" (*Ib.*, 1901—03).

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Contrib. on Theory of Curves and Surfaces, Abelian Functions, Theory of Numbers, to *J. de Math.*

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Contrib.—"Studies of Protein" (*Research Bull.* 13, 1910); "Requirements of Dairy Cows" (with F. W. Wole) (Univ. of Wisconsin Agric. Expt. Sta.).

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Contrib.—"Mond Gas Producer Plant" (*Proc. I.C.E.*, 1897); "Power Gas and Large Gas Engines" (*Proc. I.M.E.*, 1901); "Recent Develop. in Large Gas Engines" (*Proc. Brit. Assoc.*, 1902); "Internal-Combust. Pump" (*Proc. I.M.E.*, 1909).

Inv.—"Humphrey" pump; Designed first producer gas system over 120 sq. miles in S. Staffs.

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Contrib.—"Changes in wave-frequencies of lines of emission spectra of elements" (*Astrophys. J.*, 1897); "Double reversal" (*Ib.*, 1903); "Width and pressure-shift of spectrum lines" (*Ib.*, 1906); "Vertical temp. gradient of atmosphere" (*Ib.*, 1909).

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Art.—"Congenital Dis. of Heart," in "Allbutt's Syst. Med."

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Books.—"Gas Lighting"; "Hist. of Gas Lighting." *Contrib.* to *Proc. Inst. Gas Engrs.* and *J. Soc. Chem. Ind.*

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Arts.—"Dis. of Throat," "Encyc. Med."; "Hist. of Progress of Otol. in G.B. and I. since 1850" (Politzer's "Geschichte d. Ohrenheilk."); *Contrib.*—"Lupus of Throat and Nose" (*J. Laryng.*, 1889); "Methods of Operating on Benign Laryngeal Growths" (*Ib.*, 1897); "Laryngeal Vertigo" (*Liv. Med. J.*, 1898); "Laryngeal Phthisis" (*Brit. Med. J.*, 1901).

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Books.—Various *Bulls.* of Hyg. Lab. U.S. Pub. Health Serv.; Chaps. in Peterson and Haines' "Text-bk. Legal Med. and Toxicol.," etc. *Contrib.* on Thyroid Gland, Pharmacol. Actions of Choline and Related Substances, Physiol. of Cardiac Nerves, etc., in Amer. and Foreign J.

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Book.—"Recent Advances in Haematol.," 1911; Chap. on Treatment in Maylard's "Abdom. Tuberc." *Contrib.*—"Acute Degenerative Changes in Nerv. Syst. as Illus. by Snake-venom Poisoning" (*Proc. Roy. Soc. Med.*, 1910); "Infantile Splenic Anaemia" (*Lancet*, 1909); "Tuberc. Tumour of Spinal Cord in a Child of 2 Years" (*Brain*, 1902); "Histol. Appearances of Nerv. Syst. in Acute Chorea" (*J. Pathol. and Bact.*, 1910).

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Books.—"Explor. in Turkestan," 1905; "Pulse of Asia," 1907; "Palestine and its Transformation," 1911; "Asia: a Geog. Reader," 1912. *Contrib.* to *Geog. J.*, *Bull. Amer. Geog. Soc.*, *J. Race Develop.*, *J. Geol.*, etc.

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Books.—"Year Book for Colorists and Dyers"; "Chem. Jurisprudence." *Contrib.*—"Worth of Patents" (*Forum*, N.Y.).

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Contrib. to Engrng. and Min. J., J. Amer. Inst. Min. E.

Erection of Hammond M. and M. Sch., Yale Univ.

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Book.—"Course of Gen. Elec." *Contrib. to J. de Phys., Lumière Elec., Rev. Sci. Phil. Nat. Geneva, Ann. Sci. Univ. Jassy*, on dielectricism, new electroscopie, E.M.F., new props. of X-rays, molec. instability, etc.

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B. 1843, Union City, Mich. M.D. 1866, A.M. 1870, LL.D. 1895 (Mich.). *Soc.*—Amer. Acad. Med. (Pres. 1896); Amer. Mod.-Psych. Assoc. (Sec. 1893—97, Pres. 1899); Amer. Anthropol.; Amer. Assoc.; Assoc. Amer. Physicians; etc. *Late Supt., E. Mich. Asylum, Pontiac, 1878—89*; Prof. of Psychiat., Johns Hopkins Univ., 1889—1906.

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Books.—Transl. Spiegelberg's "Textb. of Obstet.," 1887; "Rise and Fall of Reading Abbey," 1906; "Hist. of Reading Path. Soc.," 1909; "Vicious Circles in Dis.," 1911. *Contrib.*—"Extensions and Retroflexions of Fœtus" (*Trans. Obstet. Soc., 1884*); "Retroversion of Gravid Uterus" (*St. Bart. Hosp. Repts., Vol. 19*); "Gangrene of Uterine Fibroids followed by Expulsion" (*Ib., Vol. 20*); "Provident Dispensary and Nursing Assoc." (*Charity Organ. Rev., 1899*).

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Contrib. on Math., in Math. Ann., J. f. d. reine u. angew. Math., Acta Math., etc.

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Contrib.—Various to *Trans. Chem. Soc., and Mineral. Mag.*

HUTCHINSON, Sir GEORGE THOMPSON, F.R.G.S., Chairman of Hurst & Blackett, and partner of Hutchinson & Co., publishers. 55, Pont Street, London, S.W.

Books.—"Living Races of Mankind," jtly., etc.

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Book.—"Autobiog. of Earth," 1890; "Living Races of Mankind," jtly., 1900.

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Books.—"Diff. and Integ. Calculus" (jtly.); "Elem. Textb. on Calculus" (jtly.). *Art. on "Series" in "Amer. Encyc.," 2nd edn. Contrib. on theta and automorphic functions, and geom. of surfaces, in Bull. and Trans. Amer. Math. Soc., Amer. Math. J.*

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Book.—"Food, Drink and Drug Frauds and the Law of Adulteration"; etc.

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Contrib.—"Talbot's Law as app. to rotating sectored disk" (*Bull. Bur. Standards*, 1906); "Geom. theory of radiating surfaces with discussion of light tubes" (*ib.*, 1907); "Comp. study of plain and frosted lamps" (*ib.*, 1907); "Synthet. develop. of radiation laws for metals" (*Astrophys. J.*, 1912).

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Books.—Two on physiol. expts. *Contrib.*—22. **HYSLOP, JAMES HERVEY**, Sec. and Ed. of *Procs. and J. Amer. Soc. Psychological Research*; V.-P., Soc. Psychological Research, Eng.

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Books.—"Science and a Future Life"; "Enigmas of Psychological Research"; "Borderland of Psychological Research"; "Psych. R. and the Resurrection."

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Books.—"Rock Minerals"; "Igneous Rocks"; "Geol. of Yellowstone Park" (jtl.). *Contrib.*—"Quant. Classif. of Igneous Rocks" (*J. of Geol.*, 1902); "Origin of Ign. Rocks" (*Bull. Phil. Soc. Wash.*, 1892).

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Books.—"Comp. Anat. of Nerv. Syst. and Physiol. of Molluscs," 1877; "Periph. Nerv. Syst. of Verteb.," 1878; "Geog. of Rio Grande do Sul," 1885; "Repts. of Paul. Mus.," 8 vols. since 1895. *Contrib.*—270.

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Book.—"Land of Brazil," 1908. *Contrib.* various on Nat. Hist. of Brazil in *Rev. do Mus. Paul.*

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Books.—"Appendicul., Thaliac., Brachyur., of Siboga Exped."

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Books.—"Text-bk. of Zool."; "Human Parasites." *Contrib.*—"Freshwater Dendrocoelen" (*Zeitschr. f. wiss. Zool.*); "Studies on the Hexactinellida" (*J. Sci. Coll., Tokyo*).

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Book.—"Dis. of Chest, Throat and Nasal Cavities," 4 edns. *Arts.*—"Dis. of Nose and Larynx" (*Amer. Yearb.*, 1901); "Dis. of Nose," in "Ear, Nose and Throat," Bennett, Ingals, Newcomb, 1901. *Contrib.* over 120 since 1876. Develop. of operations for Empyema of Chest, Intra-nasal drainage of frontal lining, Removal of tonsils, etc.

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Contrib. on astron.

Disc. upwards of 1,000 double-stars in S. hemisphere.

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- Books.*—"Weather Lore," 3rd edn.; "Temple of the Andes"; "W. F. Stanley: His Life and Work," 1911; Various Pres. Addresses to Met. Soc., etc. *Contrib. to Eng. Mechanic*, etc.
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- Book.*—"Breeding and Feeding of Live Stock" (in press). Seven repts. of animal nutrition and feeding expts. in *Ann. Repts. Roy. Agric. Coll., Aas. Contrib. to Tidsskr. f. Norsk Landbruk*.
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- Books.*—"Ligurian Geol. and Prehist.," 1892; "Ligurian Prehist.," 1908; "Slow Oscillations of the Ground at Bradisimi," 1883. *Contrib.*—Numerous on Conchol., Geol., Paleont., Prehist., Geog.
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- Books.*—"Dict. of Dutch Pharmacopeia" (with Rønder); "Medicinal Compounds"; "Oproijrda's receipts." *Contrib.*—Numerous on Pharm., Phyto-chem., Toxicol., etc., to *Arch. d. Pharm., J. d. Pharm. and d. Chem., Pharmaceut. Weekbl.*, etc.
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- Books.*—"Life of John Gerard," 1877; "Life of William Turner," 1875; "Index Kewensis," 1895; "Gloss. of Bot. Terms," 1900, 2nd edn. 1905; "Life of G. Bentham," 1907. *Art.*—"Life of Carl von Linné," in *Encyc. Brit.*, edns. 9 and 11.
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- Contrib.* on Substituted benzyl compounds; Synthesis of Anthracene Benzoltrisolphonic Acid; Nitrobenzols containing halogens; Orthoquinones, etc.
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- Book.*—Ed. of 5th revis. edn. Morris's "Hum. Anat." *Contrib.*—Numerous on hum. and comp. anat.
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Books.—"Dis. of Hair and Scalp," 1st edn. 1887, 3rd edn. 1912; "Ready Ref. Hdb. of Skin Dis.," 6th edn. 1908. *Arts.* in *Morrow's Syst. of Gen. Urin. Dis.*, 1894, Wood's Ref. Hdb. of Med. Sci., 1900—04.

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Book.—"Lab. Manual in Physiol. Chem." *Contrib.*—30.

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Books.—"Alternat. Currents and Alternat. Current Machinery" (jtl.); "Element. Elec. and Magnetism"; "Alternat. Current Phenom." (in press); "Elec. and its Applications" in Ruoff's "Cyc. Dict." *Contrib.*—"Elec. in Mines" (*Trans. Amer. Inst. Elec. Engrngs.*); "Elec. Heating Devices" (*Ib.*); about 10 papers in *Trans. Prov. Engrng. Educ.* on Waterproof Concretes; Transmission of Heat through Building Materials; Effect of varying Wave Shape on Incandes. Lamp Filaments; Effect of Heat Treatment on Steel, etc.

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Books.—"Phylogeny of Pelecypoda," 1890; "Localized Stages in Developm.," 1899; "Phylog. of Echini," 1912.

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Books.—"Jaipur Portfolios of Archit. Details"; "Jaipur Enamels," jtl.; etc. Designed numerous works in India.

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Books.—"Colour in Animal World," 1904; "Animal Geog.," 1904; "Zool. for Foresters," 1906; "Mimicry," 1913.

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Publications.—Numerous, cf. *Arch. f. Exper. Path. u. Pharmacol., Generalregister*, B. 1—50, p. 100, and *Reg. B.* 61, p. 24.

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Contrib.—Numerous to *Bull. Soc. Anthropol. Bruz.*, etc.

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Books.—"Skin Dis. by Metabol. Anomalies"; "Handb. of Sexual Dis.," jtlj. *Art.*—"Skin Dis." and "Vener. Dis." in Ebstein's "Handb. of Pract. Med."; "Tuberc. and Lup. Erythemat." in Mraček's "Handb. of Skin Dis."; "Lepra" in Kollc-Wassermann.

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Contrib.—Crystallog. and Molec. Symmetry of Chem. Compounds; Solid solutions; Fluid crystals and polymorph. of liquids; Problems of Chem. Geol.; Photochem. properties of antimony-sulphide; Dimorph. of liquid cholesterol-derivatives; Phys.-Chem. relations between isomeric benzene derivatives.

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Books.—"Theoret. Phys."; "Kinetic Theory of Gases." *Contrib.* on kinetic theory, acoustics, etc., to *Wien Ber., Ann. d. Phys.*, etc.
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Books.—"Standard Cell and its Applicn.," 1901. *Arts.*—"Werner" and "Siemens" in "Men of Science," 1906.

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Books. on Nematodes and Trematodes.
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Books.—"Family Hist. of Palmatozoa"; "Synopsis of Inverteb. Classes and Orders"; "Various Methods of Phytogen.,"; "Diluv. Breaks in N. Germany." *Contrib.* 150 on Morphol., Palaeont., Phytogenesis of Echinoderms and Invertebrates, etc., to *Ges. Nat. Freunde, Geol. Ges.*, etc., since 1887.

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Books.—"Technol. of Bread-making"; "Forensic Chem. and Chem. Evidence"; "Cantor Lect. on Bread-making and Confectioner's Raw Materials"; "Inorg. Chem. Advanced"; "Inorg. Chem., Theoret. and Pract." *Contrib.* to *J. Chem. Soc., Soc. Chem. Ind.*, etc., on Chem. of Cereals.

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Books.—"Vectors," 1905; "Tables of Functions with Formulae and Curves," 1909. *Contrib.* to *Sitz. d. Berlin Akad., Crelle's J., Ber. Leipzig Akad., Comptes rendus, Sitz. d. Berlin Math. Ges.*

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Book.—"Upper Palaeoz. Fauna of Donetz Basin," 4 pts., 1899—1911. *Contrib.*—"Fixation of shell of some Stromphenomenacea" (*Bull. Comm. Geol. Russ.*, Vol. 16); "Attachment of Brachiopoda as means of Classificn." (*Mém. Comm. Geol.*, 1908); "Morphol. and Morphog. of Rugosa" (*Verh. Russ. Miner. Ges.*, 1904); "Origin of characterist. Props of Coral Rugosa" (*Mém. Comm. Geol.*, 1910).

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Books.—"Clin. Diagn.," edns. 6 Ger., 5 Eng. 2 Russ., and in Fr., Ital., Span. and Hung.; "Poisoning," 2nd edn.; "Acetonuria and Diaceturia." *Contrib.*—400.

Filtration of Röntgen-rays for therapy; Melanin reaction; Aceto-acetic acid in urine.
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S. Africa and N.Z.; Spec. Repres. in Austral. and Amer.

Book.—"Cyanide Practice." *Contrib.*—"Progress in Gold and Silver Ore Treatment," etc., to *J. Inst. Min. and Metall., Austral. Inst. Min. Engrs., Amer. Inst. M.E., Eng. and Min. J., Min. and Sci.*

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Books.—"Relat. of Mod. Municip. to Gas Supply," 1886; "Fed. Constitution of Switz.," 1890; "Educ. of Business Men in Europe," 1899; etc. *Contrib.*—"Minority Representn." (*Proc. Amer. Phil. Soc.*, 1890); "Natl. Syst. of Educ." (*Amer. Econ. Assoc.*, 1908); etc.

Developm. of Graduate Schools and State Univs. in U.S.

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Book.—"Pract. Org. Chem." (jtlly.).

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Contrib.—"Testing strength of materials" (*Proc. Inst. C.E.*, 1897—98); "Aqueducts: their location and survey" (*Manch. Univ. Engrng. Soc.*, 1903); "Grindleford to Rowsley sect. of Derwent Aqueduct" (*Engrng.*, 1910).

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Books.—"First Princ. of Indust. Elec.," 6th edn., 1910; "Lessons on Gen. Electrotech.," 2 vols., 3rd edn., 1909—11; "Transversal Magnetism of Magn. Conductors," 1890. *Contrib.*—"Influ. of Magnetism on Chem. Phenom." (*J. de Phys.*, Vol. 2); "Elec. Oscillns." (*Ib.*, Vol. 9); "Temp. of Incand.

Lamps" (*Ib.*, Vol. 3); "Elec. Units" (*Bull. Soc. Internat. Elec.*, 1908).

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Books.—"Psychol. Automatism," 1889; "Mental State of Hysterics," 1892; "Nerv. Dis. and Fixed Ideas," 1898; "Obsessions and Psychasteny," 1903; "Nerv. Dis.," 1907.

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Soc.—Assoc. Amer. Physicians; Amer. Adv. Clin. Investig.; Amer. Exper. Biol. and Med. *Late Instr.* and Lect. on Med. Diag., New York Univ., 1898—1906.

Book.—"Clin. Study of Blood Pressure," 1904. *Arts.*—"Treatm. of diabetes" in Neusser and Kelly's "Handb. of Pract. Treatm.," 1912; "The Leukæmias" in Wood's "Ref. Handb. of Med. Sci.," 1902. *Contrib.*—"Observ. on estim. of blood-pressure in man" (*N.Y. Univ. Bull. Med. Sci.*, 1901); "Essential pentosuria in two brothers" (*Amer. J. Med. Sci.*, 1906); "Question of epinephrin in circulation and its relat. to blood-pressure," jtlly. (*J. Exper. Med.*, 1912); "Nephritic hypertension: Clin. and exper. studies" (*Amer. J. Med. Sci.*, 1913).

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Books.—"Collected Chem. Researches," 1888; "Pract. Gravimet. Anal.," 2nd edn. 1903; "Eruptive Rocks of Christiania," jtlly., 1886. *Art.*—"Nitrites" in Liebig's Jahrb., 1876; "Chem. Anal. of Phosphates" in Doelter's Handb. d. Mineralchem. *Contrib.*—200 on halogen-org. comps., xylols, constit. of tourmaline and topaz, etc.

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Books.—"Man. of Hum. Anat. and Atlas"; "Man. of Histol." *Contrib.* especially on urogenital syst. and pancreas, in Bohem., Fr. and Ger. No homology between male and female sexual cells.

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Contrib.—Struct. of Branches, in Acephalous Molluscs; Maturation of Batrachia, Mammals and Molluscs; Yeast Cells, since 1893.

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Contrib.—About 90 on Org. Chem. in *J. Chem. Soc.*, *Ber. d. Deut. Chem. Ges.*, since 1877.

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Contrib.—"Measurement of Temperatures" (*Phil. Trans.*, Lond., 1902); "Melting Point of Gold" (*Comptes Rendus*, 1904); "Diffus. of Helium through Quartz" (*Ib.*, 1905).

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Book.—"Short Hist. of Aryan Med. Sci."

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Books.—"Fact and Fable in Psychol." 1900; "The Subconscious," 1906; "Qualities of Men," 1911; "Character and Temperament," 1914.

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Books.—"Dynamical Theory of Gases," 1904; "Math. Theory of Elec. and Magnetism," 1908, 2nd edn., 1911; "Theoret. Mechanics," 1907.

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Educ. Trin. Coll., Dublin. B.A., B.A.I. (Dub.). *Soc.*—Assoc. Mem. Inst. C.E.; Mem. Inst. M.E. *Late Principal Assist.* in Charge of Met. Dept., Nat. Phys. Lab.; Assist. Engr., Messrs. Siemens Bros. & Co.

Contrib.—"Notes on Screw Threads" (*Proc. Inst. M.E.*, 1905); "Design of Shafts" (*Engr.*, 1909).

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Contrib.—"Bathymetrical and Geol. Study of Lakes of Snowdonia and E. Carnarvon" (*Trans. Roy. Soc., Edin.*); "Glac. Deposits of N. Pembroke" (*Ib.*); "Glac. Deposits of W. Carnarvon" (*Ib.*).

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Contrib.—"Fisheries of Bengal" (*J. Soc. Arts*, 1911), etc.

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B. 1850. A.M. (Moore's Hill Coll.) 1872; M.S. 1886, Ph.D. 1889 (Ind.). *Late Prof.* of Nat. Sci., Moore's Hill Coll., 1876—82, Ind. State Norm. Sch., 1883—86; Prof. of Biol., De Pauw Univ., 1886—91.

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B. 1872, London. *Educ.* Bradfield Sch., Berks; Exeter Coll., Oxford. M.A., D.Sc. (Oxon.).

Book.—"Exper. Embryol." *Contrib.* to *Biometrika, Roux's Entwick. Archiv, J. Anat.*, etc.

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Arts.—"Wild Rice Gatherers of the Upper Lakes" (*Bur. Amer. Ethnol.*); "Childhood of Jishib, the Ojibwa"; "Bontoc Igorot"; "Balonglong, the Igorot Boy." *Contrib.*—"Faith as Factor in Econ. Life of the Amerind" (*Amer. Anthrop.*, 1900); "Building a Province (in the Philippines)" (*Outlook*, 1904); "Bontoc Igorot Clothing" (*Amer. Anthrop.*, 1904); "Bulu Knowledge of Gorilla and Chimpanzee" (*Ib.*, 1911).

Amer. negro miscegenation; Survivals of European ethnic characteristics in white Americans.

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Books.—"Behaviour of Lower Organisms"; "Anat. of Cat" (with Jac. Reighard); "Contribs. to Study of Behaviour of Lower Organisms" (Carnegie Inst.). *Contrib.*—"Reactions to Stimuli in Unicellular Organisms" (*Amer. J. Physiol.*, 1897—1902); "Behaviour of Starfish" (*Calif. Univ. Pub.*, 1907); "Rotifera of Amer." (*Bull. U.S. Fish Comm.*); "Hereditary, Variation and Evolution in Protozoa" (*J. Exper. Zool.*, 1911).

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Book.—"Essentials of Milk Hyg." (transl. in Eng. by Pearson), 1907, Danish, 1903, Ger. 1903. Chaps. in Kolle-Wassermann's "Handb. d. pathog. Mikroorganismen." *Contrib.* on Bacteriol. of Milk, Butter and Bread; Cancer in Mice; Calf Diarrhoea.

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B. 1865, Odense, Denmark. Cand. Mag. (Copenh.) 1889. *Soc.*—Dan. Bot.; Ger. Bot.; Dutch Bot.; Assoc. Internat. of Bot. *Late* Assist., Univ. Copenhagen, 1889—96; Assist., Expt. Station, Karlsruhe, 1898—1900; Head of Tobacco Sect., Agric. Dept., Java, 1900—12.

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Contrib. on Rancidity of Butter; Cheese Ripening, and other Chem. and Bact. Aspects of Milk.

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Mammals.
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Books.—"Conditions of Foresters in State Service," 1881; "Ger. Eichenschälwald and its Future," 1899; "Ger. Managem. of Eichenschälwald," 1906; "Forest Econ. and Bot. Exped. to Cameroons and Togo," jty., 1909; "Primitive Forest of Cameroon," 1911. *Arts.*—"Forests" in "Handb. d. Wirtschaftsk. Deutschlands," 1902, and Elster's "Wörterb. d. Volkswirtsch.," 1898, 1906, 1911.

Contrib.—"N. Amer. Forestry" (*J. Forestry and Hunting*, 1906).

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Books.—"Saxon Bibliog. of Geol. and Miner.," 1874; "Prussian Geol. Map.," 1877—1911; "Relief Maps of E. and W. Prussia," 1890—92; "Geol. Guide to the Province. Mus.," 1892; "Noteworthy Trees of E. Prussia," 1900; Chap. on Geol. in Gerhard's "Handbk. of Ger. Dunes," 1900, and on Posen and Prussia in Klein's "Brown Coal," 1909. *Contrib.* to *Z. Geol. Ges., Königsb. Phys.-Oek. Ges.*, etc., since 1875.

Disc. Yoldia clay in Ger.

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B. 1863, Aarhus, Denmark. B.S. (Morning-side); A.M. (S. Dak.); M.D. (Iowa, Jefferson, Penna.); L.R.C.P. and S. (Edin.). *Soc.*—Amer. Med. Assoc.; Western Surg.; Amer. Milit. Surg.

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Books.—"Flora of W. Middle Cal.," 1901; "Trees of Cal.," 1909; "Flora of Cal.," 1909—12; "Silva of Cal.," 1910. *Contrib.*—Numerous.

Disc. new species of Cal. plants.

JESSEN, ERNST, Pres. of Internat. Comm. for Pub. Health of Internat. Dent. Feder., and Ed.

of the *Archiv.*; Direc. of State Dent. Clinic, Strassburg, Ger.

B. 1859, Twedt. *Educ.* Hadersleben Gymn., Kiel, Tübingen, Göttingen. M.D. P.P. Internat. Dent. Cong., Berlin, 1909.

Books.—"Sound and Diseased Teeth"; "Handbk. of Dentistry"; "Atlas of Teeth," etc.

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Contrib.—Numerous on Steel Rails, Paints, Steel Tires, etc.

JÖNSSON, BENGT, Fell. Swed. Acad. Sci.; Prof. of Bot. and Rector of Univ., Lund, Sweden.

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B. 1874, Belle Plaine, Ia. B.S. (Ill.) 1894; (Utah) 1898; Ph.D. (Hopkins) 1903. *Soc.*—F.A.A.; Geol. Amer.; Geol. Wash.

Books.—"Determ. of Rock-forming Minerals," 1908; "Man. of Petrog. Methods," 1913. *Contrib.*—"Petrog. microscope" (*Amer. J. Sci.*, 1910); "Petrog. terms for field use" (*J. Geol.*, 1911); "A drawing-board with revolving disc for stereog. projection" (*ib.*, 1911); "Accessory lens for observ. interference figures of small mineral grains" (*ib.*, 1913).

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Books.—"Aquatic Nematoceros Diptera," 1903 and 1905; "Mycetoptulidae in Genera Insectorum," 1909; "Fungus Gnats of N. Amer.," 1909—12. *Contrib. to Entom. News, Psyche, Amer. J. Sci.*

JOHANNSEN, WILHELM LUDVIG, M.D.; Fell. Danish Acad. Sci.; Ord. Prof. of Plant Physiol., Copenhagen Univ.

Book.—"Theory of Heredity," and in Ger. 1909.

JOHANSSON, JOHAN ERIK, Fell. Swed. Acad. Sci.; Prof. of Physiol., Karolin. Med. Chir. Inst., Stockholm.

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B. 1877, nr. Glucksburg. *Educ.* Coburg. Ph.D.

Book.—"Growth and Dissolution of Crystals," 1910. *Contrib.*—"Twin Crystals" (*Neuer Jahrb. f. Miner.*, 1907); "Micac" (*ib.*, 1907); "Thuringian Porphyrites" (*ib.*, 1909); "Close Packing of Globular Arragonite" (*Centralbl. f. Miner.*, 1909).

JOHNSON, ALEXANDER, F.R.S. Can.; Emer. Prof. of Pure Maths. and Vice-Principal, McGill Univ.; P.P. Roy. Soc. Can., 1905—06.

JOHNSON, ALFRED EDWARD, Chemist.

24, Parkdale, Wolverhampton, Eng. B. 1858, Liverpool. *Educ.* City of London Sch.; Roy. Coll. Sci., Dublin. A.R.C.Sc.I. 1881; B.Sc. (Lond.) 1901; F.I.C.

Books.—"Analyst's Lab. Companion"; Co-ed. (with W. L. Sutton) of Sutton's "Volum. Anal." 10th edn. *Contrib.*—"Determ. of nitrates in water by phenol-sulphonic acid method" (*Chem. News*, 1890 and 1911).

JOHNSON, G. N., Prof. of Operat. Dentistry, Chicago Coll. Dental Surg., U.S.A.; Ed. *Dental Rev.*

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Books.—"Princ. and Pract. of Filling Teeth"; "Textb. of Operat. Dentistry," 2 edns.; "Success in Dent. Practice." *Contrib.*—Numerous.

JOHNSON, CHARLES WILLIS, Prof. of Pharm. Chem., and Dean of Coll. of Pharm., Univ. Washington, Seattle, Wash., U.S.A.; U.S. Food and Drug Insp. Chem. since 1907; Chem. for State Dept. of Agric. since 1913.

B. 1873. Ph.C. 1896, B.S. 1900, Ph.D. 1903 (Mich.). *Soc.*—Am. Pharmaceut.; Am. Chem. *Late Pract. Pharm.*, Detroit, Mich., 1896; Assist. Instr. in Chem., Univ. Michigan, 1898; Instr. in Chem., Univ. Iowa, 1901; Assist. Prof. of Chem., Univ. Wash., 1903—04; Chem., State Dairy and Food Comm., 1909—13.

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Contrib.—"Insects of Labrador" in Grenfell's "Labrador," 1909; "Diptera," in Smith's "Insects of New Jersey," 1910; "New and Interesting Species of Eocene Mollusca" (*Proc. Acad. Nat. Sci.*, 1899); "Distrib. of *Helix hortensia* in N. Amer." (*Nautilus*, 1906); "Species of Genus *Bombylina* of E. United States" (*Psyche*, 1907); "New and little known Tipulidae" (*Proc. Boston Soc. Nat. Hist.*, 1909).

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Amer. *Late* Leader of Bot. Exped. to Jamaica, 1903, 1906, and 1910; Sec., Bot. Soc. Amer., 1907—09.

Contrib.—"Develop. of Leaf and Sporocarp of *Marsilia* quad." (*Annals Bot.*, 1898); "Embryo Sac of *Peperomia Pellucida*" (*Bot. Gaz.*, 1900); "Develop. of Certain Piperaceae" (*ib.*, 1901); "Extens. and Suppress. of Sporogenous Tissue in Piper Betel" (*J. Exper. Zool.*, 1910).

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Book.—"Statics by Algebr. and Graph. Methods." *Contrib.*—"Determin. of Unit Stresses in General Case of Flexure" (*J. Assoc. Engrng. Soc.*, 1902); "Anal. of General Flexure in a Straight Bar of Uniform Cross Sect." (*Trans. Amer. Soc. C.E.*, Vol. 56); "Design of Steel Concrete Work of Harvard Stadium" (*J. Assoc. Engrng. Soc.*, Vol. 32); "New Data on Weight of a Crowd of People" (*ib.*, Vol. 34).

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LL.B. (Union Coll. Law Sch.) 1869. *Late* Prof. of Nat. Sci., 1882—92, Prof. of Biol., 1892—96, Curator of Mus. 1896, Univ. Washington.

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Contrib. on Marine Algae, Parasitic Plants, Plant Dis., System, and Fossil Bot., to *Annals of Bot.*, *Roy. Dub. Soc.*, *Verein. Angew. Bot.*, etc. Showed applicability of Waller's Blaze Current to seed-testing.

JOHNSON, T. R., M. Inst. C.E.; Chief Comm. for Rys. and Tramways for N.S.W., Sydney, Australia.

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Books.—"Cultiv. and Prep. of Para Rubber," 2nd edn.; "Cocoa, its Cultiv. and Prep."; Numerous bulls. and off. repts. on trop. agric.

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Books.—"River Congo"; "Kilimanjaro"; "Life of Livingstone," 1891; "Brit. Central Africa," 1897; "Uganda Protec." 1902; "The Nile Quest," 1903; "Brit. Mammals," 1904; "Liberia," 1906; "Negro in the New World," 1910; "Grenfell and the Congo"; "Hist. of Coloniz. of Africa," 1912. *Art.*—"Bantu languages," etc., in "Encyc. Brit."

Disc. Okapi and other fauna and flora of Trop. Africa.

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Books.—"Nerv. Syst. of Verteb.," etc.

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Public. in Reports of Geol. Survey and Dept. of Mines of Canada.

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Book.—"Treatise on Anal. Geom."

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Books.—"British Fisheries"; "Life in the Sea." *Contrib.* on Mar. Biol.

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Soc.—Leop. Carol. Acad.

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Contrib.—"Elec. response of the eye to light" (*Q. J. Exper. Physiol.*, 1909); "Time relations of knee jerk and simple reflexes" (*ib.*, 1911); "Effects of lesions of the ascending parietal convolution in monkeys" (*Arch. Internat. de Physiol.*, 1907); "Auricular flutter and fibrillation" (*Heart*, 1911).

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Contrib.—"Spontaneous cryst. of solutions of some alkali nitrates" (*J. Chem. Soc.*, 1908); and of sodium carbonate and sod. thiosulphate (*ib.*, 1909).

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Contrib.—"A short-period electrometer" (*Phil. Mag.*, 1907); "Elec. oscillins in coupled circuits" (*ib.*, 1909); "Musical arc oscillins in coupled circuits" (*ib.*, 1909); "Induction-coil" (*ib.*, 1911).

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Books.—"Jun. Course Prac. Chem."; "Questions on Chem."; "Ger. Sci. Reader"; "Air of Rooms." *Contrib.*—"Hydride of Boron" (*Chem. Soc. J.*, 1879); "Boron Hydride" (*ib.*, 1881); "Stibine" (*ib.*, 1876); "Action of Alkalies on Glass" (*Mem. Man. Lit. and Phil. Soc.*, 1902).

Disc. boron hydride.

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"New Selma," Epsom, Surrey, Eng.

D.Sc. (Lond.) 1910; M.R.C.S., L.R.C.P. (Lond.) 1904. *Soc.*—F.Z.S.; Fell. Roy. Anthropol. Inst.; Anat. London. *Late Anthropol.* to Egyptian Govt. Archaeol. Surv. of Nubia; Dem. in Anat., London Hosp. Med. Coll.; Lect. and Senr. Dem. in Anat., Univ. Manchester.

Books.—"Archaeol. Surv. of Nubia," jtl.; "Corals and Atolls." *Contrib.*—"Musculature of bladder and urethra" (*Proc. Anat. Soc.*, 1902); "Nature of malformations of rectum and urogenital passages" (*Brit. Med. J.*, 1904); etc.

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Arts.—Alcohol. "Wines and Spirits," "Non-Glucosidal Bitter Principles," in Allen's "Commercial Org. Anal." *Contrib.*—"Danger incidental to Gas Firing in Small Gas-works" (*J. Soc. Chem. Ind.*, 1901); "Standardis. of Malt Anal." (*J. Inst. Brewing*, 1905); "Determin. of Diastatic Power by Lintner's Method" (*ib.*, 1907); "Determin. of Iron by Permanganate in Presence of Hydrochloric Acid" (*Analyst*, 1909).

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Books.—"Elements of Phys. Chem.," transl. into Russ. and Ital.; "Princip. of Inorg. Chem."; "Intro. to Inorg. Chem."; "Intro. to Phys. Chem."; "Elec. Nature of Matter and Radioactivity"; "Theory of Electrolytic Dissociation and some of its Applic."; "New Era in Chem." *Contrib.*—125. In Eng., Fr., and Ger.: 8 monographs pub. by Carnegie Inst. Wash.

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Book.—"Lab. Outline of Org. Chem.," 1911. *Contrib.*—"Nitroparaffine Salts and Acylated Derivs. of Hydroxylamine" (*Amer. Chem. J.*); "Two Isomeric α - β Dialkyl Hydroxylamines" (*ib.*, 1907); "Prep. of Hydroxylamine Acids from Hydroxylamine Salts of Org. Acids" (*ib.*, 1909); "Beckman Rearrangem. of Hydroxamic Acids" (*ib.*, 1912).

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Arts. in Bailey's "Cyc. Amer. Agric." Ed. for Bact., in Webster's "New Internat. Diet.";

Chief Ed. of *Phytopathology*; Repts. on Plant Path., Vt. Agric. Sta., 1890—1910. *Contrib.*—"B. Carotovorus the Cause of Carrot Dis." (*Centralbl. f. Bakt.*, 1901); "Dis. Resist. of Potatoes" (*U.S. Dept. Agric. B.P.I.*, *Bull.* 87, 1905); "Pectinase" (*N.Y. Exper. Sta. Bull.* 11, 1910); "Studies of Potato Blight Fungus, *Phytophthora infestans*" (*U.S. Dept. Agric. B.P.I. Bull.*, 1912); and on Plum Blight.

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Contrib.—Various on geol. of Holland and its bibliog.

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Books.—"Man. of Verteb. Animals of Northern U.S.," 1876; "Sci. Sketches," 1887; "Fishes of N. and Middle Amer.," jtly., 4 vols., 1896; "Footnotes to Evol.," 1898; "Animal Life," 1901; "Animal Forms," 1903; "Food and Game Fishes of N. Amer.," jtly., 1905; "Guide to Study of Fishes," 1905; "Evol. of Animal Life," jtly., 1907; "Fate of Ictiodorum," 1909; etc. *Contrib.* on ichthyol. and evol.

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Contrib. on cytol., histol., human and mammalian embryol., etc.

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Books.—Numerous, on entom.

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Books.—"Monog. on Ceratia," 1911. *Contrib.*—"N. Norweg. Flora" (*Proc. Acad. Sci. Chris.*, 1894); "Tintinnoda of Norweg. W. Coast" (*Bergens Mus. Aarbog*, 1899); "Prostistplankton of N. Norweg. Fjords" (*Bergens Mus. Papers*, 1905); "Genus Ceratium" (*Bull. trimest. Copenh.*, 1911).

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Books on App. Chem., Hist., etc. *Contrib.* on oxid. and activity of oxygen, action of radium rays, etc., in *Zeit. Phys. Chem.*, *Ber. Deutsch. Chem. Ges.*, *Zeit. Angew. Chem.*, *J. Prakt. Chem.*, *Chem. Weekbl.*, etc.

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Contrib.—"Different, of some Forms of Nerv.

Dis." (*Trans. Ore. State Med. Soc.*, 1901); "Henoch's Purpura" (*Med. Sentinel*, 1905); "Cesarian Section" (*Trans. Ore. State Med. Assoc.*, 1908).

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Contrib.—"Applic. of ionic theory to physiol. and med."; "Physiol. and therap. study of ions"; "Presence of coli-like organisms (Lactose fermentors) in drinking waters of Bombay"; "Researches on vitality of cholera vibrio in water and the question of 'carriers'"; etc.

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Clifton Vicarage, Ashburne, Derbyshire, Eng. *Educ.* Magdalen Coll., Oxford. M.A. (Oxon.) 1890. *Soc.*—Brit. Ornith. Union; Ger. Ornith.; Internat. Ornith. Comm., 1910. *Late Mem.* Eng. Comm. and Chairman of Sect., Berlin Ornith. Cong., 1910; Investig. Avifauna and Oology of Mediterr. Region (Spain, Morocco, Corsica, Roumania, etc.), Iceland from 1905—12.

Book.—"Eggs of Birds of Europe." *Art.*—"Zool. of Derbyshire," in "Vict. Hist. of Co. of Derby." Ed. "Insects," in "Vict. Hist. of Co. of Stafford." *Contrib.*—"Notes on Ornith. of Corsica" (*Ibis*, 1911); also to *Zool.*, *Brit. Birds*, *J. Derby Archaeol.* and *Nat. Hist. Soc.*

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Contrib.—"Constit. of Pilocarpine" (*J. Chem. Soc.*, 1900—05); "Constit. and Synth. of Subs. allied to Spinephrine" (*Ib.*, 1904—05); "Prep. and Props. of Tropeine" (*Ib.*, 1906); "Relat. between Chem. Constit. and Physiol. Action" (Rept. Internat. Cong. Chem., 1909).

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Books.—"Les Bushongo," 1911; "S. Amer. Archaeol.," 1912. *Arts. in Encyc. Brit. Contrib.* to *J. Roy. Anthrop. Inst.*, and *Man*, since 1903.

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Book.—"Inland Lakes of Wis.: Dissolved gases and their biol. signif.," 1911. *Contrib.*—"Diurn. movement of plankton crustacea" (*Trans. Wis. Acad. Sci.*, 1904); "Study of Twin lakes, Colorado, and Notes on Lake Tahoe" (*Bull. Bur. Fish.*, 1907); "Aquatic inverteb. that live under anaerobic conditions" (*Trans. Wis. Acad. Sci.*, 1908).

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Books.—"Geol. of Rutland," 1875; "Volcanoes," 1880; "Student's Lyell," 1896; "Coming of Evol.," 1911. *Contrib.* on Brit. Neocomian, Lower Oolites of Midlands, Secondary strata of Scotland, etc.

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Contrib.—"Parthenogen. in Gatt. Antennaria" (*Handl. Swed. Acad.*, 1900); "Nuclear division and Phylogen. of Basidiomycetaceae" (*Jahrb. f. Wiss. Bot.*, 1898); "Cell Content, Fertilisation and Spore Formation of Dipodascus" (*Flora*, 1902).

Demonstr. 1898 first known case of parthenogen. in a phanerogamic plant (*Antennaria alpina*).

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Books.—"Student's Handbk. Phys. Geol.," "Student's Handbk. Stratigraph. Geol.," "Building of Brit. Isles," 3rd edn.; "Cretaceous Rocks of Eng." (*Mem. Geol. Survey*, 3 vols.). *Contrib.* to *Q. J. Geol. Soc.*, *Geol. Mag.*, *Proc. Malacol. Soc.*

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Hon. LL.D. (St. And.) 1912.
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Books.—"Light and Heat Rays from Burning Gases," 1890; "Physics of the Sun," 1913. *Contrib.*—"Regular Movements of Earth's Crust" (*Ann. d. Phys.*, 1905); "Solar Phenom. and Anomalous Dispersion of Light" (*Proc. Roy. Acad. Amst.*, 1900); "Regular Consequences of Irregular Refraction in Sun" (*Ib.*, 1909); "Selective Absorption and Anomalous Dispersion in Large Masses of Gas" (*Ib.*, 1911).

Introd. principle of anomalous dispersion into astrophysics.

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Art. in "Nord Convers. Lex." 1886-90. *Contrib.*—Accounts of Danish Exped., 1886, 1898, 1904; "Struct. and Evol. of Penatula phosphorea L." (*Z. f. Wiss. Zool.*, 1888); "Evol. of Sex. Organs of Bone-fish" (*Arb. Zool. Inst. Würzburg*, 1889); "Ichthyotomy" (*Skr. Dan. Acad. Sci.*, 1908, 1910).

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Books.—"Pract. Handb. of Foundry Chem.," 1885; "Generators," 2nd ed., 1900; "Siderology," 1900-04; "Textb. of Phys. Chem.," 1904-05; and 17 others. *Contrib.*—Numerous to *J. Iron and Steel Inst.*, *Stahl u. Eisen*, *Z. f. Anorg. Chem.*, *Z. f. Phys. Chem.*, on Anal. and Phys. Chem., Metall., etc.

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Books.—"Glycerols and their Derivs.," 1887; "Modern Solution Theories in Relation to Chem. Equiv.," 1891; "Inorg. Chem.," 4th edn., 1908; "Phys. Chem.," 3 vols., 1900-10. *Contrib.*—"Conduct. of Hydrochloric Acid in Various Solutions" (*Zeitschr. f. Phys. Chem.*, 1889); "React. between Silver Nitrate and Pot. Halides in Absence of Solvents" (*Ib.*, 1908); "Vapour Pressure and Compos. of Water-alcohol Sols." (*Ib.*, 1903), etc.

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Books.—"The Right of Indust. Substitute," 1894; "Polit. Econ. and Engrng.," 1906; "Laws Relating to Factories, Workshops and Inspectors in Ger.," 1908; "Alfred Krupp," 1909; "State and Fatherland," 1910; "Agglomeration of Industries and its Problems," 1912; "Commercial Schs.," 1911; "Savings in Aachen," 1912.

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Books.—"Hist. of Astron.," "New Art of Flying." *Contrib.*—Numerous.

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Books.—"Lab. Exercises in Gen. Chem.," "Outlines of Chem.," "Qual. Chem. Anal." (with J. H. Walton). *Contrib.* to *J. Phys. Chem.*, *J. Amer. Chem. Soc.*, *Pharm. Review*; on Chem., Phys., and Physiol. Action of Solutions; Electrol. Conduction, etc., in Liquid Prussic Acid, etc.

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Author.—Pract. Methods of Miner.-Petrog. in Keilhach's "Text-bk. Prac. Geol.," 1908. *Contrib. to Groth's Zschr. f. Krystall., Neues Jahrb. f. Miner. u. Geol., Jahrb. Kgl. Preuss. Geol. Landesanst.*

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Books.—"Pract. of Sci. Photog.," "Handbk. of Microphotog.," Chaps. on Micrometry, etc., in *Encyc. d. Mikros. Technik*; "Histol. of Radium effect" in Lazarus's "Handb. d. Radiobiol." *Contrib.*—"Preserv. in nat. colours of anat. specimens" (*Virchow*, 1897); "Adrenalin Injections" (*Berliner Klin. Wochenschr.*, 1907); "Lipoid Cells" (*Ib.*, 1910); "Necrosis of liver in necrosis of pancreas" (*Verh. d. path. Ges.*, 1912).

Preserv. of nat. colour; Projection apparatus of Leitz-Wetzlar.

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Book.—"Technique of Load-hauling." Electro-magnetic coupling.

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Books.—"Elec. Transmission of Energy"; "Dynamos"; "Transformers."

Compound winding of dynamos; elec. measuring instruments; differential tariff elec. meter; resonating relay; accelerometer phase-advancer.

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Books.—"Resist. of Ships to Propulsion"; "Multiple Phase Systems"; "Exper. Elec. Engrng.," "Elec. Circuit"; "Magnetic Circuit"; "Engrng. Applications of Higher Maths." *Contrib.*—"A. C. Vector Diagrams" (*Elec. Club J.*, 1904—05); "Concentric Method of Teaching" (*Trans. Amer. Inst. E.E.*, 1907); "Concentric Method of Educ." (*Proc. Soc. Prom. Engrng. Educ.*, 1908); "Essays on Synchronous Machinery" (*Gen. Elec. Rev.*, 1911).

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Soc.—Hon. Mem.: Ural Nat., Russ. Miner., Vladimir Univ. Nat., Petersburg Nat., Kasan Univ. Nat., Moscow Nat., Acireale Acad., Geol. Belg., Belg. Geol. Paleont. and Hydrol., Ger. Assoc. Nat. Hist., Swiss Nat., Antonio Alzate; F.-M. Acad. Lincei; F.-M. G.S.; Assoc. Belg. Acad.; Corresp. Mem.: Göttingen Sci., Phila. Acad. Nat. Sci., Bologna Acad.; Mem.: Moscow Nat., Anthropol. and Ethnol.; Russ. Geog.; Amer. Phil.

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Book.—"Hindu-Arabic Numerals" (July), 1911. *Chap.* on Maths. in "High Sch. Educ.," 1912. *Contrib.*—"Hindu numerals in the Fihrist" (*Biblioth. Math.*, 1911); "Robert of Chester's transl. of Algebra of Al-Khowarizmi" (*Ib.*, 1911); "Alg. of Abu Kamil" (*Ib.*, 1912); "Augrim stones" (*Med. Lang. Notes*, 1912).

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Books.—"Diatoms of Kiel Bay," 1899; "Phytoplankton of Valdivia Exped.," 2 vols., 1907—09; "Text-bk. of Pharmakog.," 1903, 2nd edn. 1909. *Arts.*—"Phanerogam" in "Strasburger Lehrb. d. Bot.," "Biol. of

plants" in "Nussbaum's Biol." *Contrib.*—"Diatoms" (*Flora*, 1896—1901); "Veget. in Malay Archipel." (*Bibl. Bot.*, 1893), etc.

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Books.—"Circular Cyclones," 1893; "Weather and Pract. Life," 1908; "Clouds and Downpours," 1909; "Met. Considerations in City Construct.," 1910; "Met.-Optical Appearances," 1911. *Contrib.*—Numerous, on app. Met. to *Met. Zeitschr.*; and on Bulgaria: *Collab. of Meyer's Conversat. Lezik.*

Projected 2 met. globes of the earth, 1907; pocket vortex measure, 1908; evaporograph, 1908.

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Contrib.—Arts. in "Realencyc. d. Pharmacie"; "Utility of Oxygen in Air" (*Dingler's J.*, 1889); "Orthoplumbates of Alkaline Earths" (*Arch. d. Pharm.*, 1893—97); "Recov. of Sugar from Molasses, etc." (*Dingler*, 1895); "Separ. of Oxygen and Nitrogen from Air," 1911.

Lead saccharates, calcium plumbates, lead per- and higher oxides, ferricyanides.

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Book.—Müller-Pouillet's "Textb. of Phys.," vol. IV.

Variation of mass of electron with velocity.

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Assoc. (Sec., Sect. E); Amer. Geol.; Iowa Acad.; Nat. Geog.; Amer. Seismol. *Late* Assist. Geol., Lake Superior Power Co., and Ont. Bur. of Mines; Assist. Prof. Geol., Kansas Univ.; Junr. Geol., U.S. Geol. Surv.; Prof. Econ. Geol., Iowa Univ.

Contrib. on Geol. and Miner. Resources of S.W. Oregon to *Bull. U.S. Geol. Surv.*; and on Bering River Coal Field, Alaska.

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Contrib.—"Hindu Maths." (*J. Asiatic Soc., Bengal*, 1908); "Source of Hindu Maths." (*J. Roy. Asiatic Soc., Lond.*, 1910); "Hindu Math. Methods" (*Bibliot. Math.*, Leipzig, 1911); "Asoka Numerals" (*Ind. Antiq.*, 1911)

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Books.—"Text-bk. Geol. Formations," 4th edn., 1911; "Text-bk. Geol.," 4th edn., 1912. *Contrib.*—Numerous to *Geol. Rundschau*, etc.

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Arts. on "Iron Bridges" in Handb. d. Ing.-wiss. *Contrib.*—"Calc. of rainwater discharge in munic. canal" (*Tech. Gemeindebl.*, 1905); etc.

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Ph.D. (Ber.); Hon. LL.D. (St. And.) 1912. Soc.—F.M. Acad., St. Petersburg, Lund, Ital. Spettros.; Hon. Mem., Roy. Inst. G.B.; Leop. Carol. Acad.

Book.—"Handb. of Spectrosc.," 6 vols., 1900—12.

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D.Sc. (Viêt.); Ph.D. (Erlangen); F.I.C. Soc.—Chem. Ind.; Pub. Analy.; etc. *Late Lect.* on Org. Chem., Univ. Coll., Liverpool; Hurter Lect., Soc. Chem. Ind., 1910.

Books.—"Modern Org. Chem.," Ed. Eng. transl. of Lunge's "Tech. Anal." *Contrib.*—"Modern Iatro-Chem." (*J. Soc. Chem. Ind.*, 1910).

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Contrib.—"Revision of N. Amer. Species of Calamagrostis" (*Bull.* 11, *Div. of Agrost.*, 1898); "Bot. Surv. of Dismal Swamp Region" (*Cont. U.S. Nat. Herbar.*, 1901); "Effect upon Seedling Plants of certain Components of Alkali Soils" (with F. K. Cameron) (*Rept.* 71, *U.S. Dept. Agric.*, 1902); "Date Varieties and Date Culture in Tunis" (*Bull.* 92, *Bur. Plant Indust.*, 1906); and on Egypt. Cotton in U.S.A.

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Books.—"Plant Animals, a Study in Symbiosis"; "Pract. Plant Physiol." *Contrib.*—"Colour physiol. of higher Crustacea" (*Trans. Roy. Soc. and Q. J. M. S.*); "Symbiosis between *Convolvula roscoffensis* and green algae" (*Q. J. M. S.*); "Biochem. and Genetics of Plant Pigmentation" (*Proc. Roy. Soc. and J. of Genetics*).

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Books.—"Surgery," 6 vols.; "Amer. Textbk. of Surg." (with White); "Surg. of Typhoid

Fever"; "Addresses and other Papers"; "Gunshot Wounds and other Injuries of Nerves" (with S. Weir-Mitchell and G. R. Morehouse), 1864. *Contrib.*—Numerous.

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Contrib.—"Beds at Headon Hill and Colwell Bay, I.W." (*Q. J. Geol. Soc.*, 1881); "Sect. of Lincoln Neocomian" (*ib.*, 1882); "Sect. at Hordwell Cliffs" (*ib.*, 1883); "Discov. of *Nummulina elegans* Zone at Whitecliff Bay, I.W." (*Geol. Mag.*, 1887).

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Contrib. to Hertwig's "Handb. d. vergl. Entw.ck.-lehre." Schlenka's "Menschenaffen," Semon's "Forschungreisen," Keibel u. Mall. "Handb. d. Entw. geschichte d. Menschen"; "Evol. of Human Uro-genital Organs" (*Arch. Anat. u. Physiol.*, 1896); Standard Tables of Evol. Hist. of Swine and Men in Keibel's "Normentafeln," 1897, 1908; "Evol. of Chorda in Mammals" (*Arch. Anat. u. Physiol.*, 1889).

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Books.—"Text-bk. of Pract. Geol.," 2nd edn.; "Text-bk. of Geol. of Water"; "Geol. Calendar." *Contrib.* to *Jahrb. d. Preuss. Landesanst.*, *Z. f. Geol. Ges.*, etc. Ed. *Geol. Centralblätter*.

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Book.—"Directions for Lab. Work in Chem." *Contrib.*—"Metallic deriv. of Acetylene" (*Amer. Chem. J.*, XV.); "Liquid Acetylene Di-iodide" (*ib.*, XXI.); "Synth. of Fumaric and Maleic Acids from Acetylene Di-iodides" (*ib.*, XLVI.); "Prep. and compos. of acid carbonates of calcium and barium" (*ib.*, XXX.); etc.

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Books.—"Intro. to Study of Anthropoid Apes," 1896; "Human Embryol. and Morph.," 1901; "Ancient Types of Man," 1911; "Structure of Human Body," 1912. *Contrib.*—"Structure of Heart" (*Proc. Anat. Soc. G.B.*, 1902); "Mech. of Respiration" (*ib.*, 1903); etc.

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Books.—"Travels in E. Africa and Madagascar," 1887; "Life of the Sea," 1895; "Descent of oldest Domestic Animals," 1902; "Nat. Hist. of Domest. Animals," 1905; "Domest. Animals of Mediterran. Islands," 1911.

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Contrib.—"Copper as an Algicide and Disinfectant in Water Supplies" (*Bur. Plant Indus.*, *Bull.* 76, 1905); "Disinfection of Sewage Effluents" (*ib.*, *Bull.* 115, 1907); "Bact. Studies of Soils of Truckee-Carson Irrig. Project" (*ib.*, *Bull.* 211, 1911); "Functions and Value of Soil Bact." ("Yearbook," Dept. Agric., 1909).

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B. 1866. B.Sc. (Olivet) 1888; Ph.D. (Hopkins) 1892; Hon. A.M. (Williams) 1901. *Soc.*—Amer. Zool.; Amer. Nat. *Late Prof.* of Biol., Olivet, 1892—99.

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Books.—"Amer. Insects"; "Darwinism To-day"; "Animals and Man"; "Evolution and Animal Life"; "Elem. Zool."; "Insect Stories," and 6 others. *Contrib.*—Numerous.

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Books.—"Oper. Gynaec.," 2 vols., 1898; "Vermiform Appendix and its Dis.," 1905; "Walter Reed and Yellow Fever," 1906; "Gynaec. and Abdom. Surg.," with Noble, 2 vols., 1907—08; "Med. Gynaec." (july), 1908; "Myomata of Uterus," 1909; "Johns Hopkins Hosp. Repts.," 2 vols.; "Cyc. of Amer. Med. Biog.," 2 vols., 1912. *Contrib.*—"Hysterorrhaphy," 1887; "Note on a series of new vesical specula," 1900; "Removal of pelvic inflamm. masses by abdomen after bisection of uterus," 1900; and 336 others.

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Contrib.—"Gastric Secretion of Hydrochloric Acid in Cancer, etc." (*Proc. Roy. Soc.*, 1905); "Treatment of Gen. Peritonitis" (*Liver. Med.-Chir. J.*, 1908); "Intra-trach. Insuffl. of Ether" (*Brit. Med. J.*, 1912).

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Books.—"Hist. of Scott. Highlands"; "Partition of Africa"; "Applied Geog."; "Rept. on Geog. Education."

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Book.—"How to Draw a Straight Line," 1877. *Contrib.*—"Memoir on Theory of Math. Form" (*Phil. Trans.*, 1886); "Relation between Logical Theory of Classes and Geomet. Theory of Points" (*Proc. Lond. Math. Soc.*, 1890); "Gen. Method of producing Exact Rectilinear Motion by Linkwork" (*Proc. Roy. Soc.*, 1875); "Applic. of Sylvester-Clifford

Graphs to Ordinary Binary Quantics" (*Proc. Lond. Math. Soc.*, 1885, 1893).

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Books.—Publications of Astrophys Observ., Potsdam; "Newcomb-Engelmann Popular Astron." 4th edn. *Contrib. to Astron. Nachr.*

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Contrib.—"Bacterial metabolism" (I.—VII., *J. Biol. Chem.*, 1912, XIV.—XXX., *J. Amer. Chem. Soc.*, 1913); etc.

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Arts.—"Geol.," "Vict. Hist. of Yorks.;" "Rept. on Eastern Extension of the Yorks. Coalfield"; "Rept. Roy. Comm. on Coal Supplies," 1905. *Contrib.*—"Syst. of Glacier Lakes in the Cleveland Hills" (*Q. J. Geol. Soc.*, 1903); "Glaciation of the Lothians" (*Trans. Roy. Soc., Edin.*, 1906).

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Contrib.—"Measure of power" (*Proc. Amer. Soc. Mech. E.*); etc.

Power and distortion meas.

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Books.—"Mechanics of Machinery"; Transl. Reuleaux's "Kinematics of Machinery"; Ed. Moore's "Alps in 1864." *Contrib. to Proc. Civil and Mech. Engrngs.*, etc.

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Chapter on Suture and Anastomosis of Nerves in Chipault's "Chirurgie Nerveuse," 1903. *Contrib.*—"Regeneration of Nerves" (*Phil. Trans.*, 1897); "Restor. of Co-ordinated Movements after Nerve Crossing with Interchange of Function of Cereb. Cortical Centres" (*Ib.*, 1901); "Restor. of Paralysed Muscles by Means of Nerve Anastomosis: Part 1, Facial Nerve" (*Ib.*, 1911); "Suture of Brachial Plexus in Birth Paralysis of Upper Extremity" (*Brit. Med. J.*, 1903).

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Book.—"Elem. Lab. Course in Chem.," jtly., 1905. *Contrib.*—"Identific. of Basic Salts" (with W. L. Miller) (*Trans. Roy. Soc. Can.*, 1901); "Formation of Tachhydrite" (with Van't Hoff) (*Z. Phys. Chem.*, 1902); "Polarimetry in Estim. of Tartaric Acid in Commerce. Products" (*U.S. Dept. of Agric.*, 1902); "Hydrates and Acid Salts of Ferrous Sulphate" (*J. Phys. Chem.*, 1909).

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Contrib.—"Mammalian Heart" (Rolleston Memorial Prize, 1892, and *Proc. Physiol. Soc.*, 1892, *J. Physiol.*, Vol. 14); "Histol. of Vaccine Vesicle" (*Brit. Med. Assoc.*, 1894); etc.

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Contrib.—"Notes on Zeeman Effect" (*Astrophys. J.*, 1901); "Effect of Circuit Conditions upon Wave-lengths of Spark Lines" (*Ib.*,

1903); "Relative Positions of Arc and Spark Lines of Spectra of Titanium, Zinc and Iron" (*Proc. Amer. Acad. Arts and Sci.*, 1905); "Spectrum of High Potential Discharge between Metallic Electrodes in Liquids and Gases at High Pressure" (*Pubs. Yerkes Observ.*, 1907).

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Books.—"Pub. Health Lab. Work," 5th edn.; "Hyg. and Pub. Health," 4th edn.

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Books.—"Skin of Reptiles," 1877; "Trematodes," 1888; etc.

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Arts. in Ref. Handb. Med. Sci., Morris's Anat., Anat. Record.

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Books.—"Power and Power Transmission"; "Exper. Study of Bagasse and Bagasse Furnaces"; "Bagasse Drying"; "Exper. Study of Heat Transmission in a Vacuum Evaporator." *Contrib.* on cane milling, factors affecting fuel records in sugar factories; etc.

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Contrib.—Various Zool., on Compar. Anat. and Embryol. of Vertebrates.

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Contrib.—"Intensity of Pulmonic Sound in Mitral Incompetence" (*Cal. State Med. J.*, 1907); "Painless and Painful Angina Pectoris" (*J. Amer. Med. Assoc.*, 1909); "Treatment of Croupous Pneumonia" (*Cal. State Med. J.*, 1909).

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Books.—Ed. of Geophys. Sect. of Publens. from Pola; "Marit. Met."; "Tide Phenomena at Pola and Ragusa"; "Results of Magn. Observ. at Pola, 1847—1909."

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Books.—"Design of Steel Mill Bldgs." 1903; "Design of Walls, Bins, and Grain Elevators," 1907; "Design of Highway Bridges," 1908; "Design of Mine Structures," 1912; "Surveying Manual" (jtly.), 1900.

Granular materials; reinforced concrete; Graphic and algebraic statics as appl. to engrng. structures.

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Books.—"Building of Tunica Intime of Aorta Wall in Growing People," 1881; "Enderteritis Chronica Deformans as Cause of Sudden Death," 1887; "Gastric Rupture," 1890; "Relations between length of human Gravity and the Paternity *in foro*," 1912.

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Books.—"Paleont. of Mo.," 2 vols.; "Geol. Formations"; "Coal Deposits of Iowa";

"Origin of Ore Deposits"; "Lineament of the Desert"; "Original Rivers." *Contrib.*—500.

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Ed. of "Pure Maths.," *Encyc. Americana*; Amer. Ed. *Hibbert J.*

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Books.—"Devonian Fauna in Christiania Area," 1911; and many others on Norwegian Fauna.

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Books.—"Social Evolution," 1894; "Control of the Tropics," 1898; "Princ. of Western Civilisation," 1902; "Individualism and After" (Herbert Spencer Lect., Oxford), 1908; "Two Principal Laws of Sociol." *Art.*—"Sociol." (*Encyc. Brit.*, 1910).

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Books.—"Catalogue of Palaeoz. Plants in Brit. Mus.," 1886, and in Brussels Nat. Hist. Mus., 1911. *Contrib.* about 100.

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Contrib.—"Results of A. Philippson's Height Measurements in Asia Minor," 1902 and 1904 (*Ges. Erdk.*, 1905 and 1908); "Dry Periods of 1908 in N. Ger." (*Ber. Preuss. Met. Inst.*, 1908); "Theory of Cyclones and of Currents in them" (*Abh. Preuss. M. Inst.*, Vol. 4).

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Books.—"Text-bk. of Anal. Chem.," 6th edn., 1909; "Chem. Practice for Medicals," 2nd edn., 1909. *Contrib.*—Numerous on Sugars and Glucosides.

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Contrib.—Over 100 on respiratory and food passages, dis. of nose, etc.

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Books.—"Elements of Machine Design," jty.; "Indust. Educ.," "Elem. of Indust. Organiz." *Contrib.*—Numerous.

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Contrib.—"Gen. Circulation of the Atmos." (*Monthly Weather Rev.*, 1901); "Pyrheliometer and Polarimeter Observations" (*Bull. Mt. Weather Observ.*, 1908—09); "Solar Radiation, Atmos. Absorp. and Sky Polarization" (*Ib.*, 1910); "Some Causes of Variation in Polarization of Sky Light" (*J. Franklin Inst.*, 1911).

Improved formula for computing solar constant from pyrheliometric observations.

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Contrib. to *Astron. Nachr.*, 1902, 1909.

Disc. Z term in Latitude Variation.

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Book.—"Lab. Guide." *Art.*—"Legumin" in Thorpe's "Dict. Applied Chem." *Contrib.*—"Agric. Chem. of Japan" (*Trans. Asiatic Soc. Japan*, 1880); "Chlorine in Rain Water" (*Trans. Chem. Soc.*, 1887—1900); "Basic Cinder as Manure" (*J. Agric. Soc. Eng.*, 1890); "Valuation of Feeding Stuffs and Foods" (*Trans. Surveyors' Inst.*, 1892).

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Contrib.—"Determ. of orbits of spectroscopic binaries" (*Astrophys. J.*, vol. 27); "Theory of least squares" (*J. R.A.S.C.*, 1907—08); "Remarks upon doctrine of probabilities" (*Id.*, 1909); etc.

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Books.—"Histol. Technique"; "Lab. Direc. in Histol." *Contrib. to J. Comp. Neurol.*, *Anat. Record*, *Amer. J. Anat.*, *J. Morphol.*, etc.

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Book.—"Teleph. in Princ. and Pract.," 1882. *Contrib.*—"Origin and Develop. of Teleph. Switchboard" (*Inst. Elec. Engrs.*, 1895); "Future of Teleph. in U.K." (*Brit. Assoc.*, 1902).

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Books.—"Verteb. Zool."; "Comp. Zool."; "Standard Nat. Hist."; Transl. Hertwig's "Zool."; "Comp. Anat. of Verteb.," 1912. *Arts.* on Zool. in "Johnson's Cyc." *Contrib.*—"Embryol. of Limulus" (*J. Morph.*, 1892—93); "Ossicula Auditus" (*Tufts Coll. Studies*, 1901); "Embryol. of Crangon" (*Bull. Essex Inst.*, 1887—89); "Classific. of Arthropods" (*Amer. Nat.*, 1894). Ed., *J. of Morph.*

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Books.—"Hist., Products, and Processes of Alkali Trade," 1877; "Animal Chem.; or the Relation of Chem. to Physiol. and Path.," 1878; "Nature's Hygiene and Sanitary Chem.," 5th edn., 1907. *Contrib.*—"Calcic Hypochlorite from Bleaching Powder" (*J. Chem. Soc.*, 1875); "Glycero-phosphoric Acid (from the Brain) and its Salts" (*Id.*, 1876); "Atmos. Oxidation of Phosphorus, etc." (*Id.*, 1880); "Atmos. Oxidation of Terpenes," 1874—94.

Pilocarpine; Two new fatty acids from cocoa butter, etc.; Inv. of "Sanitas" disinfects, etc.

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Book.—"San. Water Surv. of Des Moines River at Des Moines."

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- Amer. Phys.; Assoc. Mem. Amer. Inst. E.E. Late Elec. Expert, U.S. Army, Signal Corps.
- Contrib.*—"Residual charges of condensers" (*Proc. Amer. Inst. E.E.*, 1894); "Series dynamo elec. machines" (*Trans. Acad. Sci. St. Louis*, 1898); "Syst. method of calculating dynamo dimensions" (*Decenn. Publ., Univ. Chicago*, 1903); "Short spark discharges" (*Phil. Mag.*, 1905).
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- Books.*—"Frost and Light as Factors in Germin.," "Guide for Biol. Gardeners, Seed-merchants," 1912. *Contrib.*—"Seeds of Brassica and Sinapis, esp. Indian" (*Ledger No. 7*, 1899 and 1901); "Light-hard Seeds" (*Ber. Bot. Ges.*, 1907—09); "Influence of Light on Fructif." (*Nat. Z. f. Land-u.-Forst-wirtschaft.*, 1905); and on Microsp. Control of Foods and Food Mixtures.
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- Books.*—"Org. Chem." and "Inorg. Chem." (with Perkin).
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- Books.*—"Cryptogam. Flora of Silesia," 1879; "Microsc. Plantlife in Fresh Water," 1884, 2nd edn. 1891; "Flora of Stuttgart and vicinity," 1888; "Dis. and Blights of Cultiv. Agric. Plants," 1890; Atlas of same (with Boltshausen), 1896—1902; "Life-hist. of Flowering Plants of Middle Europe" (with Loew and Schroeter), 1904; "Flowers and Insects," 1911
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- Book.*—"Hdb. of Otol.," 7th edn. 1904.
- Inv.*—Ear-massage apparatus; Divertic. of Eustach. tube.
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- Books.*—Repts. Hamburg Internat. Dairy Exhbit., 1877, and Leipzig Agric. Inst.; "Manual of Dairying," *Arts.* on Horned Cattle, etc., Goltz's "Manual of Agric."
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- Contrib.* on Elec. Properties of Gases; Chem. Effects of Elec. Discharge, chiefly in Electrolytic Gas, with a Theoretical Explanation.
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- Book.*—"Hist. of Med. Teaching in T.C.D. and of Sch. of Physio in Ireland," 1912. *Contrib.*—"Asphyxial Factor in Nio Anaesthesia" (*Med. Circular*, 1901); "Somnoform as an Anaes. in Dent. Pract." (*ib.*, 1903); "10 Years Anaes. Pract. in Dent. Hosp., Dublin" (*ib.*, 1910); "Control of Consumption by Pub. Health Authority" (*Dub. J. Med. Sci.*, 1903).
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- Book.*—"Pract. of Bact." *Arts.* in Hdb. d. Hyg. and Hdwb. d. soz. Hyg. *Contrib.*—Numerous to *Zsch. f. Hyg.*, etc.
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- Book.*—"Electrochem.," 1912. *Art.*—"Electrochem." in *Encyc. Brockhaus-Efron*, 1904. *Contrib.*—"Chem. change in homogen. structures," 1895; "Alternating current in galvanic battery."
- Capillarity constants by boiling-pt., 1904.
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Books.—"Petrog. of Ecuador and of Ger. Colonies"; "Geol. of E. Prussia." *Contrib.* to Dennert's "Convers.-Lexikon."

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Books.—"Host-changing Uredineae," 1904; "Dis. of Lilac," 1909; "Outlines of Gen. Phytopath.," 1912; Ger. transl. De Vries' "Species and Varieties," 1906. *Contrib.*—"Studies on Zygotes" (*Jahrb. f. wiss. Bot.*, 1891, 1892); "Culture of Uredineae" (*Zeitschr. f. Pfl.-Krankh.*, 1892—1912); "Imperfect Fungi and appert. Ascomycet. forms" (*ib.*, 1906—8); "Auxospore formn." (*Jahrb. f. wiss. Bot.*, 1896).

Disc. Nuclii in Germin. of Desmidiæ; life-history and new species of Uredineae; etc.

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Books.—"Proportion of Male to Female," 1894; "Reproduc. of Algae and Fungi," 1896; "Deliberate Variation in Plants," 1903. *Contrib.*—"Studies in Flagellation" (*Z. f. Zytolog.*, 1892); "Physiol. of Reproduc. in Fungi" (*Jahrb. wiss. Bot.*, 1898—1900); "Problems of Evolution" (*Biol. Centralbl.*, 1904); "Artific. Metamorp." (*Nat. Ges., Halle*, 1909).

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Books.—"Anal. of Vanadium Comps.," 1894; "Estim. of Rancidity and Acidity of Butter," 1894; and *arts.* on Milk, Cheese, etc., to Polish Encycs. *Contrib.*—"Colorimet. Estim. of Small Quants. of Vanadium" (*Z. f. Anorg. Chem.*, 1893); "Micro-org. of Rancid Butter" (*Centralbl. f. Bakt.*, 1894); "New Acid Butter Fermenter" (*ib.*, 1896); "Rancid Butter in Poland" (*Acad. Sci., Cracow*, 1903, 1907, 1909).

Disc. B. saccharobutyricus.

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Art. in "Allen's Analysis."

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Books.—"Histol.," transl. into several languages; Chapters in Stricker's "Handbk. of Histol.," "Anat. of Lymphatic Syst.," "Histol." in "Handbk. of the Physiol. Lab.," "Atlas of Histol.," "Micro-organisms and Dis.," "Grouse Dis. and other Dis. of Poultry," "Bact. and Etiol. of Oriental Plague," etc. *Contrib.*—Several on Histol. to *Q. J. Micros. Sci., Repts. of M.O. of Loc. Govt. Bd.*, from 1874—1907; also to *Brit. Med. J., Lancet, Pub. Health and J. of Hyg.*, etc.

Disc. several new species of pathogenic bacteria and fungi.

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Books.—"Handbk. of Astron.," 3rd edn.; "Astron. Evenings," 8th edn.; "Gen. Weather Lore," 3rd edn. *Contrib.* on Relation between Cirrus Clouds and Sunspots; Periodic Colour Variation of a Ursae Majoris, etc.

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Books.—"Med. Diagnos.," 18th edn. 1913; "Textb. of Intern. Med.," 1906; "Infection and Immun. in Asiatic Cholera," 1893; "Liebig and Med.," 1901.

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Books.—"Textb. of Vet. Hyg.," "Handb. of Serum Therapy and Serum Diagn. in Vet. Med.," jty.; "Handb. of Food Examn.," jty.; "Hyg. of Domest. Animals." *Contrib.* on milk hyg., epidemics, physiol. chem., bact., etc.

Antiphymatol; ventrase.

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Books.—"Building Materials," 2nd edn.; numerous Handb. on Metal-working, Glass-making, Wood-working, etc.

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Books.—"Arteriosclerosis Dis. of the Media and Aneurysm," 1911. *Contrib.*—"Exper. Arteriosclerosis" (*Brit. Med. J.*, 1906); "Calcereous Degeneration" (*J. Exper. Med.*, 1905); "Osteogenesis Imperfecta" (*J. Path. and Bact.*, 1908); "Bacteria on Aesculin Agar" (*J. Infect. Dis.*, 1910).

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Book.—"Trans-Pacific Longs." *Contrib.*—"Microseisms" (*Roy. Soc. Can.*, 1909); "Our Earth in the Universe" (*J. Roy. Astron. Soc.*, 1910); "Earthquake Epicentres" (*ib.*, 1910); "Movement of Earth Particle" (*Roy. Soc. Can.*, 1912).

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Books.—"Upper Egypt," and in Eng. 1878; "Coral Insects of Red Sea," 1877; "Fishes of Red Sea," 1884; "Crabs of Red Sea," 1906, 1913. *Contrib.* on Australian and Württ. fishes, verteb. of Red Sea; etc.

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Book.—"Med. Ophthalm."

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Books.—"Man. of Dyeing" jty.; "Princ. and Pract. of Textile Printing"; "New Reduction Methods in Volum. Anal." *Art. in Encyc. Brit. Contrib. to Ber. d. Chem. Ges., J. Soc. Dyers and Colourists.*

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Contrib. on Lithium in Deep Well Waters, Potable Waters, Chem. of Rubber, etc.

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Books.—"Course in Quant. Anal."; "Notes on Blowpipe Anal."; "Prob. in Chem. Arith." *Contrib.*—About 70 on chem.

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Contrib.—"Temp. and potential press. relations in mercury arc" (*Phys. Rev.*, 1910); "Rays of positive elec. from Wehnelt Cathode" (*Phil. Mag.*, 1911 and 1912); "Production of helix of rays from Wehnelt Cathode" (*Ib.*, 1912).

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Contrib. on Oriental Observa. and Hist. of Astron. in *Memoirs* and *Monthly Notices Roy. Astron. Soc.*, Observatory, Egyptian Research Account, etc.

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Books.—"Methods for Determ. of Mean Density of Earth"; "Schmidt's theory of the Sun and its Applic. to Spectrosc. Determ. of Period of Rotation of Sun." *Art.*—"Determ. of orbits of comets and planets" in *Taschenb. f. Math. u. Phys.*, 1911; "Fixed Star Systems" and "Sun Syst." in *Hdwb. d. Naturw.*, 1913.

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Contrib. on Pyrazol compds.; Constit. of Morphine; Tautomerism; Isoln. of both Aceto-Acetic Esters.

Antipyrin.

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Soc.—Leop. Carol. Acad.

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Books.—"Elec. and Magnetism"; "Physics"; "Physics of Earthquake Phenom."; "Life and Sci. Work of P. G. Tait"; "Four-figure Math. Tables." *Arts.*—"Pneumatics"; "Light" in *Encyc. Brit.*, 9th edn.; "Photometry" in *Encyc. Brit.*, 11th edn.; Revised "Kelland and Tait's Quaternions." *Contrib.*—"Magnetism and Strain" (7 papers) (*Trans. R.S.E.*, 1883—99); "Elec. Resist. and Temp." (4 papers) (*Ib.*, 1886—1907); "Seismic Radiations" (*Proc. R.S.E.*, 1907 and 1909); "Earthquake Periodicities" (*Proc. Roy. Soc.*, 1897).

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Books.—"Path. of Oesophagus" (Gold Med. Path. Soc. Dub., 1877), 1878; "Mapother's Physiol." 3rd edn., 1882. *Contrib.*—"Fever of Over-exertion" (*Trans. Roy. Acad. Med. I.*, 1888); "Origin of Syph." (*N.Y. Med. J.*, 1908); "Dies Caniculares" (*Ib.*, 1908); "Iron" (*Ib.*, 1908).

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Book.—"Birds of the World," 1909. *Arts* Bot. H—Z, in Century Dict.; Bot. A—Z, in Standard Dict.; "Fossil Flora of Alaska," in Fossil Flora.

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Books.—"Physico-Chem. Calculations," 1912. *Contrib.*—"Ionisation of Sulphur and Complexes of Mercury" (*Zeitschr. f. Elektrochem.*, 1906); "Study of sulphur anion and of complex sulphur anions" (*Trans. Faraday Soc.*, 1908); "Solub. of Bi₂S₃ in alkali sulphides and of Bi₂O₃ in alkali hydroxides" (*Trans. Chem. Soc.*, 1909); "Volum. estim. of mercury and of silver in presence of mercury" (*Ib.*, 1909).

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Books.—“Parkeriaceae”; “Increase of Thickness of Wood and its Depend. on other Influences”; *Botanic Charts. Contrib.*—Numerous.

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Contrib.—96 monog., 109 publ. discussions; and on med., surg., san., and social.

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Books.—“Textb. of Pharm.-Therap.,” 2nd edn.; “Textb. of Intoxication,” 2 vols., 2nd edn.; “Compend. of Pract. Toxicol.,” 5th edn. (transl. into 4 languages); “Theory of Prescriptions,” 4th edn.

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Book.—“Turbines and Rotat. Pumps,” 1906. *Contrib.*—“Efficiency of Bands” (*Z. d. Ing. u. Archit. Ver.*, 1908); “Vacuum and Compressed Air Brakes” (*Ib.*, 1910); “Expts. on Diesel Motor” (*Ib.*, 1908); etc.

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Books.—“Syst. of Fixed Stars,” 1906; “Astron.,” 2 vols., 1910—11; *Arts.* on Fixed Stars, Parallax, Proper Motion of Solar Syst., in Valentin's “Dict. of Astron.” *Contrib.*—Numerous, since 1879.

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Books (in Hung.)—“Geol. of Donau Trachyte Group,” 1877; “Critical Survey of Siebenburg Minerals,” 1885; “C. Siebenburg Earthquake, Oct. 3, 1880,” 1880; “Tert. Formns. of Siebenburg,” 1894, 1900. *Contrib.* on new minerals, etc.

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Contrib.—Memoirs on theory of infinite determinants, theory of functions, theory of prime numbers, in *Acta Math.*, *Math. Ann.*, etc.

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Contrib.—Numerous.

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Books.—“Handb. of Childr. Dis.”; “Dis. of Male Sexual Org.”; “Surg. Operat.”; “Surg. of Infect. Dis.”; “Encyc. of Surg.”; etc.

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Books.—“New Meth. of Linear Measuram.”; “Geod. Expts. of Tectonic Movem. at Pribram”; etc.

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Books.—"Ger. Dendrol.," 1893; "Families of Pomaceae," 1890. *Arts.*—"Lythraceae" in Flora Brasil.; others in Engler. *Contrib.*—"Philadelphus" (*Mitt. Deut. Dendrol. Ges.*, 1904); "Ligustrum" (*Ascherson-Festschr.*, 1904); "Prunus, sp. Asiae orient." (*Sargent, Pl. Wilson*, 1911—13); "Sorbus, sp. Asiat." (*Ib.*).

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Books.—"Chem. of Human Food and Drugs," 4th edn. 1903; "Agric. and Commerce. Subs.," 4th edn. 1910; "Water Purific.," 2nd edn. 1899. *Contrib.* since 1870 on Agric., Food and Drug Chem., and on product. of cellulose, etc., from wood.

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Book.—Ed. Lommel's "Text-bk. Exper. Physics," edns. 6—19; Drude's "Phys. of Ether," 2nd edn., 1912. *Contrib.*—Numerous to *Ann. d. Phys.*, etc.

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Contrib. on Phys. and Geophys.

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Books.—Numerous on Math.; Biogs. of Helmholtz and Jacobi.

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Books.—"Outlines of Marine Met.," 2nd edn. 1909; "Gen. Climatol.," 2nd edn., 1906. *Contrib.*—About 200 in *Met. Zschr.*, *Ann. d. Hydrog.*, *Arch. d. Seewarte*, etc.

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Books and *Arts.* on dis. of ear and brain, etc.

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Books on Cytol.; "Influence of Radium on Plants"; "Tropical Plants"; "Plant Geog." (with Roth). *Contrib.* to *Bot. Centralbl.*, etc.

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Contrib. on Geol. of Togoland and Ger. E. Africa to *Mitt. aus d. deut. Schutzgebieten*, *Z. geol. Ges.*, *Abh. d. preuss. geol. Landesanst.*, etc.

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Books.—"Theory of Spectrum Anal.," 1890; "New Geom. Theory of Seismical Phenom.," 1895; "Seismic Laws," 1906, in Ital.; "Seis-

mic Hysteresis," 1910. *Contrib.*—"Develop. and Intensity of Earthquakes" (*Beitrage zur Geophys.*, 1905); "Possibility of Prevision of Earthquakes" (*Boll. seismol. Ital.*, 1910).

Speed of solar syst. by spectros. observ.; Law of displacement (Wien's Verschiebungsgesetz); Seismical hysteresis and predict. of earthquakes.

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Books.—"Plankton of Ill. River," 2 vols. 1894—1898; "Biol. Stations of Europe," 1910; Ed. "Univ. Cal. Publ. Zool." *Contrib.*—"Plankton studies" (*Bull. Ill. State Lab. Nat. Hist.*, 1896—98); "Dinoflagellata, San Diego Region" (*Univ. Cal. Pub. Zool.*, 1906—11); "Early develop. of Limax" (*Bull. Mus. Comp. Zool., Harv. Coll.*, 1895); "Repts. Sci. Results Exped. E. Tropic Pacific Protozoa" (*ib.*, vols. 46, 50, 52, 54).

Inv. self-closing bucket and net for Plankton work.

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Contrib.—Numerous on Phys. and Electro-*tech.* in *Wied. Ann., Elektrotech. Zschr.*, etc.

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Contrib. to *Ber. deut. chem. Ges., Liebig's Ann., Zsch. f. Electrochem.*, etc.

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Book.—"Around the World."

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Books.—"Essays on Dwarfing of Useful Trees in Japan"; "Forestry Econ."; "Princ. of Forestry Econ."; "Climat. of Japan"; "Relat. between Forestry Products of World and Foreign Trading"; etc.

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Disc. Immunity against typhoid (with Pfeiffer), against rinderpest (with Sir G. Turner); antimeningococci serum (with Wassermann).

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Books.—"Equation $t^2 - Du^2 = 1$," 1903; Ger. Transl. of Schuster's "Intro. to Theory of Optics," 1906; Several Chapters in Kayser's "Handb. d. Spectroscopic"; "Atlas of Emission Spectra of most Elements," 1905, in Eng.; "Astrophysics," in "Fortschr. d. Phys.," 1905—11; "Luminosity of Gases and Vapours," 1911. *Contrib. to Ann. d. Phys., Astrophys. J., Z. f. wiss. Photog.,* etc.

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Books.—"Manual of Chem. Anal. and Assaying app. to Manuf. of Iron," with Dietz, 1871, in Eng. 1872; "Treatise on Mineral Anal. Chem.," 1893, 2nd edn. 1913; "Textb. of Qual. and Quant. Mineral Anal.," with Meinette, 1899; "Préparat. Manipulés for Anal.," 4th edn. 1907. *Contrib. to Zschr. f. Anal. Chem., Zschr. f. Angew. Chem., Bull. Soc. Chim. Belg., Rev. Univers. des Mines.*

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Books.—"Forest Flora of Java," 3 vols.; "Atlas of Java Tree Species," jtly.; etc.

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Arts. in *Beibl. d. Ann. d. Phys. Contrib.* on comets, cometary tails, minor planets, nebulae, meridian circle.

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Books.—Ed. of "Handbk. Path. and Therap." (Budapest); and several arts. on Path. and Therap. of Chest-organs, Zoonoses, etc., to

Encycs. of Billroth and Pitha, Eulenburg, etc.

Percussion of spinal column.

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Book.—"Phys. Chem. and Med.," 1907 (with Richter).

Osmotic pressure in pract. med., esp. in path. of heart dis., and in path. and diag. of kidneys.

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Contrib. to Prakt. Bl. f. Pflanzbau, etc.

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Books.—"Theory of Potential," 2 vols., 1899, 1901; "Hydrodynam. of Gravitat. and Elec. Phenom.," 2nd edn. 1898; "Elec. Distance Photogr.," 2nd edn. 1907; "Handb. of Phototeleg. and Telautography," jtly., 1911. *Inv.* Korn phototeleg. and telautography.

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Books.—"Textb. of Embryol.," 1890—1909; "Regen. and Transplant.," 1908. *Contrib.* on morphol. and embryol.

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Book.—"Upper Silesia: its Territory and Industries," 1888. *Art.*—"Fuels" and "Potassium Salts" in "Muspratt's Tech. Chem.," 4th edn. *Contrib.*—"Chalks of Ger. Empire" (*Trans. Inst. Adv. Indus. Pract. Berlin*, 1888); "Occurrence of limestones in N. Ger.," 1913; "Process for absorbing and destroying acid gases from roasting furnaces" (*Trans. Inst. Adv. Indus. Pract.*, 1883).

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Contrib. on biochem. to *Zschr. f. Physiol. Chem.*

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Contrib.—"Law of Thermodyn. Unity" (*J. de Phys.*, Paris, 1894); "Theory of Phosphorescence" (*Phil. Mag.*, 1907, and *Bull. Acad.*, Cracow, 1908); "Phosphorescent Org. Substances" (*Phys. Z.*, 1911).

Product. of nitrates from air by elec. discharge, 1888—1903.

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Book.—"Helminth. Researches in Denmark and Iceland," 1866, and in Eng. and Fr.; etc.

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Books.—"Flora of N. and Cent. Ger.," 7th edn. 1910; "Guide to Bot. Investig.," 8th edn. 1913; "Guide to Zool. Investig.," 6th edn. 1911; "Intro. to Biol.," 3rd edn. 1912; "Monogr. of Ger. Freshwater Bryozoa," 1887, 1892; "Relat. of Animals to each other and to Plants," 1905, 2nd edn. 1913; "Nature Studies" in Garden, Forest, Field, etc., 5 vols. *Arts.*—"Scorpions," "Palpigrada," etc., in Das Tierreich. *Contrib.*—Numerous on Insect Anat., Animal Geog., Nomenclature, Museums, Systematics, etc.

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Contrib. on Progress in Prac. Geol. and Min. Econ.

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Book.—"Production of Corn," 1908. *Contrib.*—Numerous on Plant and Agric. Physiol. to *Wollug's Forsch.*, *Gebiete d. Agric.-physik*, *Nat. Zeitschr. f. Land-u.-Forstwiss.*

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Books.—"Essentials of Crystallog." 1906; "Descriptive Miner.," 1911; "Tables for Determ. of Minerals" (with W. F. Hunt), 1911. *Contrib.*—Numerous, to *Zeit. f. Krystall.*, *Amer. J. Sci.*, *Science*, *Amer. Geol.*, *Centralbl.* and *Neues Jahrb. f. Miner. Geol.* and *Paleont.*, on Chem. Crystallog., Amer. Minerals, Crystallog., Optical Properties of Certain Elec. Furnace Products.

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Books.—"Life of Richard v. Volkmann," 1890; "Tuberc. of Bones and Joints," 1890, 1900; "Surg. of Brain and Spinal Cord," 1908, 1911; "Textb. of Surg. Operat.," 1912—13.

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Contrib. to *Z. Tropenhyg.*, *Berlin Klin. Woch.*, *Zsch. f. Exper. Path.*, etc., on African peoples, veg. oils, sleeping sickness, etc.

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Books.—"Textbk. of Clin. Diag."; "Therap. of Internal Dis."; Collab. of "Handbk. of Trop. Dis., Röntgen-Atlas of Internal Dis.," etc. *Contrib.* 70. Ed. of *Z. f. Röntgenkunde*.

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Contrib.—"Geol. Age of Backstein Limestone from Trilobite Fauna" (*Jahrb. Pr. Geol. Landesanst.*, 1894); "Obsidian from Dutch Indies" (*Leiden Geol. State Mus.*, 1898); "Tertiary, Cretac. and older Beds in W. Borneo" (*ib.*, 1897); "Diluvial, Tertiary, Cretac. and Jurass. Beds from Borings at Heilsberg" (*Jahrb. Pr. Geol. L.*, 1903).

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Books.—"Thermal Anal. of Chem. Comps.," 1909; "Guide to Graphic Chem.," 1910; "Phys. Chem. Theories and Tech. Manuf.," 1911, and in Eng. *Contrib.* on Formn. and Dissoc. of Compounds, Chem. Kinetics, to *Sitzber. Akad. Wien, Monatsh. f. Chem.*

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Books.—Eng. Transl. of Gildemeister and Hoffmann's "Volatile Oils." *Contrib.*—Numerous on Phytochem.

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Books.—"New Tacheometer," 1876, 1888; Transl. "Rankine's Man. of C.E.," 1876; "Location of Rys. and Traffic," 1900; "Masonry Dams," 1909; "River Channels," 2nd edn. 1910. *Arts.* in Handb. d. Ing.-wiss., Röll's Encyc., Meyer's Conv. Lex. *Contrib.* to *Proc. Inst. C.E.*, *Zsch. Oesterr. Ing. Arch.*, *Zsch. Ver. Deut. Ing.*, etc.

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Books.—"Theory of Resistance," 1893; "Stable and Unstable Equilib. Figures," 1902; "Energy Maintenance," 1905. *Contrib.*—"Line of compress. in pile of masonry" (*Schweiz. Bauz.*, 1899); "Stress in transversal framework of tubular bridges" (*ib.*, 1900).

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Contrib. to *Bull. Amer. Mus., Univ. Cal. Publ., Amer. Anthropol., J. Amer. Folk Lore, J. Anthropol. Inst. G. B.*

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Contrib. on Aurora borealis, etc.

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Soc.—Ger. Engrs.; Ger. Architects and Engrs. Assoc.; Iron Smelters.

Book.—"Theory of Bridge Construc.," 1883. *Contrib.*—"Theory of Arched Girders" (*Z. f. Baukunde*, 1880).

Bridges at Bonn, Dusseldorf, Berne (Aare), Levensau (Nord-Ostsee Kanal).

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Books.—"Researches on Glacial Period," 1876; "Orography of Asia," 1904; "Desiccation of Asia," 1904; and numerous in Sociology.

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Books.—"Repts. on Estimation of Perpendic. Variation," 1898; "Equations for Specified Observ. in Two Groups," 1905; "Arrangement of Contradictions in Triangulation," 1906; "Equations for Line Surv.," 1908; "Representations of Earth Ellipsoids in Plane," 1911. *Contrib. to Verh. d. Göttingen, Ges. d. Wiss. Astron. Nachr., Z. f. Math. and Phys.*, etc.

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Books.—"Hypersensitiveness of Eye," 1910; "Studies on Tuberc.," 1913. *Contrib.*—"Heredit., Sight and Refraction anomalies of higher

schools in Levant and India" (*Ber. Ophth. Ges. Heidelberg*, 1912).

Pats. on oculist apparatus.

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Books.—"Electromotor for Railways"; Founder, *Zeitschr. Elek. Bahnen u. Kraftstriebe. Contrib.*—Numerous on Currents, Railways, etc.

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Book.—"Yearly Progress of Ground-temper. in Differing Climates," 1907.

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Books.—"Comp. Anat. and Embryol. of Whales," 1889, 1893; "Comp. Anat. of Sirenionris," 1894; "Guide to Zool. Pract." 1898, 6th edn. 1912. *Arts*.—"Alcyonaria" in *Rept. Ger. Deep-Sea Exped.*, vol. 13, 1906, 1911.

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Book.—"Dis. of Mouth" (jily.) 3rd edn. 1912. *Contrib.*—Numerous.

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Books.—"Path. Anat. of Plants," 1903; "Fructific. and Sexuality of Plants," 1906; "Artificial Culture of Micro-org.," 1907; "Galls of Plants," 1911.

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Books.—"Surg. of Kidneys," 1896, 1902; "Five Years in Augusta Hosp. Berlin," 1877; "Surg. Triennium," 1882; "Hist. of Augusta Hosp.," 1911. *Contrib.*—Numerous.

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Books.—"Catalogues of Stars," etc. *Contrib.*—Many in *Astron. Nach.*, *Astrophys. J.*, etc. *Disc.* variation of latitude.

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Books.—Co-ed. "Results of Surgery and Orthopaedy"; and of Handbks. of Prac. Surg. Operation Methods, Blood Transfusion, Transplantation from the Dead.

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Books.—"Dis. of Frontal Sinus," 1895; "Therap. of Conjunctiv. granulosa"; "Utility of Conjunctiva in Pract. Oper. Ophthalm." *Contrib.*—Numerous.

KUKULA, OTAKAR, Ord. Prof. of Surg., Fac. Med., Bohem. Univ., Prague, Bohemia.

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Resuscitation of heart.

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Public.—"Dis. of elbow"; "Thyroid Transplant. by Crisani's meth."; "Laparotomy"; "Radical Oper. for Hernia"; "Carcinoma."

Inv. apparatus for coxalgia, sterilis. of silk threads, etc.

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B. 1856, N.Y. City. *Educ.* New York City. A.M. (Columb.) 1898; Ph.D. (Mar.) 1904; Sc.D. (Knox.) 1907; Chev. Leg. Hon. Fr. 1904; Kt. St. Olaf, 1908; Red Eagle, Ger., IV. Soc. Amer. I, Min. E. *Late in charge* Precious Stones, U.S. Geol. Surv., 1882—1909; Cur. Mus. Nat. Hist., Paris.

Books.—"Gems and Precious Stones of N. Amer.," 1889; "Precious Stones of N. Carolina"; "Precious Stones of Can.," "Ornamental Stones of Mex." *Arts.*—"Lapidary," in *Encyc. Brit.*; "Precious Stones," in "Cent. Dict." *Contrib.*—About 200, on Mineral, Archaeol., Precious Stones, Meteorites, etc.

Named moissanite, tiffanyite, morganite, californite.

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Books.—"Mech. Outlines of Theor. Phys.," "Induction in Rotary Field of Rotating Spheres." *Contrib.*—"Magnet. Props. of Pyrrhotine," jtlly. (*J. de Phys.*, 1907); "Magn. Props. of Haematite" (*Jahrb. d. Miner.*, 1907); "Absolute values of elem. magnets of iron, nickel and magnetite" (*Phys. Rev.*, 1909).

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Books.—"Introd. to Study of Alkaloids"; "Apoth. Legislation in Saxony," 2 vols; "Role of Chem. in Evol. of Med.," 1907. *Arts.*—"Apoth. revision," "Alkaloids" and "Tannoids" in *Realencyk. d. gesamt. Pharmac. Contrib.* on tannoids, etc. to *Pharm. Centralbl.* Capillary anal. of pharm. tinctures; Cyclogalliphar acid in gall-nuts; Electrolyt. process for clarifying solns.

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Arts. on Plant Geog. and Flora in Just's Bot. Jahresber., 1875—80; "Vegetation" in Rio and Achaval's "Geog. de Cordoba," 1904. Contrib.—"Essay on bot. bibliog. of Argentina" (Bol. Acad. Nacl. Cordoba, 1899); "Flora of Chilcat district of S.E. Alaska" (Engler's Jahrb., 1895); "Existence of Dakota flower (Cenomano) in S.W. Patagonia" (Rev. Mus. La Plata, 1899); "Exist. of Lower Gondwanas in Argentina" (Ib., 1894).

Relat. of Argentina flora to Mexican Gulf.

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Contrib.—"Cobra Venom" (*Berl. klin. Woch.*, 1902, 1903); "Venom Hemolysis" (*J. Infect. Dis.*, 1910); "Production of antibodies to Pneumococci in an insusceptible host" (*J. Amer. Med. Assoc.*, 1911).

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Book.—"Manual of Dis. of Ear, Nose and Throat."

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Contrib.—Numerous on Obstet. and Gynaec.

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Books.—"Large Sailing Vessels," 1908; "Measurement of Sailing Vessels," 1908; "Dock-laying," 1908. *Contrib.*—"Draft of Herring-lugger with Machinery (*Abh. d. D. Seefisch. Verein*, 1897); "Photog. Measurement of Sea-waves" (*Z. d. Ver. D. Ingen.*, 1905); "Slip Crane Construction" (*Ib.*, 1908); "Large Motor Boats" (*Verh. d. 3 D. Seeschiffahrtstages*, 1911).

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Books.—"Phys. Constants," jtly.; "Univ. Reform in N.Z.," jtly. *Contrib.*—"Supersat. and nuclear condens. of certain org. vapours" (*Phil. Trans.*, 1908); "Relat. betw. velocity and vol. of org. ions in aq. solns.," "Vapour press. of mercury"; "Observ. by string electrom. of fluctuations in ionization produced by γ -Rays," with Burbidge.

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Books.—"Venom of Brazil. Snakes," 1881; "Rept. on Museums of Paris and London." *Contrib.*—Numerous on yellow fever, beri-beri, physiol., anthropol., microbiol., etc.; "Mem. on Metas of Brazil" (*Ong. of Races*, London, 1911).

Disc. pot. permanganate antidote for snake-bite (Govt. of Brazil prize).

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Books.—"Elements of Physiol. Psych.," 1887; "Intro. to Phil.," 1889; "Outlines of Physiol. Psych.," 1880; "Phil. of Mind," 1891; "Primer of Psych.," 1894; "Phil. of Conduct," 1902; etc.

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Books.—"Tech. Mycol.," 1897, 2 vols. and in Eng., 1898, 2nd edn., 2 vols., and Russ., 1903; "Handbk. of Tech. Mycol.," 5 vols., 1904.

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Contrib.—"Pancreas" in Renault and Regaud's "Gen. Review of Histol.," Collab. in Poirier and Charpy's "Treatise on Anat.," Annual Review of Anat. in "Review of Sciences," Pure and Applied; Numerous in *Arch. d'Anat. Micros., J. de l'Anat.*, etc.

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Contrib.—"Decrease of Magnetic Influence in Iron Discs" (*Ann. d. Phys.*, 1900); "Absorp. Spectrum of Chlorine" (*Astrophys. J.*, 1901); "Ionization produced by Discharge Rays" (*Phys. Rev.*, 1910).

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Books.—Transl. and Ed., "Kayser's Comp. Geol.," "Textb. of Geol." (jtyl.). *Arts.*—"Alps," "Europe," "Asia," etc., in *Encyc. Brit.* *Contrib.*—"Monog. of Brit. Cambrian Trilobites" (*Palacont. Soc.*); "Denbigh" (*Q. J. Geol. Soc.*, 1895); "Bala Lake" (*Geol. Mag.*, 1900); "Trilobites of Bokkeveld Beds" (*Ann. S. African Mus.*).

LAKING, Sir FRANCIS, Bt., G.C.V.O., K.C.B., Physician in Ord., and Surg. Apoth. to the King and Household; to Household of Duke of Connaught; Physician in Ord. to Prince and Princess Schleswig-Holstein; Visiting Apoth., St. George's Hosp.; Cons. Physician Gordon Hosp. for Fistula and Vict. Hosp. for Children; Physician, Alliance Assurance Co. 18, Cavendish Sq., London, W.

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Contrib.—"Indican in Urine" (*St. Geo. Hosp. Rept.*).

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Books.—"Hexagonal Abaci," 1885; "High Precision Surveying," 1889; "Systematic Errors in Surveying," 1889; "Atmos. Refraction," 1890; "Cadastral Refection," 1899; "Metric Syst.," 1904; "Movements of Earth's Crust," 1909—10. *Contrib.*—"Legal Hour in France and Hour-Clocks" (*Rev. Sci.*, 1897—98); "Volcanoes and Earthquakes" (*Id.*, 1903); "Air Map and Aeron. Marks" (*Geog. J.*, 1911). Médiamètre, 1886; Equality of sea-level. 1890.

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B. 1867, Chelsea. *Educ.* Privately; Cent. Tech. Coll., S. Kensington, B.Sc. (Lond.); M.A. (Cantab.). Soc.—Assoc. Mem. Inst. E.E.; Foll. Camb. Phil.

Book.—"Alternating Currents." *Contrib.*—"Diptera of Sub-Antarctic Islands of N.Z.," 1910; "Distrib. of Induction in Bar" (*Phil. Mag.*, 1899); "Measurement of Permeability" (*J. Inst. E.E.*, 1901); "Conductivity of Heat Insulators" (*Proc. Roy. Soc.*, 1899).

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Contrib.—"Recent Marine Sponges of Can. from Atlantic, Pacific and Arctic Oceans" (*Trans. Roy. Soc. Can.*, 1892—1900); "Revision of Genera and Species of Can. Palaeozoic Corals" (*Geol. Surv. Can. Palacont.*, 1899); "Verteb. of Mid-Cretaceous of N.W. Terr." (*Id.*, 1902); "Palacont. Fishes from Albert Shales of N.B.," 1910.

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Sch.; Merton Coll., Oxford. M.A. (Oxon.) 1903. *Soc.*—F.C.S.; Fell. Ger. Chem.

Contrib.—"Corrosion of Metals," "Rusting of Iron," etc., in *J. Chem. Soc.*

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Books.—"Outlines of Zool.," 1892; "Manual of Fauna of Belgium," 3 vols., 1895—1907; "Revis. of Prionides," 1902—12. *Contrib. to Arch. de Biol., Ann. Soc. Entom., Ann. Soc. Zool. Malacol., etc.*

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Books.—Ed. "Yearb. of Progress of Math.," 1883—1911, and *Arch. Math. Phys.*, 1900—1913. *Contrib.*—Numerous.

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Contrib.—"Notes on a Visual Exper." (with V. M. Slipher) (*Lowell Observ. Bull.* No. 10, 1903); "On Photog. Canals of Mars" (*Ib.*, No. 21, 1905); "Canals of Mars Photographed" (with Lowell) (*Pop. Astron.*, 1905).

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Book.—"Geol. of Isle of Man" (*Mem. Geol. Surv.*); Parts of Several Memoirs (Geol. Surv.) on Districts in Irel., Midlands and S. of Eng. *Contrib.*—Numerous Papers on Lower Cretaceous and Glac. Subjects, and on Geol. of Isle of Man, Zambesi Basin, Spitzbergen, etc.

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Book.—"Handbk. of Distrib. of Prime Numbers," 1909, 2 vols. *Contrib.*—"Generalisation of Picard's Law" (*Sitz. Berlin Akad. Wiss.*, 1904); and 80 others.

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Books.—"Blowpipe Anal." 3rd Ger. edn. 1908, 3rd Eng. 1901, 1st Fr. 1895, Ital. 1878; "Spectrum Anal.," 1896, and in Amer. 2nd edn. 1907. *Arts.* in Neu. Hwb. d. Chem.

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Art.—Chapter on "Treatment of Tuberc.," in "Modern Treatment," ed. by H. A. Hare and H. R. M. Landis. *Contrib.*—"Agglutin. Studies in Tuberc." (*J. Med. Research*, 1905); "Clin. and Path. Comparison of Tuberc. Caritica" (*Amer. J. Med. Sci.*, 1906); "Compression of Pulmonary Veins as Cause of Cardiac Hydrothorax" (*Ib.*, 1909); "Fibrosis of Lungs" (5th Ann. Rept. Phipps' Inst.).

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Books.—"Alone with Hairy Ainu"; "Corea"; "In the Forbidden Land" (Tibet); "Gems of the East"; "Across Widest Africa"; etc.

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Books.—"Serotherapy," 1898; "Elements of Anat. and Physiol.," jtyl., 1913. *Arts.*—"Pneumonia" and "Pneumococci" in Brouardel and Gilbert's *Pathol.*; etc. *Contrib.* on muscular and myopathic atrophy, pleurisy *a frigore*, tuberc. and typhus B.

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Book.—"Metric Tables for Engrns.," 1885; Words in Civil Engrng., for 2 new vols. of "Century Dict.," 1910. *Contrib.*—"Observations of Transit of Venus, 1882, made at Vanderbilt Observ." (*Amer. J. Sci.*, 1883); Over 100 Tech. Repts. on Water-supply, Water Regulations, Stream-pollution, Sewage-disposal, and Sewer Sys. in N.Y. State, for N.Y. State Bd. of Health and State Dept. of Health.

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Books.—"Theory of Algebraic Functions," 1902 (with K. Hensel). *Art.* on Algeb. Struct. in *Encyc. d. Math. Wiss. Contrib.*—Numerous.

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Arts.—"Ovary and Ova in Lucifuga and Stygiocola" Chap. in "Cave Vertebrates of Amer.," by Eigenmann, 1909. *Contrib.*—"Ovarian Structures of Cuban Blind Fishes" (*Biol. Bull.*, 1903); "Habits and Placentation of Tatu novemcinctum" (*Okla. Research Bull.*, 1909); "Suggested Classific. of Edentates"

(*Ib.*, 1909); "A Paired Entoplastron in Trionyx" (*Proc. Ind. Acad. Sci.*, 1909).

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Contrib. on Morph. and Life-hist. of Bryophyta and Pteridophyta.

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Art.—"Fauna" in *Encyc. Nederl. W. Ind. Contrib.*—"Germinal layer form. of Megalobatrachus maximus Schlegel" (*Anat. Hefte*, 1908); "Embryol. of Jap. giant salamander" (*Anat. Anz.*, vols. 42, 43); etc.

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Book.—"Lects. on Struct. of Centr. Nerv. Syst.," 1910. *Contrib.*—"Muscle tonicity" (*Arch. f. Anat. u. Physiol.*, 1901 *et seq.*); "Determin. of sensory spinal skinfields in healthy individuals" (*Roy. Acad. Sci. Amsterdam*, 1900); "Princip. of entropy in physiol." (*Ib.*, 1902 *et seq.*); "Form of the trunk-mylotome" (*Ib.*, 1904).

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Book.—"Chem. of Pottery" *Contrib.* to *Trans. Amer. Ceram. Soc.*, etc.

Aventurin glazes and "Rookwood" faience.
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Book.—"Parasitic Worms," 1912. *Contrib.* "Mandibulae Dolichopod." (*Verh. internat. Zool. Kong.*, 1901); "Blood-biol. researches on Apides" (*Zeitschr. f. wiss. Insektenbiol.*, 1910) and on Diptera (*Ib.*, 1910).
Croatian fauna; poisonous insects.
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Sc.D. (Cantab.); Hon. LL.D. (St. And.); Hon. Sc.D. (Dubl.); Roy. Med., Roy. Soc., 1892; Baly Med., Roy. Coll. Physicians, 1903. *Soc.*—V. P. Roy. Soc., 1904—08; Brit. Assoc., Pres. Sect. I., 1899; P.P. Neurol.; Corresp. Mem. of Senek. Nat. Frankfurt, Roy. Mil. Acad., St. Petersb., Vienna Med., Biol. Paris, Ger. Neurol.; Hon. Mem. Kazan Alien. and Neurol. Swed. Physicians, Amer. Physiol.; F. M. Roy. Upsala Sci., Belgium Acad. Med., Danish Acad., Swed. Acad.
Contrib.—Numerous.
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Contrib.—"Anal. of Shellac" (*J. Soc. Chem. Ind.*, 1905—11); "Anal. of Glycerine" (*J. Ind. and Engrng. Chem.*, 1911); Separation of Uranium and Vanadium ("Crookes' Select Methods").
- LANGMUIR, IRVING**, Research Chem., Research Lab., Gen. Elec. Co., Schenectady, N.Y., U.S.A.
B. 1881, Brooklyn. Met. E. (Columbia); Ph.D. (Gött.). *Soc.*—Amer. Assoc.; Amer. Chem.; Am. Phys.; Am. Electrochem.; Am. I.E.E.
Contrib. on dissoc. of hydrogen, convect. of heat, etc.
- LANGSDORF, ALEXANDER S.**, Prof. of Elec. Engrng., and Dean of Sch. of Engrng., Washington Univ., St. Louis, Mo., U.S.A.
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Contrib.—"Current Locus of Single Phase Induct. Motor" (*Trans. A.I.E.E.*, 1909); "Air-Gap Flux in Induct. Motors (*Ib.*, 1905); "Excitation Characteristics of Synchronous Motor" (*Elec. World*, 1907); "Fatigue of Insulation" (*Ib.*, 1908).
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Books.—"Digest of Metabolism Expts." (with W. O. Atwater); "Occurrence of Aluminium" (with P. T. Austen); Numerous Govt. Bulls. and Documents. *Arts.*—Numerous, on Food and Nutrition, in "Internat. Encyc." *Contrib.*—Improved Respiration Calorimeter (with R. D. Milner); Dietary Standards; Human Nutrition; Ed. for Foods and Nutrition, "Exper. Sta. Record."
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Books.—"Comparative Longevity," 1870; "Cephalaspidian Fishes," 1870; "Nature and Man," 1905; "Kingdom of Man," 1907; "Okapi," 1910; "Sci. from an Easy-chair," 1910. *Arts.* on Zool. to *Encyc. Brit. Contrib.*—"Newer Tertiaries of Suffolk and their Fauna" (*Geol. Soc. Q. J.*, 1870); "Limulus an Arachnid" (*Q. J. Microsc. Sci.*, 1881); "Coelom and Vascular Sys. of Mollusca and Arthropoda" (*Ib.*, 1893); "Classific. of Animals by Econ. Zool." (*Brit. Mus. Rept. Econ. Pathol.*, 1903).
Disc. first known parasite in verteb. red corpules, 1871; Scales of fossil fish *Pteraspis*; Diestian box-stories of Red Crag; Affinities of King Crab and Scorpion, etc.
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Books.—"App. Mechs.," "Dynamics of Machines." *Contrib.*—Numerous.
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Contrib.—60 to *Trans. Chem. Soc.*, etc.

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Books.—Ed. with T. C. English, "Syst. of Treatment," 4 vols.; "Dict. of Med. Treatm.;" "Early Diagn. and Modern Treatm. of Pulmonary Consump.," 4th edn. *Contrib.*—"Some points in path. and treatm. of Typhoid Fever," *jtly.* (*Lancet*, 1893); "Extensive effusion into Pericardium" (*Id.*, 1903); "Cardiac pain: its causation and treatm." (*Clin. J.*, 1901).

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Contrib.—"Geol. of W. Rajputana" (*Memoirs Geol. Surv., India*, 1902); "Relics of Great Ice Age in India" (*Geol. Mag.*, 1910); "J. of Major Rennell" (*J. Asiatic Soc., Bengal*, 1910); Numerous Papers in Records, Geol. Surv. of India.

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Book.—"Text-bk. of Physics" (with H. E. Hurst). *Contrib.*—"Mutual Solubilities of Diethylamine and Water" (*Phil. Mag.*, 1905); "Vapour Pressures of Triethylamine and Water" (*J. Chem. Soc.*, 1907); "Ionization of Electrolytic Oxygen" (*Phil. Mag.*, 1909); "Effect of Water Vapour on Velocities of Gaseous Ions" (*Proc. Roy. Soc.*, 1910).

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Books.—"Chinese Pottery of the Han Dynasty," 1909; "Jade: a Study in Chinese Archaeol. and Religion," 1912.

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Books.—"Levelling," 1877; "Gradient of Streets" and "Tech. Hochsch.," 1881; "Theory of Draw of Railways," 1887—8; "Elem. of Polit. Econ.," 1885; "Tariff of Railways," 1891, and in Ital. 1902; "Roaring Loom of Time," 3rd edn. 1910.

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Books.—"Valuation, Book-keeping and Calculn. in Agric.," 1911; "Theory of Agric. for Farmers," 1912.

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Books.—"Greek and Roman Methods of
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 Anal.; Amer. Chem.; A.A.A.S.; Amer.
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 Revision Comm. (Sec.); Amer. Med. Assoc.

Book.—"Org. Chem." (with Leffmann).
Art.—Chap. 6, Vol. 4 (with H. Leffmann) in
 Allen's "Commerc. Org. Anal." *Contrib.*—
 "Compar. Study of Fruit and Veg. Colours"
 (*Amer. J. Pharm.*, 1905); "Estimation of Ben-
 zoic Acid in Catsup" (*Ib.*, 1908); "Detect.
 of Capsicum in Ginger Preparation" (*Ib.*, 1909);
 "New Method of Assay of Alkaloidal Fluid
 Extracts" (*Amer. Druggist*, 1911).

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Contrib.—"Morphol. of Coniferae" (*Annals*
Bot., 1904—07); on Cytol. to *Bot. Gaz.*, 1903—
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 P.P. Seismol. Soc., 1909—10.

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Contrib.—"Spectrum of N." (*Amer. J. Sci.*,
 1907).

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Contrib.—"Pulsations of spheres in an elastic
 medium" (*Camb. Phil. Trans.*, vol. XIV.);
 "Mutual action of oscillatory twists in an
 elastic medium app. to a vibratory theory of
 elec." (*Ib.*); "Law of distrib. of velocities in
 a syst. of moving molecules" (*Camb. Phil. Proc.*,
 vol. VII.); "Certain functions connected with
 tesser harmonics" (*Proc. Roy. Soc.*, vol. 56;
Commem. Vol. Univ. Coll. Sheffield.)

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Books.—"Spher. Trigonom.," "Examples in Math. Theory of Elec.," "Surface and Volume Integrals used in Phys.," "Elem. Theory of Symmet. Optical Instrument," *Contrib.*—"Theory of Magneto-Optic Phenom." (*Phil. Trans.*, 1897); "Magneto-Optic Phenom." (*Phil. Trans. Camb. Phil. Soc.*, 1898); "Elec. Waves" (*Phil. Mag.*, 1906); "Gauss's Theorem" (*Proc. Lond. Math. Soc.*, 1910).

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Book.—"Problems in Animal Metabolism," 1906. *Art.*—"The Fats" in "Monographs on Biochem.," 1910.

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Books.—"Upper Silurian Fauna of Timan," 1892; "Import. of Corals in Devon. Formns. of Russia, 1902"; "Geol. of Donjetz-Becken."

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Books.—"Anat. Studies on Blood-vessels of Human Eye," 1865; "Dis. of Retina and Optic Nerve," 1877; "Inflammat Dis.," 1891; *Ed. v. Gräfe's Arch. f. Augenheilk. Art.*—"Circul. and Nutrit. of Eye" in *Grafe-Samisch's Handb. Contrib.*—Numerous.

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Books.—"Text-bk. Electrochem.," 5th edn., 1911, and in Fr., Ital., Russ., and 2 edns. in Eng.; "Elec. Manuf. of Chromium and its Compounds," 1902, and in Eng.; "E.M.F. of Polarisation," 1910. *Contrib.*—Numerous.

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Books on Morphol. of Mammals and Man.

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Book.—Transl. Robine and Lenglen's "Cyanide Industry"; *Bulls.* 124, 128, 138, 149 and 164, Bur. Chem. U.S. Dept. Agric. *Contrib. to Yearb. U.S. Dept. Agric.*, 1906, 1908.

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Books.—Various on Anat. and Veg. Physiol.; "Treatise on Veg. and Agric. Physiol."

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"Rept. on Enteric Fever-Carrier" (Loc. Govt. Board, 1910). *Contrib.* on path., bact., immunity, phagocytosis and enteric fever in *J. of Hyg., Proc. Roy. Soc., Zeitschr. f. Immun.-forsch.*, etc.

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Contrib. on Coleoptera, Distribution, etc.

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Book.—"Microtometist's Vade-Mecum." *Contrib.*—"Fine Struct. of Chordotonal Organs" (*Arch. f. mikr. Anat.*, 1884); "A Little-known Sense-organ in Salpa" (*Q. J. Micros. Sci.*, 1891); Series of papers on Retrospection of Karyokinetic Spindle (*La Cellule*, 1895—1905); "Numeric reduct. and conjug. of Chromosomes in the Snail" (*La Cellule*, 1911).

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Arts.—"Physiol., Vital Processes in Health," in "In Sickness and in Health"; "Reproduction," in "Amer. Text-bk. of Physiol."; "Sch. of Med.," in "Hist. of Columbia Univ."; *Transl. and Ed.* "Verworn's Gen. Physiol."; *Bd. of Eds. Amer. J. Physiol. and Columbia Univ. Q. Contrib.*—"Elec. Phenom. which accompany Muscular Contract." (*Arch. f. Physiol.*, 1887); "Study of Sense of Equilib. in Fishes" (*J. Physiol.*, 1893 and 1894); "Cause of the Treppe" (*Amer. J. of Physiol.*, 1907); "Action of Norm. Fatigue Substances on Musclic" (*ib.*, 1907).

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Contrib.—"Stagigr. and paleont. study of Faucille Chain" (*Mém. Soc. Geol. Suisse*, 1904); "Carbonif. Fauna from Nowaja Semlja" (*Trans. R. S. Edin.*, 1908); "Brit. carbonif. Trepostomata" (*Mem. Geol. Survey*, 1912); "Oceanic sedimentation," jtlly. (*Mem. Mus. Comp. Zool. Harv.*, 1908, and *Proc. Roy. Soc. Edin.*, 1905—6).

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Contrib.—"Implant. of Ovum in Spermoph. Tridiceml." (*Mark Anniv. Vol.*, 1903); "Early

developm. of *Geomys Bursarius*" (*Lancet*, 1906); "Decid. cavity in *Geom. Burs.*" (*Anat. Record*, 1907).

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Books.—"Exercises in Pract. Phys.," "Intermediate Course of Pract. Phys." (with Prof. A. Schuster, F.R.S.); *Several Lives in "Dict. National Biog." Contrib.*—"Conductivities of Metals for Heat and Elec." (*Trans. Roy. Soc.*, 1908); "Isotherms under Mountains" (*ib.*, 1909); "Pressure developed during Explos. of Cordite" (*ib.*, 1907); "Effect of Slit in Edge of Resist. Standard" (*Proc. Phys. Soc.*, 1911).

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Books.—"Analysis of Water," 6 edns.; "Analysis of Milk and Milk Products," 3 edns.; "Select Methods in Food Analysis" (with W. Beam); *Amer. Ed., Vols. 1 and 2, "Allen's Commerce. Org. Anal.," 4th edn. Contrib.*—Miscellaneous to *J. Chem. Engrng., Pharm. and Med.*, and to *Proc. of various Soces.*

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Books.—"Cataract in Glassworkers," Cd. 4387, 1908; "Manuf. of Paints and Colours Containing Lead," 1905; "Pub. Health in European Capitals," 1896; "Cattle Tuberc." 1898; *Various Offic. Repts. in Ann. Rept. of Chief Insp. of Factories, 1898—1908. Arts.*—"Anthrax" (with J. H. Bell), Rolleston and

Allbutt's "Syst. Med.," 1907; "Mercurial Poisoning, and Lesions produced by Bichromate of Potash" (Oliver's "Dangerous Trades," 1902). *Contrib.*—"Indust. Anthrax and Serum Treatment" (Milroy Lect.) (*Lancet*, 1905); "Results of 10 years' Notific. of Lead Poisoning" (*Trans. Ind. Internat. Cong. Study Indus. Dis.*, 1910); "Workmen's Compens. Act and Indus. Dis." (*Ib.*).

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Books.—"Text-bk. Phys. Chem.," "Electrochem." *Contrib. to Phil. Mag.*, since 1891.

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Books.—"Laws of Human Sensation," 1892; "Superstition and Sorcery," 1898, 2nd edn., 1908; "Bodily Expressions of Mental States," 3 vols., 1899—1905; "Text-bk. Psychol. Methods," 1906; "Psychophysiol.," 1912. *Contrib.*—"On Recognition" (*Wundt. Phil. Studien*, 1889 and 1892); "Weather and Our Work" (*Arch. f. Psychol.*, 1907); etc.

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Books.—"Phys. Technics," 1885; "Molec. Physics," 2 vols., 1888—89; "Crystal Anal.," 1891; "Elec. and Light," 1895; "Elec. Discharges," 1898; "Liquid Crystals," 1904; "Liquid Crystals and Theories of Life," 1906, 2nd edn., 1908; "Crystallisation Microscope," 1910; and several more on Crystallog. *Contrib.*—143 on Crystal Microscope, Transformation Temp. of Polymorphic Modifications, Anomalous Mixed Crystals, etc.

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Book.—"Formation of Pampas and Fossil Man in the Argentine." *Contrib. to Z. f. Ethnol. Rev.* and *An. d. Museo de La Plata*, since 1893.

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Contrib.—"Factor tables for first 10 million numbers" (*Carnegie Inst. Wash.*, 1908); "List of primes not greater than 10 million" (*Ib.*); "Asymptotic evol. of certain totient sums" (*Amer. J. Math.*, 1900); "Synthet. theory of Universal cubic by synthet. methods" (*Trans. Amer. Math. Soc.*, 1902).

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Contrib.—"Geog. courses at Amer. Unvs." (*J. Geog.*, 1903); "Educ. value of Geog." (*Ib.*, 1903); "Influ. of forests on climate" (*Ib.*, 1904); "Concrete meth. in geol." (*Teachers' Guide*, 1911).

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Contrib. on life-cycles of *Dranunc. mcadinensis*, *Filaria loa*, *Trichostrongylus pergracilis*, etc.

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Books.—"Manual of Vener. Dis." (with Melville and Pollock, 1907; Chapter "Kala Azar" in "Handb. d. Tropenkrankh.," 1906, and in "Allbutt's Syst. of Med.," Vol. 2, 1907. *Contrib.*—"Rapid Method of Romanowsky Staining" (*Brit. Med. J.*, 1901); "Method of Quant. Estim. Phagocytic Power of Leucocytes" (*ib.*, 1902); "Transmiss. of Tick Fever, etc." (*Trans. Soc. Trop. Med. and Hyg.*, 1910); "Anti-typhoid Inoculation" Harben Lects., *J. Roy. Inst. Pub. Health*, 1910). Disc. parasite Kala Azar; Leishmania donovani.

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Contrib.—"Mesabi iron-bearing district of Minnesota" (*U.S. Geol. Survey, Monog. XLIII.*, 1903); "Rock Cleavage" (*ib.*, *Bull.* 239, 1905); "Pre-cambrian geol. of N. Amer." with Van Hise (*ib.*, *Bull.* 360, 1909); "Geol. of Lake Superior Region" with Van Hise (*ib.*, *Monog. LII.*, 1911); etc.

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Book.—Husband's "Pract. of Med.," 6th edn. (jty.). *Arts.*—"Gastritis," Allbutt and Rolleston's "Syst. Med.," "Fever," "Clin. Exam. of Blood," "Ulceration of Stomach," Quain's "Dict. of Med.," new edn.; "Inflammation," *Encyc. Med. Contrib.*—"Actinomyces of Colon, Liver and Lung" (*Edin. Hosp. Repts.*, 1894); "Thoracic Complications in Simple Gastric Ulcer" (*Internat. Clinics*, 1895); "Treatment of Heart Dis. by Baths and Exercises" (*Lancet*, 1896); "Path. Tumours of Corpus Uteri" (*J. Obstet. and Gynaec. Brit. Empire*, 1911).

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Contrib.—"Algae of Brandenb.," 1910; "Repts. on Plankton," 30 pts. *Arts.*—"Flagell.," "Chlorophyc.," "Coccosphaer.,"

and "Silicoflagell." in Brandt's "Plankton of the North."

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Books.—"Kathode Rays," 1906; "Ether and Matter," 1911. *Contrib.*—"Alkaline Earth Phosphorus" (*Ann. d. Phys.*, 1904); "Elec. of Waterfalls" (*ib.*, 1892); "Product. of Kathode Rays through Ultra-violet Light" (*Sitzber. Akad., Vienna*, 1899); "Elec. Influence of Light" (*Ann. d. Phys.*, 1902).

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Acad. Med. I. *Late Lect. Surg., Carm. Coll., Dublin.*

Contrib.—"Popliteal Aneurysm with Notes of 3 Cases Cured by Ligature of Fem. Artery" (*Trans. Roy. Acad. Med. Irel., Vol. 12*); "Method of Restoring Lower Lip after Excis. for Cancer" (*Id., Vol. 13*); "Pyloroplasty" (*Id., Vol. 15*); "Intestinal Obstruct. from Malign. Dis. of Large Intest." (*Id., Vol. 16*).

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Art.—"Dysentery" and "Typhoid immunity" in *Kolle-Wassermann's Handb. Contrib.*—"Typhoid campaign in S.W. Germany" (*Brit. Med. Assoc., 1910*; *Brit. Med. J., 1910*); numerous on rabies, cholera, etc.

New method of anaerobic culture.

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Soc.—Leop. Carol. Acad.

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Books.—"Diagn. of Dis. of Abdom. Organs,"

2nd edn.; "Nature and Cause of Diabetes mellitus"; "Hydrochloric Acid Therap."

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Books.—"Culicidæ of Roumania"; "Injurious Insects of Roumania"; "Roumanian Cestodes."

Disc.—Diplogonoporus brauni and Braunia.

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Books.—"Iowa Geol. Surv.," Vols. 6, 8, 12 and 16; "N. Dak. Geol. Surv.," Vols. 3—6; *Geol. Map of N. Dak. Contrib.*—"Cretaceous and Tertiary Form. of N. Dak. and Montana" (*J. Geol., 1911*); "Basic Rocks of Northeastern Maryland" (*Amer. Geol., 1902*); "Bismarck Folio" (*U.S. Geol. Surv., 1911*).

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Author on Geol. of Vosges, Rhine Schists, Saar, Riesen and Glätzer Rocks, etc., in *Jahrb. d. Geol. Landesanstalt, Lexik. d. Geom. Technik. Contrib.*—"Diluvium of the Mosel" (*Jahrb. d. Geol. Landesanst., 1911*); "Geol. of Homburg" (*Id.*); "Pract. Applic. of Geol. to Balneol." (*Med. Klin., 1910*).

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Books.—"Geol. of S.W. Tyrol," 1878; "Geol. of Attica, Greece," 1893; "Geol. of Ger.," 2 vols., 1903; "Geol. Map of Ger. Empire," 27 charts, 1894—97; "Unity and Cause of Glacial Epoch in the Alps," 1910.

Boring of a new hot-spring at Nauheim, Wetterau; two hot-springs at Salzbig near Boppard; and others in Ger.

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Contrib.—Non-diff. of certain functions" (*Crelle's J., 1896*); on Malmsten series, elliptic func. and definite integrals to *Rozpravy České Akad., 1891—6, 1899—1900*; "Calc. of number of classes of quadratic binary forms with whole coeffs." (*Mém. des Savants Etrangers, XXXIII.*). Series couples, 1900.

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Books.—"Physiol. of Speech and Song," 1885; "Rhino. Oto. Laryng. at Vienna," 1894; "Therap. of Dis. of Nasal Passages," 1896; "Therap. of Dis. of Ear," 1901; "Applic. of Elec.," 1912; "Prac. Treatise on Oto-rhinolaryng." (in press). Ed. *La Presse Médicale* and *Ann. d. Maladies de l'Oreille et du Larynx.*

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Contrib.—"Descrip. of new mallophaga" (*Vict. Nat.*, 1902) "Descrip. of new mallophaga from Marsupials" (*Ib.*, 1902).

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Books.—"Wild Life in Austral.;" "Animals of Austral." (july.); "Birds of Austral." (july.). *Contrib.*—"Descrip. of Birds' Eggs from N. Austral." (*Ibis*, 1896—98); "Visit to Albatross Is." (*Ib.*, 1895); "Mound-building Birds of Austral." (*Ib.*, 1899); "Visit to Queensland" (*Vict. Nat.*, 1891), etc.

Ascent of Mt. Peter Botte, N. Queensland.

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Books.—2 Atlases of Forensic Med. *Contrib.*—Numerous to *Virchow, Q. J. gerichtl. Med.*, etc.

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Book.—"Psych. Study of Religion: its Origin, Function and Future," 1912, and in Fr. 1913. *Contrib.* on psychol. since 1896.

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Books.—"Urine," with Salkowski; "Special

Diagn. of Intern. Dis.;" "Dis. of Stomach and Intestines." *Contrib.* on Dis. of Kidneys, Stomach, Intestines; Sepsis caused by Fungi; Albumen in Urine of healthy men; Nervous dyspepsia; Leucanaemia.

Stomach-probe; Subcutaneous Feeding.

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Contrib.—"Determ. orbits of comets, planets and satellites" (*Publ. Lick Observ.*, vol. 7): "Tables of Watson Asteroids" (*Mem. Nat. Acad. Sci.*, vol. 10).

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Chapter on "Partial Hydrolysis of Nuclein Acid," in "Arbeitsmethoden," ed. by E. Abderhalden. *Contrib.* on Chem. of Proteins, Carbohydrates, Nucleins, Mucoids, Enzymes, and on Chem. of Digestion.

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Contrib.—"Particular Solutions of Differential Systems and on Stationary Movements" (*Prac. math.-phys.*, Warsaw, 1906); "Laws of Resistance" (*Rend. Circ. Mat.*, Palermo, 1907); "Gravitation of a Thin Tube" (*Rend. Circ. Mat.*, Palermo, 1912).

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- Books.**—"Danish Zool." 1894; "Morph. and Syst. of Cheilostomatous Bryozoa." *Contrib.*—"Trematodfauna of Greenland" (*Bull. Acad. Sci.*, 1896); "N. Sea Annulata" (*Ib.*, 1883—84); "Medusae, Ctenoph. and Hydroid. of Greenland" (*Ib.*, 1893).
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- Books.**—"Service Chem.," "Acetylene"; "Liquid and Gaseous Fuel," etc. *Contrib.*—Many in *Soc. Arts, Chem. Soc., Chem. Ind., Roy. Soc., Gas Inst.*, etc.
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Contrib. on histol. of hypophysis.
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Book.—"Rubber Manuf." (Transl. from Ger.). *Art.*—"Rubber" in Allen's "Comm. Org. Anal." *Contrib.*—"Tribromophenol Bromide" (*Trans. Chem. Soc.*, 1902); "Tertiary Butylphenol" (*Ib.*, 1903); "India-rubber as a Protective Colloid" (*J.S.C.I.*, 1912).
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Arts.—"Wave Motion," "Light," in Blakistons' Phys. *Contrib.* on spectros. and discharge through gases, to *Astrophys. J., Phys. Rev., Ann. d. Phys., Phys. Zsch.*, since 1895.
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- Book.*—"New Phytologist," 1912. *Art.* in "Brit. Vegetation," 1911. *Contrib.*—"Distrib. of Vegetation of Basins of Rivers Eden, Tees, Tyne, and Wear" (*Geog. J.*, 1904); "Plant Remains in Scottish Peat Mosses" (*Trans. Roy. Soc. Edin.*, 1906—11); "Light Reactions of Mesocarpus" (*Annals of Bot.*, 1898); and to *Sci. Progress, Nature, Scot. Geol. Mag.*, etc.
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Contrib. on chem., phys. and math.
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Contrib. on Bact. and Path.
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Book.—"Text-bk. of Crystallography."
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Contrib.—"Anat. of Leaves of Brit. Grasses" (*Trans. Linn. Soc.*, 1902); "Hybridiz. of Sugar-cane" (*W. Ind. Bull.*, 1904); "Red Rot of Sugar-cane Stem" (*Bull. Exper. Sta., H.S.P.A.*, 1908); "Bact. Flora of Hawaiian Sugars" (*Ib.*, 1909).

Germin. of Phalloid spores (Ithyphallus coralloides).

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Books.—"Textb. of Gen. Surg.," 2 vols., 6th edn. (transl. into several languages). *Contrib.* on Osteol., Transplantation, etc.

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Soc.—*F.-M. Acad. Lincei* and *Palermo Circ. Mat.*; Kharkoff Univ.; Kharkoff Math.; Polkowa Phys. Math.; Moscow Nat., Anthropol. and Ethnol.; Moscow Math.

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Contrib.—"Veloc. of Ester Form. and Conductivity of α , β , γ and δ Halogen Fatty Acids" (*Liebig's Ann.*, 1901); "Solub. of chloride, bromide and iodide of lead" (*J. Amer. Chem. Soc.*, 1903); "Chem. kinetics of decomp. of oxalic acid in conc. sulphuric acid" (*J. Phys. Chem.*, 1907); "Absolute sulphuric acid from sulphur trioxide and water" (*J. Amer. Chem. Soc.*, 1908).

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Books.—"Introd. to Chem. Technol.," "Bleaching, Dyeing and Printing"; "Nat. Org. Colours"; "Anal. of Fats and Waxes";

"Short Man. of Gas Manuf.," "Gas Anal.," "Anal. of Water." *Arts.* in 2 *Russ. Encyc. Contrib.*—"Quant. determ. of nitrogen in gas-mixture" (*J. Russ. Chem. Soc.*, 1902); "Quant. volumet. determ. of hydrogen in mineral and org. subs." (*Ib.*, 1904); "Determ. of weight of gases" (*Ib.*, 1905); "Prep. of analogues of carbonic acid" (*Ib.*, 1905—12).

Elec. bleaching, 1882; ironcoke, 1910.

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Contrib. on dyes, alkaloids, substituted acid groups, etc. to *Ber. deut. Chem. Ges.* since 1868. *Artificial alizarine*, 1869, with Graebe.

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Books.—"Chem. of Man," 1881; "Chem. Pract. in Hyg.," 1887; "Gen., Inorg. and Org. Chem.," jtyl. *Contrib.*—Numerous on physiol. chem.; hyg. immunity.

Pseudonuclein; *Lecithalbumin*; *Nature of Complements.*

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Books.—"Geom. Crystallog.," "Phys. Crystallog."

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Books.—"Gen. Theory of Uneven Surfaces and Linear Ray Systems," 1886; "Uneven Lines and Curves," 1896; "Lects. on Diff. Geom.," 2 vols., 1908, 1913. *Contrib. to Math. Ann.*, etc.

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Book.—"Develop. of the Chick," 1898. *Contrib.* on embryol. and cytol., to *J. Morph., Biol. Bull., J. Exper. Zool.*, etc.

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Book.—"Design of Columns and Plate Girders." *Contrib. to Proc. Inst. C.E. Irel.*, Mech. Engrns., and Civ. Engrns. Lond., and in *Engrng.*, on Secondary Flexure of Columns; new Torsion Testing Machine; Machine for Demonstra. on Centrif. Force.

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Books.—"Outlines of Crystallog.", 3rd edn., 1913; "Tables of Petrog.", 3rd edn., 1909; *Ed. of Miner. and Geol. in Handwörterb. d. Naturwiss.*, 1912.

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Books.—"Textb. of Gen. Path." 1909—12; "Lects. on Laws of Heredity and Variation," 1905; "Textb. of Med. Zool.," 1912. *Contrib.*—Numerous.

Nephrotoxins; new theory of secretion of urine.

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Sect., Soc. Chem. Ind.; Hon. Sec., Fermentation Sect., 7th Internat. Cong. Appl. Chem.

Book.—"Principles and Pract. of Brewing" (with W. J. Sykes). *Art.*—"Malting," in *Encyc. Brit. Contrib.*—"Nitrophenols and Quinones" (*J. Chem. Soc.*, 1886—93); "Chem. of Starch" (*Ib.*, 1895); and numerous on Analysis, Action of Diastase on Starch in regard to Brewing Technol., etc.

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Bact. flora of soils of arid regions; relation of alkali salts in soils to bact. flora.

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Books.—"Thermodynamics"; "Acoustics and Optics"; "Capillarity"; "Colour Photog.," "Elec. Units."

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Barnesville, Ga., 1900; Solok, Sumatra, 1901; Porta Coeli, Spain, 1905.

Public., with Eichelberger, on work done in U.S. Nav. Observ.

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Book.—"Chem. of Paper Making" (with R. B. Griffin). *Contrib.*—"Chemist and the Community" (*Science*, 1907); "Untilled Fields of Chem." (*Ib.*, 1909); "Chemists' Place in Indust." (*J. Ind. and Engrng. Chem.*, 1910); "Earning Power of Chem." (*Ib.*, 1911).

Cellulose esters, chlorate manuf., incandes. lamps, chrome tanning, artific. silk; engrng.-chem.; paper-making; cellulose acetate.

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Contrib.—"Knots with a census for order ten" (*Trans. Conn. Acad.*, vol. VII.); "Alternate knots" (*Trans. Roy. Soc. Edin.*, vol. XXXVI.); "Non-alternate knots" (*Ib.*, vol. XXXIX.); "Supply and demand of engrng. graduates in U.S." (*Proc. Nat. Educ. Assoc.*, 1911).

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Book.—"Chronic Dis. of Heart"; "First Steps in Clin. Study."

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Books.—"Chem. Equilibrium," and on various Spectra.

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Books.—"Minerals of N.S.W.," 1888; "Chem. Anal.," 1903. *Contrib.*—Numerous on Chem., Miner., etc., to *Proc. Roy. Soc. N.S.W.*, *Proc. Chem. Soc.*, *Phil. Trans.*, *Nature*, etc.

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Books.—"Stature of Italians," 1883; "Cephalic Index of Italians," 1886; "Interpret. of Serial Curves in Anthropom.," 1894; "Military Anthropom.," 2 vols., 1896—1905; "Handbk. of Anthropom.," 1900; "Anthropol. in its Relations with Social Medicine," 1910.

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B. 1875, Grand Rapids, Mich. B.S. (Mich.) 1898; Ph.D. (Chicago) 1901. *Soc.*—Amer. Nat.; Bot. Amer.; Amer. Chem. *Late* Assist. in Plant Physiol., 1899, Assoc., 1904, Univ. Chicago; Soil Expert, U.S. Bur. Soils, 1905; Staff Mem., Desert Lab. of Carnegie Inst., 1906—09.

Books.—"Rule of Diffusion and Osmotic Pressure in Plants," 1903; "Relation of Desert Plants to Soil Moisture and Evapn." (Publ. 50, Carnegie Inst.) 1906. *Contrib.*—"Change of form in polymorphic green algae" (*Bot. Gaz.*, 1900); "Relat. of Soils to nat. vegetation in Roscommon and Crawford Cos., Mich. (*Ib.*, 1905); "Chem. stimulation of a green alga" (*Bull. Torrey Bot. Club*, 1905); "Light intensity and transpiration" (*Bot. Gaz.*, 1911).

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Books.—"Bot. in Teaching of Biol. in Secondary Schs.," 1904; "Physiol. of Stomata" (Carn. Inst. Wash., Publ. 82); "Guayule: a rubber plant of Chihuahuan Desert" (*Ib.*, Publ. 139).

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Book.—"Surg. Essays," 1880.

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Book.—"Introduct. to Biol. for Students in India," 1910. *Contrib.*—Various to Records and Memoirs of Indian Museum, 1907—10.

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Book.—"Recent Progress in Study of Variation, Heredity and Evolution," 1906, 3rd edn., 1911. *Contrib.*—Numerous on Evolution, Plant Breeding, Plant Physiol. and Agric. to *Proc. Roy. Soc., Annals Gard., Peradeniya*, since 1903.

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Contrib. "Progress in gold milling" and "Progress in ore dressing and coal washing," with R. H. Richards (*Mineral Ind.*, annually).

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Books.—"Origin and Present Position of Atomic Theory," 1905; "Introduct. to Anal. Chem.," 1907; "Relation of Chem. to Biol. and Med.," 1909. *Contrib.*—Test for arsenic, and numerous on org. chem., biochem., and disinfection.

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Books.—"Contributions to Solar Phys.," 1873; "Spectros. and its Applic.," 1873; "Studies in Spectrum Anal.," 1878; "Chem. of the Sun," 1887; "Movements of the Earth," 1887; "Meteoritic Hypoth.," 1890; "Dawn of Astron.," 1894; "Sun's Place in Nature," 1897; "Recent and Coming Eclipses," 1897; "Inorg. Evolution," 1900; "Stonehenge," 1906; "Educ. and National Progress," 1907, etc. *Contrib.*—Over 200, to *Proc. Roy. Soc.*

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Books.—"Australian Meteorol.," 1909; "Southern Hemisphere Surface-air Circulation," 1910; "Rept. of Solar Eclipse Exped. to Vavau, Tonga Is., Apr. 29, 1911," 1912. *Arts.*—Numerous. *Contrib.* to *Roy. Soc. and Roy. Astron. Soc.*

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Book.—"Biol. and its Makers," 1908. *Arts.* on Zool. in *Encyc. Brit.*, and "Students' Ref. Book"; "Prim. Segmentation of Vertebr. Head" in *Biol. Lects.*, Boston, 1890. *Contrib.*—"Struc. and Develop. of Vertebr. Head" (*J. of Morph.*, 1896); "A Newly-recognised Nerve Connected with Fore-brain of Selachians" (*Anat. Anzeig.*, 1905); "Fifth and Sixth Aortic Arch of Birds and Mammals" (*Proc. 7th Internat. Zool. Cong.*, 1908); "Anat. Illust. before Vesalius" (*J. Morphol.*, 1911).

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Book.—"Mensuration"; "Diff. and Integ. Calculus." *Contrib.*—"Bessel Functions" (*Brit. Assoc. Repts.*, 1889—95).

LODGE, Sir OLIVER JOSEPH, F.R.S.; Principal of Birmingham Univ.; Pres., Brit. Assoc., 1913.

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Books.—"Modern Views of Elec."; "Pioneers of Sci."; "Signalling across Space"; "Lightning Conductors"; "Life and Matter"; "Electrons"; "Ether of Space"; "Survival of Man."

Wireless teleg.; electrif. of atmosphere; psychical research.

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Books.—"Heliotropism," 1889; "Heteromorphosis," 1890; "Comp. Physiol. of Brain," 1900; "Dynamics of Living Matter," 1906; "Studies in Gen. Physiol.," 1906; "Artific. Parthenogen.," 1906; "Chem. Evolution of Animal Eggs," 1909; "Tropisms and Psychol.," 1909; "Mechanistic Conception of Life," 1912.

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Contrib.—Numerous, on Zool., chiefly on Verteb.

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Books on Geod.; "Sundials," 1906. *Contrib.* to *Sitz.-ber. Akad. Wien*, etc.

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Arts.—"Celastrac." and "Hippocrateac." in Engl. Prantl. *Contrib.*—"Monographia Aquifoliacearum" (*Nova Acta Leop. Carol. Acad.*, 1901, 1908).

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Contrib.—"Lipase" (*Amer. Chem. J.*, 1900); "Catalytic Decompos. of Hydrogen Peroxide and Mechanism of Induced Oxidations" (*ib.*, 1903); and on enzyme action, pharmacol. action of oxidising agents, etc.

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Books.—"Chem. Energy of Living Cells"; "Energy of Living Protoplasm"; U.S. Dept. of Agric. Bulls. on Tobacco fermentn., Cacao fermentn., Mineral nutrients, Catalase.

Manuf. of formaldehyde; Pyrocyanase (with Emmerich).

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Books on Albumen Synthesis, Diabetes, Sympathetic Nerv. Syst., Pharmaceuticals, etc. *Contrib.*—"Pharmacol. of Assimilation," etc.

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Contrib.—"Investigs. on Java Tea" (*Annals Bot. Gard.*, Buitenzorg, 1893—98); "Chem. and Biol. of Lebernoore" (*Flora*, 1903); "Investig. on Java Indigo," 1906; "Venom of Ger. Shave-grass" (*Arb. D.L.G.*, 1904).

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Contrib.—"Appendiculariae" (*Schr. Naturw. Ver. Schleswig-Holst.*, 1899); "Coccolithophoridae" (*Arch. f. Protistenk.*, 1902); "Plankton-content of the Sea" (*Wiss. Meeresuntersuch. Kiel*, 1908); "Problems of modern plankton investig." (*Verh. Zool. Ges.*, 1912).

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Public. of Astrophys. Observ. on Jupiter, Mars, Double Stars, Planetography; *Calcul. Tables with Machines. Contrib.* on soundless exhaust of benzine motors, air seals, gas burners, etc.

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Roofof Hartstr. 121, Amsterdam.
Books on Opilionids, Pantopods, and Petro-myson.

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Contrib.—"Variations of normal knee-jerk" (*Amer. J. Psychol.*, 1887); "Influences which affect power of voluntary muscular contractions" (*J. Physiol.*, 1892); "Mech. effects produced by contraction of individual muscles of thigh of Frog," july. (*Amer. J. Physiol.*, 1907); "Blood pressure in arterioles, capillaries and small veins of human skin" (*ib.*, 1912).

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Contrib.—Numerous.

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Books.—Numerous Text-bks. in Maths.

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Books.—"Textb. of Physiol. Chem."; "Elements of Gen. Chem."; "Textb. of Elem. Anal. Chem." *Contrib.*—"Salts of Casein" (*J. Amer. Chem. Soc.*, 1905—1907); "Elec. conductivity of urine" (*ib.*, 1902 and 1904); "Lecithin" (*ib.*, 1908).

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Contrib.—"Elec. resistance of thin films, etc." (*Phys. Rev.*, XI); "Carbon resistances" (*ib.*, XV); "Percentage bridge" (*ib.*, XXIV).

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Contrib.—Numerous, to Geog. and Alpine J. **LOOMIS, ELMER HOWARD**, Prof. of Phys., Princeton Univ., Princeton, N.J., U.S.A.

B. 1861, Vermilion, N.J. A.B., D.Sc., 1909 (Colg.); Ph.D. (Strass.). *Soc.*—Amer. Assoc.; Amer. Phys.; Amer. Electrochem.

Contrib.—Numerous on freezing-pts. of solns. **LOOMIS, FREDERIC B.**, Prof. of Anat., Amherst Coll., Amherst, Mass., U.S.A.

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Contrib.—"Observ. on Temporo-mandibular Articulation" (*Anat. Record*, 1913.)

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Books.—"Mod. Refrig. Machines," 1896, 4th edn., 1909, Transl. in Eng.; "Turbines," 1906, 2nd edn., 1911; "Tech. Phys.," 3 vols., 1902—10; etc. *Contrib. to Civiling., Zeitschr. d. Ing., Phys. Zeitschr., Z. f. Turbinwesen*, etc., on Theory of Machines., Mech., Thermodynamics, Hydrodynamics, and Strength of Materials.

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Books.—"Electrochem. Pract.," 1901; "Educ. of Electrochemists," 1901; "Electrol. of Molten Salts," 1904. *Contrib.* on disturbance of Faraday's Law in electrol. of molten salts; pyrosol; surface tension and mol. wt. of molten salts; atoms and ions; gas- and transformat.-electrodes; etc.

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Books.—"Past and Present Theories of Geom.," 1888, 3rd edn., 1907; "Methods of Descrip. Geom.," 1909; "Algebraic and Transcend. Special Curves," 1902, 2nd edn. 1910—11; "Polyhedra, Curves and Surfaces according to Descrip. Geom.," 1911. *Contrib.*—About 150, to Ital. and foreign periodicals, on Theory of "Panalgebraic" Curves and Surfaces; Hist. of Maths., etc.

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Book.—"Inorg. Colloids," 1901. *Arts.*—"Colloids" in Abegg's Inorg. Chem.; etc. *Contrib. to Ber. Deut. Chem. Ges., Zsch. Angew. Chem., Zsch. Phys. Chem.*, etc.

Colloidal mercury.

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Contrib.—Numerous.

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Contrib. on Basin Range Structure, W. Coast Stratigraphy, and Miner.

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Books.—“Handbk. on Gold Milling”; “Dressing of Minerals”; “Metall. of Tin”; “Traverse Tables”; “Treatise on Ore Deposits,” 2nd edn.; Transl. of “Handbk. Metall.,” by Schnabel; “Goldfields of Australasia,” by Schmeisser. *Contrib.*—Numerous to *J. Iron and Steel Inst.*, *Trans. Inst. Min. E.*, *Trans. Amer. Inst. Min. E.*, *Mineral Indust.*

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Books.—“Math. Theory of Elasticity,” 2 edns.; “Theoret. Mech.,” 2 edns.; “Element of Calculus”; “Problems of Geodynamics.” *Arts.*—“Hydrodynamik,” in *Encyc. d. Math. Wis.*; “Elasticity”; “Function,” “Infinitesimal Calculus,” “Variations, Calculus of,” in *Encyc. Brit. Contrib.*—“Vibrations of Shells” (*Phil. Trans.*, 1888); “Discontinuous Fluid Motion” (*Camb. Proc.*, 1891); “Elec. Waves” (*Phil. Trans.*, 1901); “Gravitational Stability of Earth” (*ib.*, 1907).

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Book.—“Lateral Curv. of Spine and Round Shoulders: Cause, Prev. and Cure by Gymn. Exercise.” 2nd edn.

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Books.—“Measurement of Light and Colour”; “Intro. to Study of Colour Phenom.” *Contrib.*—“Colour as a Means of Quantitative Estimation” (*J. Soc. Chem. Ind.*, 1894); “Apparatus and Meth. for meas. Fog. Densities” (*Roy. Met. Soc.*, 1907); “Colour and its Measurement” (*Eng. Ceram. Soc.*, 1910); “Fading of Dyestuffs” (*Soc. Dyers and Colourists*, 1911).

Colour measurement and nomenclature; chromo-pyrometer.

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Contrib.—“Ossific. of Human Lower Jaw” (*J. Anat. and Physiol.*, 1909); “Human Embryo of 13—14 Mesodermic Somites” (*ib.*, 1908); “Epignathus” (*Aber. Univ. Quatercenten.*, 1906); “Contents of Short Cists found in Aberdeens. and Neighbouring Counties” (*Proc. Anat. and Anthrop. Soc., Univ. Aber.*, 1902—04).

LOW, DAVID ALLAN, Emerit. Prof. of Civ. and Mech. Engrng., East London Coll. (Univ. of London), Mile End Road, London, E.

B. 1857, Dundee. *Educ.* High Sch. Dundee; Owens Coll. Manchester; Glasgow Univ. Whitworth Scholar. *Soc.*—Mem. Inst. M.E.; Hon. Mem. Junr. Inst. Engrs.

Books.—“Pocket Book for Mech. Engrs.”; “Textb. of Appl. Mech.”; “Pract. Geom. and Graphics.”

LOW, WILSON H., Head Chem. of Cudahy Packing Co., South Omaha, Neb., U.S.A.

B. 1864, Chelsea, Mass. *Educ.* Mass. Inst. Tech., Boston, Mass. S.B. *Soc.*—Amer. Chem.; Chem. Ind. P.P. Neb. Sect., Amer. Chem. Soc., 1910.

Contrib.—“Boric Acid: its Determin. and Detection” (*J. Amer. Chem. Soc.*, 1906); “Determin. of Antimony and Tin in Alloys” (*ib.*, 1907); “Test for Formaldehyde in Milk” (*ib.*, 1907); “Calculation of Percent. of Decompos. in Twitchell Process” (*ib.*, 1911).

Bleaching soap; refining crude glycerines.

LOWELL, PERCIVAL, Direc. of Lowell Observ., Flagstaff, Arizona; Mem. of Corporation, and Non-res. Prof. of Astron., Mass. Inst. Technol.

53, State St., Boston, Mass., U.S.A.

B. 1855, Boston. *Educ.* Harvard. A.B. (Harv.) 1876; LL.D. (Amh.) 1907, (Clark) 1909; Janssen Med., Soc. Astron. Fr., 1904; Med. Soc. Astron. Mexico, 1908. *Soc.*—Fell. Amer. Acad. Arts and Sci.; Fell. Amer. Assoc. Adv. Sci.; Mem. Amer. Phil.; Amer. Astron. and Astrophys.; Ger. Astron.; Fr. Astron.; Hon. Mem. Sci., Antonio Alzate, Mexico; Hon. Mem. Astron., Mexico; Mem. Astron. Belg.; Amer. Geog.; National Geog.; Roy. Asiatic, G.B. and I.; Asiatic, Japan.

Books.—“Occult Japan,” 1894; “Mars,” 1895; “Annals of Lowell Observ.,” 3 vols., 1898, 1900, 1905; “Solar Sys.,” 1903; “Mars and its Canals,” 1906; “Mars as Abode of Life,” 1908; “Evolution of Worlds,” 1909. *Arts.*—“Mars,” *Encyc. Brit.*; “Planets,” “Standard Diet.” *Contrib.*—“Mars on Glac. Epochs” (*Proc. Amer. Phil. Soc.*, 1900); “Gen. Method for Evaluat. the Surface Temper.

of Planets" (*Phil. Mag.*, 1907); "Position of Axis of Mars" (*Astron. Nachr.*, 1908); "Limit of Oblateness of a Rotating Planet" (*Phil. Mag.*, 1910).

LOWENSTEIN, ARTHUR A. B., Chief Chem., Morris & Co., Chicago; Mem. of Comm. on Anal. of Fats and Oils.

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B. 1880. A.B. (Cin.) 1902. *Soc.*—Amer. Chem.; Amer. Assoc. *Late* Chairman Comm. on Fertilizer Legislation, 1908—10, and of Chicago Sect., Amer. Chem. Soc., 1912.

Contrib.—"Determin. of Sugar in Meats" (*J. Amer. Chem. Soc.*, 1908); "Rapid Determin. of Moisture in Viscous Commerc. Products" (*J. Ind. and Engrng. Chem.*, 1909); "Influence of Heat on Non-Volatile Ether Extract of Spices" (*ib.*, 1910); "Spanish Paprika" (*ib.*, 1910).

LOWRY, THOMAS MARTIN, Lect. in Phys. Chem. and Electrochem.; Instr. in Crystallog., City and Guilds Coll.

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B. 1874, Low Moor, Bradf. d. *Educ.* Kingswood Sch., Bath; City and Guilds Coll., S. Kensington. D.Sc. (Lond.) 1899. *Soc.*—F.C.S. (Mem. Counc.); Faraday (Mem. Counc.).

Contrib.—"Elec. Conductivity of Sodium Hydroxide in Aqueous Solutions" (*Phil. Trans.*, 1905); "Chem. of Silver Voltmeter" (*ib.*, 1908); and on Camphor, Dynamic Isomerism, Crystallog., Polarimetry, and Electrochem.

Inv. Gas-regulators for Thermostats.

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77th St. and Columbus Av., New York, U.S.A.

B. 1852, Plymouth, Mass. *Educ.* Plymouth. Sc.D. (Pitts.) 1909. *Late* Osteol., U.S. Nat. Mus., 1882; Cur. Dept. Comp. Anat., 1893; In Charge of Dept. Biol., 1902; Cur.-in-Chief, Mus. of Brooklyn Inst. Arts and Sci., 1904—11; Mem. of Comm. to Investigate Condition of Fur Seals, Behring Sea, 1896—97.

Books.—"Animals of the Past"; "Animals Before Man on N. Amer." *Arts.* on Anat., Breeding Habits, Food and Causes of Mortality among Fur Seals, in Repts. of Comm. (also Ed. of). *Contrib.*—Numerous on Paleont. and Anat.

LUCAS, GEORG, Prof. of Road and Railway Construc., Tech. Sch., Dresden, Ger.

LUCAS, KEITH, F.R.S.; Fell. and Lect. in Nat. Sci., Trin. Coll. Cambridge.

Fen Ditton, Cambridge, Eng.

B. 1879, Greenwich. *Educ.* Rugby Sch.; Trin. Coll. Cambridge. Sc.D. (Cantab.).

Contrib. on Physiol. of nerve and muscle to *J. Physiol.*

LUCAS, S., Prof. of Math., Univ. Lisbon, Portugal.

LUCAS-CHAMPIONNIÈRE, JUST MARIE MARCELLIN, Cons. Surg., Hôtel Dieu, Paris; Mem. Fr. Acad. Med. (Oper. Med. Sect.); Comm. Leg. Hon. Fr.

(See *Obituary.*)

B. 1843. M.D.; Hon. F.R.C.S.

LUCATELLO, LUIGI, Prof. of Path., Univ. Padua, Italy; Pres., Acad. Med. Padua.

Soc.—Corresp. Acad. Sci. Padua; Acad. Phys. Siena; Intern. Tuberc. Berlin; It. Intern. Med. (Mem. Counc.); Acad. Med. Genoa.

LUCET, DESIRÉ ADRIEN, Prof. of Comp. Path., Nat. Hist. Mus., Paris; Pres., Vet. Federation, France.

2, Rue des Arènes, Paris, Fr.

B. 1858, Courtenay. *Educ.* Lyc. Lens; Alfort. *Soc.*—Biol. Paris; Therap. Paris; Zool. Fr.; Acad. Med. Fr. *Late* Vet. Surg., Courtenay, 1881—1907; Assist., Mus. Paris, 1907—10.

Contrib.—Numerous on bact., parasitol., obstet., comp. path. of animals to *Vet. J.*, *Ann. Inst. Pasteur*, *Bull. Soc. Zool. Fr.*, etc.

Disc. Human actinomycosis, 1887; numerous animal parasitic dis.; nematodes of birds.

LUCIANI, LUIGI, Prof. of Physiol., Rome Univ., Italy.

LUCKE, CHARLES EDWARD, Prof. of Mech. Engrng. and Head of Dept., Columbia Univ.

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B. 1876. *Educ.* N.Y. City Pub. Schs.; Coll. of City of N.Y.; Univ. N.Y., Columbia, Cornell. B.Sc. (Coll. City N.Y.) 1895; M.Sc. (N.Y.) 1897; Ph.D. (Colum.) 1900. *Soc.*—Amer. Mech. Engrns.; Prom. Engrng. Educ.; Amer. Refrig. Engrns.; Amer. Assoc. Adv. Sci.; Amer. Inst. E.E.

Books.—3. *Contrib.*—100.

LUDENDORFF, HANS, Observer, Roy. Astrophys. Observ., Potsdam, Ger.

B. 1873, Thunow, Pomerania. Ph.D. (Ber.) 1897; Prof., 1909.

Contrib.—Numerous on astrophys. and astron. in *Astron. Nachr.*, *Publ. d. Astrophys. Observ. Potsdam*, etc.

LUDWIG, ERNST, Fell. Vienna Acad. Sci.; Mem. of House of Lords; Prof. of App. Med. Chem., Vienna Univ.

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B. 1842, Freudenthal.

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B. 1853, Diedrichsdorf, Pomerania. *Educ.* Wollin; Roy. Vet. Coll. Berlin. *Soc.*—Ger. Path. *Late* Vet. Surg. in Army, 1878; District Vet., Belgard, 1883; Tutor, Berlin Vet. Sch., 1884; Dept. Vet. Surg., Trier, 1886.

Contrib.—Actinomycosis of cow; Anthrax in dog; Periarteritis in axis-deer.

LÜPPO-CRAMER, Head of Sci. Investig. Dept. of Schlessner's Dry Plate Factory, Frankfurt a. M., Ger.

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B. 1871, Leer, E. Friesland. *Educ.* Munich, Heidelberg, Berlin. Ph.D. (Ber.) 1894.

Books.—"Röntgen Photog.," 1909; "Latent Image," 1911; "Photog. Problems," 1907; "Photog. Sci. Investig.," 1902; etc. *Contrib.*—Numerous, to *Photog. Korresp.*, *Kolloid-Zsch.*, etc.

LÜTHJE, H., Prof. of Med., Kiel Univ., Ger.

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B. 1860, I. of Falster. *Educ.* Roy. Tech. Coll., Copenhagen. *Soc.*—Univ.-Extension, Copenhagen (Pres.); *Tech.* Copenhagen (V.-P.). *Books.*—"Lects. on Bridges," 3 vols., 2nd edn., 1900; "Lects. on Roads, Streets and Railways," 3 vols., 1902, 1903.

LUFF, ARTHUR PEARSON, Physician and Lect. on Med. in St. Mary's Hosp., London.

9, Queen Anne St., Cavendish Sq., London.

B. 1855, S. Kensington. *Educ.* Western Gram. Sch.; Roy. Coll. Sci.; St. Mary's Hosp. M.D., B.Sc. (Lond.); F.R.C.P. (Lond.); Gold Med., Soc. of Apoth.; Pereira Med. Soc.—Roy. Med.; F.I.C.; F.C.S. *Late* Goulstonian Lect., R.C.P., 1897; Anal. to Home Office.

Books.—"Gout, its Pathol. and Treatment"; "Manual of Chem." *Arts.*—Numerous on Gout, Rheumatism, and Rheumatoid Arthritis.

LUGARO, ERNESTO, Prof. of Clin. Psychiatry, Roy. Univ. Turin.

Via Cibrario, 32 bis, Turin, Italy.

B. 1870, Palermo.

Book.—"Mod. Problems in Psychiatry." *Contrib.* to *Riv. d. Patol. Nerv. e Ment.*, 1896—1912.

LUGEON, MAURICE, Ord. Prof. of Geol. and Palaeont., Univ. Lausanne, Switz.

Villa des Préalpes, Avenue Sceretan, Lausanne.

B. 1870. *Educ.* Lausanne, Munich, Zurich, Paris. D.Sc.; Laureate Acad. Paris, Geog. and Geol. Paris. *Soc.*—Geol. of Fr., Switz., Vienna, Italy; Corresp., Geol. London and Belg.

LUKASIEWICZ, WLODZIMIERZ, Prof. of Dermatol. and Syphilitic Dis., Lemberg Univ.

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LUKIS, Sir CHARLES FARDEY, K.C.S.I.; Director-Gen. I.M.S.

Educ. St. Bart. Hosp. London. M.D. (Lond.) 1904; F.R.C.S. (Eng.) 1890; L.S.A. 1879. *Late* Princ. and Prof. of Med., Med. Coll. Calcutta, and 1st Physician, Coll. Hosp.

LULL, RICHARD SWANN, Prof. of Verteb. Palaeont., Yale Univ., New Haven, Conn., U.S.A.

B. 1867, Annapolis, Md. *Educ.* Rutgers Coll.; Univ. Columbia, Yale. M.Sc. (Rutgers) 1896; Ph.D. (Columbia) 1903; Hon. A.M. (Yale) 1911. *Late* Assist. and Assoc. Prof. of Zool., Mass. Agric. Coll., 1894—1906.

Books.—Monog. for U.S. Geol. Survey, Conn. Geol. Survey, etc. *Contrib.* to *Amer. J. Sci. Amer. Nat.*, etc.

LUMHOLTZ, CARL, Fell. Norweg. Acad. Sci.; Explorer and Anthropol., Christiania, Norway.

Contrib. on anthrop. of Indians of Mex.; etc.

LUMMER, OTTO, Geh. Reg. Rat; Ord. Prof. and Direc. of Phys. Inst., Breslau Univ.

Goepertstr. 1—3, Breslau, Ger.

B. 1860, Gera. *Educ.* Univs. Tübingen, Berlin, Jena, Munich. *Late* Prof. at Charlottenburg, 1894; Ger. Delegate to Chicago, 1893; Lect. Columbia Univ., N.Y., 1907.

Books.—"Radiant Energy," 1907; "Radiation Technics," 1903. *Contrib.* to "Photog. Optics," 1900; "Abbé's Representation

Theory," 1910. *Contrib.* 120 to *Berlin Acad.*, *Ann. d. Phys.*, etc.

Photometer, interference spectroscope.

LUNA y NOGUERAS, RAFAEL, Ord. Prof. of Chem., Univ. Valladolid, Spain.

LUNDEN, HARALD, Assist., Nobel Inst. Phys. Chem., Sweden.

B. 1878, Mariestad. *Educ.* Univs. Upsala and Stockholm. Ph.D. (Stockh.) 1909.

Book.—"Measurem. of Affinity of Weak Acids and Bases," 1908. *Contrib.*—"Amphoteric electrolytes" (*Zeitschr. f. phys. Chem.*, 1906, and *J. Biol. Chem.*, 1908); "Relat. betw. coeff. of affin. and hydrol. of salts of isonitro-ketones" (*J. de Chem. phys.*, 1907); "Influence of temp. on internal and free energy of electrolyt. dissoc. of weak acids and bases" (*ib.*, 1908); etc.

LUNDGREN, JOHN PETER, Prof., Vet. Inst., Stockholm, Sweden.

LUNGE, GEORGE, Emer. Prof. of Tech. Chem., Federal Polytech., Zurich, Switz.

37, Carmenstr., Zurich, Switz.

B. 1839, Breslau. *Educ.* Breslau and Heidelberg. Ph.D. (Breslau); Hon. Dr. Ing. (Karlsruhe). *Soc.*—Hon. Mem. Chem., London, Amer., Ger. Assoc. Chemists, etc.; Leop.-Carol. Akad.; Roy. Inst. G.B. and I. *Late* Hon. Pres. of Internat. Comm. on Analysis, etc.

Books.—"Coal Tar and Ammonia," 2 vols., 4th edn., 1909 (new Ger. edn. in press); "Sulphuric Acid and Alkali," 3 vols., 3rd edn., 1903—11, new edn. of Vol. I. in press (Fr. and Ger. edns.); "Techno-Chem. Anal.," 2 vols., 1903—11; "Handb. of Tech. Gas Analysis, Tech. Methods of Chem. Anal.," 4 vols., 1908—11; "Tech. Chemist's Handb.," 1910 (formerly "Alkali Maker's Handb."). *Arts.* about 100, in *Encycs.* and *Sci. J.* and in *Encyc. Brit.*

Improvements in chem. manufac., many patented in U.K. and abroad.

LUNT, JOSEPH, Astrophys. Assist., Roy. Observ., Cape of Good Hope, S. Africa.

B. 1866, Egerton, Eng. *Educ.* Owens Coll., Manchester. D.Sc. (Vict.) 1909; F.I.C. 1897; D.Sc. (C. of Good Hope) 1909. *Late* Chem., Water Lab., Brit. Inst. Prev. Med.; now Lister Inst.; Lect. Chem. and Phys., Manchester Tech. Sch.

Book.—"Chem. for Beginners" (with Sir H. Roscoe). *Contrib.*—"Sterilisation of Water by Filtra." (*Trans. Brit. Inst. Prev. Med.*, 1897); "Some Organisms of B. Coli Communis Isolated from Drinking Water" (*Trans. Jenner Inst.*, 1898); "Spectra of Silicon and Fluorine" (*Proc. Roy. Soc.*, 1906); "Presence of Europium in Stars" (*ib.*, 1907).

Disc. silicon origin of important lines in spectra of certain Helium Stars; Measurement of stellar radial velocities.

LUPIÁNEZ, GABRIEL, Prof. of Med. Path., Univ. Seville, Spain.

LUPTON, SYDNEY, Chemist.

102, Park St., London, W.

B. 1850, Roundhay, Eng. *Educ.* Rugby; and Ch. Ch., Oxford. M.A. (Oxon). *Soc.*—F.C.S.; Chem. Ind.; Phys. *Late* Assist. Master at Harrow.

Books.—"Chem. Arith.," 1882; "Numerical Tables and Constants," 1884; Notes on Observ., 1898. *Contrib.*—Various.

LUSCHAN, FELIX A. M. V., Geh. Reg.-Rat; Prof. of Anthropol., and Direc. of Anthropol.

Inst., Berlin Univ., Ger.; Sec. of Berlin Anthropol. Soc.

Oehlertstr. 26, Berlin-Südende, Ger.

B. 1854, Hollabrunn, n. Vienna. *Educ.* Vienna, Paris, Berlin. M.D. (Vienna) 1878; Ph.D. (Munich) 1887; Hon. Litt. D. (Athens) 1912. *Soc.*—Ger. Anthropol. (Pres.); Far East Berlin (Pres.); Hon. Fell., Anthropol. of G.B., Brussels, Florence, Munich, Paris, Rome and Vienna. *Late* Direc. of African and Pacific Dept., Roy. Ethnog. Mus., Berlin.

Books.—"Travels in Lycæa," with Petersen, 1889; "Folk-lore of Ger. Protectorates," 1897; "Polynesian Cranium," 1907; "Excavations in Sendichirli," 1893 *et seq.*; "Early Inhabitants of W. Asia" (Huxley Lect., 1911); "Origin and Descent of Ionian Column," 1912. *Art.*—"Races" and "Peoples" in Ullstein's Hist. of World, 1909; "Ethnog. of Augusta-Flanes" (*Bressler's Arch.*, 1910). *Contrib.*—"Iron working in Africa" (*Z. f. Ethnol.*, 1909).

LÜSK, GRAHAM, Prof. of Physiol., Med. Coll. Cornell Univ.

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B. 1866, Bridgeport, Conn. Ph.B. (Colum.); Ph.D. (Mun.) A.M., Sc.D. (Yale). *Soc.*—F.R.S.E.; Corresp. Mem. Imper. Med. Vienna; Amer. Physiol., etc.

Book.—"Elem. of Sci. of Nutrition," 2nd edn. 1909, and in Ger. *Contrib.* on diabetes, phosphorus poisoning, nutrition, etc.

LUSTGARTEN, JOSEPH, Senr. Lect. in Elec. Engrng., Sch. of Technol., Manchester, Eng.

B. 1877, Botosani, Roumania. *Educ.*

Botosani Gram. Sch.; Owens Coll., Manchester. M.Sc. (Vict.) 1901; Assoc. of Owens Coll., 1901; A.M.I.E.E. *Late* Assist. Lect. Hartley Univ. Coll., Southampton, 1898; Lect., Tech. Sch., Hull, 1901.

Books.—"Elec. Arc Lamps"; "Sci. and Technolog. German Readers, Books 1 and 2"; "Commerc. Testing of Elec. Machinery"; "Are Lighting," 2 vols. *Contrib.*—"Flash over Voltages" (*Electrician*, 1908); "Manufact. and Testing of Rubber Gloves" (*Elec. Rev.*, 1910); "Discuss. of Transformer Oils" (*Iron and Coal Trade J.*, 1911); "High tension porcelain line insulators" (*Inst. E.E.*, 1912).

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B. 1860, Düsseldorf. *Educ.* Düsseldorf, Köln, Bonn, Berlin, Leipzig. Ph.D. (Leip.) 1883. *Soc.*—Ger. Astron. *Late* Observ., Hamburg.

Books.—"Cat. of 636 Stars"; "Orbit of Planet 113 Amalthea." *Contrib.* on Planets, Comets, Variable Stars, Occultations, Eclipses, to *Astron. Nachr.*, 1885—1912; Elements and Ephemerides of Minor Planets to *Berlin Astron. Jahrb.*, 1885—1914; Reports to *V.Z. Astron. Ges.*, 1901—10; "Star of Bethlehem" (*Observ.*, 1909).

LUTHER, ROBERT, Ord. Prof. of Photog., Direc. Sci.-Photog. Inst., Tech. Sch., Dresden, Ger.; Ed., *Photog. Rundsch.*

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B. 1868, Moscow. *Educ.* Gymn. Moscow; Univs. Dorpat, Leipzig. Ph.D. (Leip.) 1896. *Soc.*—Ger. Chem.; Ger. Bunsen; Dresden Photog.; Saxon Sci.; etc.

Books.—"Chem. Reactions in Photog."; "Photog. as Medium for Teaching and Investg." *Contrib.*—Numerous.

LUTZ, CARL WOLFGANG, Cur. of Terrastr. Magnetic Observ., Munich, Ger.

B. 1878, Munich. Ph.D. (Munich). *Late* Assist., Tech. Sch., Munich.

Contrib. on Atmos. Elec. to *Ber. d. bayer. Akad.*, 1906—11; "Saiten" elcctrometer, 1908.

LUTZ, REINHOLD, Prof. of Machine Engrng. Tech. H. Sch., Trondhjem, Norway.

LYBURN, E. ST. J., A.R.C.Sc.I.; Econ. Geol., 4, Upper Merrion Street, Dublin, Irel.

LYDE, LIONEL WILLIAM, Prof. of Econ. Geog., Univ. Coll., London.

B. 1863. M.A. *Soc.*—F.R.G.S., etc.

Books.—"Man and his Markets," 9th edn. 1909; "Geog. of the World," 7th edn., 1909; "Brit. Isles," 10th edn. 1912; etc.

LYDEKKER, RICHARD, F.R.S.; *late* on Staff of Indian Geol. Surv.

The Lodge, Harpenden, Herts, Eng.

B. 1849. B.A. (Cantab.).

LYDTIN, A., Geh. Ober-Reg. Rat; Mem. Roy. State Bd. of Health, Baden-Baden; Mem. Leop. Carol. Acad.

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LYLE, ROBERT PATTON RANKEN, Prof. of Midwif. and Gynaecol., Durham Univ.

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B. 1870, Coleraine, Irel. *Educ.* Trin. Coll., Dublin; Middlesex Hosp.; Paris. M.D. (Dub.) 1896; B.A. 1892, M.D. 1900 (Dun.); L.R.C.P.I. 1897. *Soc.*—Roy. Med.; Obstet. Edin.; N. of Eng. Obstet. *Late* Assist. Master, Rotunda Hosp., Dublin.

Contrib.—"Treatment of Accidental Haemorrh." (*North. and Durham Med. J.*, 1899); "Puerperal Sepsis" (*ib.*, 1900); "50 Consec. Abdom. Sects." (*Brit. Med. J.*, 1906).

LYLE, T. R., Prof. of Phys., Melbourne Univ., Victoria, Austral.; M.A.; D.Sc.

LYMAN, G. R., Prof of Bot., Dartmouth Coll., Hanover, N.H., U.S.A.

LYMAN, THEODORE, Assist. Prof of Phys., and Direc. of Jefferson Phys. Lab., Harvard Univ., Cambridge, Mass., U.S.A.

B. 1874. Ph.D.

LYNCH, RICHARD IRWIN, Cur. Univ. Bot. Garden, Cambridge, Eng.

B. 1850, St. Germans, Cornwall. *Educ.* St. Germans. Hon. M.A. (Cantab.) 1906; Vict. Med. of Hon. in Hort., Roy. Hort. Soc., 1906; Veitch Med., 1901. *Soc.*—Assoc. Linn. Soc.; Assoc. Roy. Bot. Soc.; Corresp. Mem. Roy. Hort. Soc.; Corresp. Mem. Imper. Hort. Soc., Russia. *Late* Sen. Foreman, Roy. Gardens, Kew.

Book.—"Book of the Iris," 1904. *Contrib.*—"New Classific. of Genus *Paconia*" (*J. R.H.S.*, 1890); "Evolution of Plants" (*ib.*, 1900); "Averrhoa Bilimbi" (*J. Linn. Soc.*, 1878); "Thladiantha dubia" (*Bull. Internat. Bot. and Hort. Cong., St. Petersburg.*, 1884).

Gerbera hybrids; Campanula isophylla alba.

LYNEN, WILHELM, Prof. of Machine Constr., Tech. Sch., Munich, Ger.

LYNGE, BERTT, Assist., Univ. Bot. Garden, Christiania, Norway.

Contrib. on lichenol.

LYON, THOMAS LYTTLETON, Prof., since 1906, of Soil Technol., Cornell Univ., Ithaca, N.Y., U.S.A.

B. 1869, Pittsburgh, Pa. *Educ.* Univs. Cornell, Göttingen. B.S.A. 1891, Ph.D. 1904

(Cornell). *Soc.*—F.A.A.; *Amer. Agron.*; *Amer. Chem.*; *Amer. Prom. Agric. Sci.*

Books.—"Princip. of Soil Management"; "Examining and Weeding Grains," with Montgomery. *Arts.*—"Fertilizers," in *Encyc. Amer.*; "Soils of the Great Plains," in *Cyc. of Amer. Agric. Contrib.*—"Improving quality of wheat" (*Bull. 78, Bur. Plant Ind.*, U.S. Dept. of Agric., 1905); "Rel. of certain non-legum. plants to nitrate content of soils," jtly. (*J. Franklin Inst.*, 1910); "Changes in soils by steam under pressure," jtly. (*Proc. 7th Internat. Cong. App. Chem.*, 1909); "Availability of soil nitrogen in relat. to basicity of soil," jtly. (*J. Ind. and Engng. Chem.*, vol. 2).

LYONS, HENRY GEORGE, F.R.S.; Capt. R.E. (ret.); Assist. Direc., Science Mus., S. Kensington; Mem. Meteorol. Comm.; Hon. Ed., Sci. Results Scott Antarct. Exped.

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Books.—"Island and Temples of Philae"; "Physiogr. of Nile Basin"; "Cadastral Surv. of Egypt."

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Books.—"Exper. Embryol" 1903; "Conditions of Life and Reproduc. of Animals," 1907; "Medusae of *Albatross* Exped.," 1903; "Medusae of Belgian Antarctic Exped.," 1907. *Contrib.*—"Origin of Corn. Sponges," 1893; "Fossil Medusae" (*Palaeontol.*, 1898); "Expts. on Egg-drilling" (*Ges. f. Morphol.*, 1904); "Line Separation of Sponges" (*Roux's Archiv.*, 1908).

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MCADIE, ALEXANDER G., Prof., U.S. Weather Bur., San Francisco, Cal., U.S.A.

B. 1863. *Educ.* New York, Univs. Clark, Harvard. M.A. (Harv.). *Late* Dist. Forecaster, Cal.

Books.—"Climatol. of Cal.," "Frost Fighting"; "Cat. Earthquakes," etc. *Contrib.*—"New Units in Aero-Phys." (*Amer. J. Sci.*; "Entropy" (*J. Elec.*), "Frost."

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Books.—Ed. Ziegler's "Text-bk. Path. Anat.," 1897; Author, "Nature of Fever," 1887; "Adv. Study and Research," 1903; "The Gen. Med. Counc.," 1906; "Echoes," 1907. *Contrib.*—"Law of Geometric Mean in Vital Stats." (*Proc. Roy. Soc.*, 1879); "Antipyrin in Hectic Fever" (*Trans. Camb. Med. Soc.*, 1885); "Friedreich's Ataxy" (*Ib.*); "Form and Mechanism of the Heart" (*Brit. Med. J.*, 1882).

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Books.—"Geol. of Ore Deposits," (jtly.); "Recognition of Minerals" (jtly.); Memoirs and maps on geol. and mining of Cornwall and Devon. (jtly.). *Contrib.*—"Emerald Mines of N. Etbai, Upp. Egypt" (*J. R. G. S.*, 1900); "Aro Country, S. Nigeria" (*Scott. Geog. Soc.*, 1901); "Geol. aspect of lodes of Cornwall," (*Econ. Geol.*, U.S.A., 1908); "Tin and specular iron lodes of Dartmoor" (*Grol. Mag.*, 1908).

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Books.—"Alternat. Current Motors"; "Transformers" and "Motors" in "Standard Handbk. for Elec. Engrngs." *Contrib.*—"Single-phase Induct. Motor" (*Amer. Elec.*, 1902); "Excitation of Generation by Condensance" (*Elec. World*, 1903); "Energy in Magnetic Fields" (*Trans. Amer. Inst. E.E.*, 1906); "Photometric Relations" (*Trans. Ill. Engrng. Soc.*, 1911).

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Books.—"Methods and Results of Microchem." *Art.*—"Microchem. Methods" in Abderhalden's "Hand-bk. d. Biochem." *Contrib.*—"On Iron in Animal and Veg. Cells" (*Q. J. Micros. Sci.*, 1895); "On Absorp. of Iron" (*J. of Physiol.*, 1894); "On Distrib. of

- Potassium in Animal and Veg. Cells" (*J. Physiol.*, 1905); "On Nature of Silver Reaction in Cells" (*Proc. Roy. Soc.*, Vol. B 76, 1905); "Surface Tension and Life Phenomena" (*Univ. of Toronto Studies*, 1912).
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- Book.*—"Textb. of Zool.," with Shipley, 1901. *Art.*—"Echinoderm." in Cambridge Nat. Hist., 1906. *Contrib.*—"Developm. of *Asterina gibbosa*" (*Q.J.M.S.*, 1896); "Dev. of *Echinus esculent.*" (*Phil. Trans.*, 1903); "Dev. of *Ophiothrix fragilis*" (*Q.J.M.S.*, 1907); "Formn. of layers in *Amphioxus*" (*Ib.*, 1903).
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- Book.*—"N. Amer. Slime Moulds." *Contrib.*—Numerous.
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- Books.*—"Phys. Properties of Soils"; "Broom Corn Culture."
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- Contrib.*—"Haematozoan infections" (*J. Exp. Med.*, 1898); "Tetany" (*Ib.*, 1909); "Teaching of Path. Physiol." (*Hopkins Bull.*, 1906—8).
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- Books.*—"Gen. Bact.," jtl.; "Lab. Methods for Exper. Study of Immunity," *Art.* in Marshall's "Microbiol." *Contrib.*—Antigen. Properties of *B. Welchii*, Clin. Diagn., Gen. Paralysis of Insane, Tuberculin Reaction.
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- Contrib.*—"Action of Epinephrin upon muscular struc. of vein" (*Proc. Ia. Acad. Sci.*, 1911).
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- Contrib.*—"Spermatocyte divisions of *Locustidae*" (*Kans. Univ. Sci. Bull.*, 1902); "Chromosome complex of Orthopteran Spermatocytes" (*Biol. Bull.*, 1905); "Accessory chromosome-sex determinant" (*Ib.*, 1902); "Cytol. and Taxonomy" (*Kans. Univ. Sci. Bull.*, 1908, and *Proc. 7th Internat. Zool. Cong.*, 1912).

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Book.—"Conduc. of Elec. Through Gases and Radio-activity." *Art.* on "Conduc. of Elec. and Radio-activity" in "Duff's Textb. of Phys." *Contrib.*—"Effect of press. on rate of recombination of ions" (*Phil. Mag.*, 1902); "Effect of temp. on rate of recombination of ions" (*ib.*, 1903); "Effect of temp. on ionization" (*ib.*, 1904); "Absorp. of X rays" (*ib.*, 1906).

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Arts.—"Diphth. and Scarlet Fever," in Osler's "Mod. Med.," 1908; "Diphth. of Air Passages," "Amer. Text-bk. of Dis. of Eye, Ear, Nose and Throat," 1899. *Contrib.*—"Importance of Bacteriol. Investigs. in Cases of Suspected Diphth." (*Boston Med. and Surg. J.*, 1895); "Plea for Larger Doses of Antitoxin" (*Med. and Surg. Repts., Boston City Hosp.*, 1900); "Nine Years in Treatment of Diphth. with Antitoxin" (*Boston Med. and Surg. J.*, 1905); "Decrease of Infect. Dis. Consequent upon Application of Prev. Measures" (*ib.*, 1907)

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Contrib. to *J. Chem. Soc.*, since 1908.

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Numerous repts. on geol. of W. Canada, pub. by Survey.

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Books.—"Cancer of Stomach," with W. Osler, 1909; "Mod. Med.," with W. Osler, 1907—10.

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Arts.—"Chiriqui," in *Encyc. of Religion and Ethics*, 1911; "Anthrop., Ethnol. and Prehist. Archaeol.," in *Amer. Year Book*, 1911. *Contrib.*—"Study of Chiriquian antiquities" (*Mem. Conn. Acad.*, 1911); "Recent disc. bearing on antiquity of man in Europe" (*Smithsonian Rept.*, 1909); "Cave Man as artist" (*Century Mag.*, 1912).

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Arts.—"Fungus Dis. of Plants"; "Smaller Mammals and Birds, and Injurious Insects" in Stephen's "Book of the Farm." *Contrib.*—Numerous in *J. Board of Agric., Highland and Agric. Soc. Trans., Bot. Soc. Edin., Trans. Roy. Scott. Arboricul. Soc.*, on Genus *Pissodes*; *Scolytus multistriatus*; *Diapenes dendrobii*; Parthenogenesis in *Lophyrus pini*, etc.

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Books.—"Intro. to Social Psychol.," 1908; "Body and Mind," 1911; "Pagan Tribes of Borneo," 1912; "Primer of Physiol. Psychol.," 1905; "Psychol., the Study of Behaviour," 1912. *Arts.* in *Encyc. Brit., Brain, Mind, Brit. J. of Psychol.*

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Contrib.—"Influ. of occluded hydrogen on elec. resistance of palladium" (*Proc. Amer. Acad. Arts and Sci.*, 1904).

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Books.—"Osteotomy, with an Inquiry into Etiol. and Path. of Knock-knee, Bow-legs, and other Osseous Deformities of the Lower Limbs," 1880; "Observ. concerning Transplant. of Bone," 1881; "On Immediate Treatment of Wounds," 1881; "Chronic Gut on Chicken-bone Drainage Tubes," 1881; "Transverse Fract. of Patella"; "On a New Method of Radical Cure of Hernia"; "Pupil in its Semiolog. Aspects"; "Surg. of Brain and Spinal Cord"; "Pyogenic Infective Dis. of Brain and Spinal Cord"; "Treatment of Aneurysm by New Method." *Contrib.*—"Introduct. of Tubes into Trachea through Mouth" (*Brit. Med. J.*, 1880); "Some Points

in Surg. of Lungs" (Cavendish Address) (*W. Lond. Med. Chir. J.* and *Brit. Med. J.*, 1906); "Growth of Bone," 1911.

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Contrib.—"Cellular Studies on Mollusc Eggs" (*Zool. Jahrb.*, 1897); "Opisthobranch Mollusca of Monterey Bay, Cal." (*Bull. Bur. Fish., U.S.*, 1906); "Opisthobranchiate Mollusca of Brazil" (*L. S. J. Univ. Pub., Univ. Series, No. 2*, 1909); "Dorididae of Monterey Bay" (*Proc., Wash. Biol. Soc.*, 1905).

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Books.—"Text-bk. upon Pathogenic Bacteria," 6 edns.; "Text-bk. on Pathol.," 2 edns.; "Biol., Gen. and Med." *Contrib.* 100.

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Contrib. to J. Soc. Chem. Ind., J. Amer. Chem. Soc., Bull. Inland Rev. Labs., Can.

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Books.—Trans. Meyer's "Hist. Chem.;" Ostwald's "Sci. Foundations of Anal. Chem.;" Berntsen's "Org. Chem.;" Art.—"Cholesterin," Watt's "Dict. Chem.;" *Contrib.*—"Derivs. of Methylsulphonic Acid" (*J. f. prakt. Chem.*); "Some Derivs. of Thiocarbamide" (*J. Chem. Soc.*, 1886); "Iodometric Estimation of Nitric Acid in Nitrates" (*ib.*, 1891); Various on Chem. of Sewage Purific., etc. (*Append. Rept. Roy. Comm. Sewage Disp.*).

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Books.—"Ann Repts. on Brit. New Guinea," 1888—98; "Repts. on Labrador"; "Trade of Newfoundland."

Geog.; Anthropol.; Malaria.

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Contrib.—"Mech. of exper. glycosuria" (*Amer. J. Physiol.*, 1907); "Direct utiliz. of sugars by tissues" (*ib.*, 1908); "Isocalycanthine and its quaternary base" (*J. Pharmacol.*, 1912); etc.

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Books.—"Treatise on Mineral Chem.," 2 vols. jty. (by order of Lisbon Acad.); "Molec. Wts. of Sol. Subs.;" "Adiabatic Expansion and Compress. of Saturated Vapours"; "Props. of Solns."

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Contrib.—"Phys. of Flame" (*Ann. d. Phys.*, 1903, 1907); "Radio-act. of Gastein Springs" (*Wien. Ber.* 1904); "Atmospheric Elec.," jty. (*Samm. Wiss.*, vol. XXX.); "Rate of evaporat. of water" (*Wien. Ber.* 1910).

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Arts.—"Linseed Oil," A. H. Sabin's "Tech. Paint and Varnish"; "Anal. of Oil Varnishes and Shellac" in "Anal. of Paints," by Gardiner and Schaeffer. *Contrib.*—Numerous.

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Contrib. to Offic. Repts. Geol. Surv. Can.

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Books.—"Mar. Inverteb. and Fishes of St. Andrews"; "Annelids of the *Challenger*"; "Resources of the Sea"; "Life Hist. of British Food-Fishes" (with Dr. A. T. Masterman). *Arts.*—"Annelids," in *Encyc. Brit.* *Contrib.*—"British Marine Annelids" (*Ray Soc.*); "British Food-Fishes" (with Prince) (*Trans. R.S.E.*, 1889); "Cephalodiscus" (*Challenger Repts.*); "Phoronis Buskii" (*ib.*); "Brit. Nemerteans and New Annelids" (*Trans. R.S.E.*, 1869).

Classified Brit. Nemerteans; Struc. of Mar. Annelids and introd. sci. methods into Brit. Mar. Fisheries.

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Books.—19 Ann. *Educ. Repts.* on N.S. *Contrib.*—"Freshwater Sponges of Can." (*Roy. Soc. Can.*, 1889); "Phenolog. Observ., Can." (*ib.*, 1892—1910); "Geol. of Pictou Is." (*N.S. Inst. Sci.*, 1891); "Fungi of N.S." (*ib.*, 1906—07); "Lichens of N.S." (*ib.*, 1889). *Arts.* on *Educ.* in N.S. to *Encyc.*, etc.

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Books.—"Human Anat." with Cleland, 1896; "Directory of Dissections," 1897. *Contrib.*—"Morphol. of arterial arches in birds" (*Trans. Roy. Soc.*); etc.

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Contrib.—"Oxygen Ethers of the Ureas" (*Amer. Chem. J.*, 1901); "Primeval Atmos." (*Sci.*, 1906); "Preparation of Cyanamides" (*Amer. Chem. J.*, 1906); "Oxygen Ethers of Dialkylureas" (*ib.*, 1909).

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Books.—"Text-bk. of Physiol.," "Life in Motion"; "Life of Helmholtz." *Arts.* on

Physiol. in *Encyc. Brit. Contrib.*—Numerous on Physiol. of Nerv. Syst. and Senses, esp. that of Hearing.

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Book.—"Guide to Diag. in Dis. of Throat, Nose and Ear." *Contrib.*—"Vestibular Nystagmus Tests" (*J. Laryngol.*, 1909); "Submucous Resection of Nasal Septum" (*Practitioner*, 1907); "Magic and Med." (*ib.*, 1911).

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Contrib.—"a β and $\beta\gamma$ Pentenic Acids" (*Liebig's Annalen*, 1894); "Dimethoxydiphenylmethane" (*Chem. Soc. J.*, 1896); "Action of Sodium, Methoxide, etc." (*ib.*, 1901); "Trithionates and Tetrathionates of Alkali Metals" (*ib.* 1908).

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Contrib. on animal husbandry, to *Roy. Agric. Soc. J.*, Board of Agric. J., *Trans. Highland and Agric. Soc. Scotl.*, and *Trans. Brit. Assoc.*

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Books.—"Methods of Surveying"; "Notes on Irrig. Works." *Contrib.*—"Notes on River Discharges" (*Geog. J.*, 1909—11); etc.

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Arts.—"Arches," in "Cement and Concrete," by Taylor and Thompson; "Steel Construction," in "Amer. Civ. Engrs. Pocket

Bk." *Contrib.*—"Tests of Fireproof Floor" (*Engnrg. News*, 1901); "Bending Moments and Shears" (*ib.*, 1907); "Engnrg. Educ." (*Engnrg. Record*, 1910); "Fritz Engnrg. Lab." (*Engnrg.*, 1911).

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Books.—"Britain and Brit. Seas," 1902, 2nd edn., 1907; "Elem. Studies in Geog.," 8th edn., 1912; "Lects. on India," 1910. *Arts.*—"Great Britain," in "Encyc. Amer.," "Chart of Hum. Progress," in "Historians Hist. of World," Vol. 1. *Contrib.*—"Scope and meth. of Geog.," (*Proc. Roy. Geog. Soc.*, 1887); "Modern Geog., Ger. and English" (*Geog. J.*, 1895); "Geog. pivot of history" (*ib.*, 1904); "Journey to summit of Mt. Kenya" (*ib.*, 1900).

First ascent and map of Mt. Kenya, Brit. E. Africa; founded Oxford Sch. of Geog. and Univ. Coll., Reading.

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Art.—"Meninges of cerebrum" in *Encyc. Med. Contrib.*—"Three cases of new growth with cavity formn. in spinal cord" (*Brain*, 1896); "Distrib. of certain sensory spinal roots" (*Brit. Med. J.*, 1898); "Disseminated sclerosis" (*Rev. Neurol.* 1903, 1906); "Two cases of Adams-Stokes syndrome" (*Heart*, 1911).

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Contrib.—"Single-phase and Direct Current Rail. Operation" (*Elec. J.*, 1907); "Rail. Calculations" (*ib.*, 1908); "Effect of Temper. upon Hysteresis Law" (*Trans. Amer. Inst. E.E.*, 1911).

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Books.—"Title to Realty," 1900; "Theory of Light," 1909; "Lect. on Light," 1909. *Contrib.* to *Trans. and Procs. Camb. Phil. Soc.*, *Roy. Soc.*, *Phil. Mag.*, *La Revue Scientifique, Science*, etc., on theory of Phys. Optics, etc.

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Arts.—"Space Curves" and "Surfaces" in "Encyc. Amer."

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Contrib.—"Ann. Met. Repts.," "Ann. Seismol. Repts." (*Ann. Rept. Brit. Assoc.*).

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Book.—"Mod. Elec. Pract.," 6 vols. *Contrib.* to *Roy. Soc. Lond.*; *Roy. Soc. Edin.*; *Brit. Assoc.*, etc.

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Contrib.—"Magnetic properties of Heusler's Alloys" (*Phys. Rev.*, 1907); "Radioact. of ord. metals and on penetrating radiation at surface of earth" (*ib.*, 1908 and *Nature*, 1908); "Constit. of mercury green line and on magnetic resolution of its satellites by an Echelon grating" (*Proc. Roy. Soc. Lond.*, 1912); "Series Lines in arc spectrum of mercury" (*ib.*, 1908).

Disc., with E. F. Burton, existence of a penetrating radiation at surface of the earth.

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- Books.*—Ed. "Chem. Phys." of W. A. Miller's Elements of Chem., 1872 and 1877; "Inorg. Chem.," 1874; *Contrib.*—"Apparatus for Measurement of low Pressures of Gas" (*Proc. Lond. Phys. Soc.*, 1876, and *Phil. Mag.*, 1874); "Electrol. of Aqueous Solutions of Sulphuric Acid" (*J. Chem. Soc.*, 1886); "Decompos. of Potassic Chlorate by Heat in Presence of Manganic Peroxide," 1889; "Determin. of Rate of Vibration of Tuning-forks" (*Phil. Trans.*, 1880).
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- Books.*—"Diabetes: its Path. Physiol.," 1913; "Pract. Physiol.," new edn. 1910, jtly.; "Recent Advances in Physiol.," 1905, jtly.; "Org. Chem.," 1907, jtly. *Contrib.*—"Studies in Glycosuria," Papers I.—VII. (*Amer. J. Physiol.*, 1907—13); etc.
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- Books.*—"Med.-Leg. Experience in Bengal"; "Sanitary Past, Present and Future of Calcutta"; "Operat. Surg. in Calcutta Med. Coll. Hosp.," *Arts.*—"Scrotal Elephantiasis" and "Delhi Boil" in "Heath's Diet. of Surg.," "Cholera" and "Epidem. Dropsy" in "Allbutt's Syst. Med." *Contrib. to Lancet, Brit. Med. J., Med. Times Gaz., Edin. Med. J.*, etc.
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- Books.*—"Diff. Calculus," jtly., 1898; "Plane Geom.," 1903; "Hyperbolic Functions," 1906. *Contrib. to Annals of Math., Bull. Amer. Math. Soc., London Educ. Times*, on Formulae for roots of Bessel Functions, etc.; Formula for general term in reversion of series.
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- Contrib.* on chem. research, to *Amer. Chem. J., J. Amer. Chem. Soc., London Chem. News, Zeits. f. phys. chem.*, etc.
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- Books.*—"Text-bk. Invertebrate Morphol.," 1894, 2nd edn., 1896; "Develop. of Human Body," 1902, 4th edn., 1913; Ed. Sobotta's "Atlas and Text-bk. Human Anat.," 1906—07; Co-ed. Morris' "Human Anat.," 4th edn., 1907. *Contrib.*—Numerous, on Morphol. of Actinaria; Vertebrate Morphol.; Embryol. of Mollusca and Crustacea.
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"Researches on Mod. Explosives" (*Proc. Roy. Soc.*, 1894 and 1900); "Products and Relative Temperature of Combust. of some Smokeless Powders" (*J. Soc. Chem. Ind.*, 1904).

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Books.—"Studies in Nutrition," jtly., 1911—12; "Man. of Microbiol.," 1913. *Arts.* in "Marshall's Microbiol.," 1911. *Contrib.*—"Life hist. of Trypanos. lewisi and brucei" (*J. Infect. Dis.*, 1904); "Methylene violet and azure" (*Ib.*, 1906); "Faecal bact. of healthy men" (*Ib.*, 1909).

Artific. culture of trypanosomes; recog. of *B. abortus* of Bang in contagious abortion of cattle in Amer.

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Books.—"Bedford McNeill's Code," 1893; "McNeill's Code," 1908.

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Contrib.—"Path. changes developing in kidney following occlusion of one branch of renal artery" (*J. Med. Research*, XXIV.); "Study of renal epithelium in various types of exper. nephritis" (*Ib.*, XXVI.); "Effect of different anaesthetics on path. of kidney in Nephritis" (*Ib.*, IV.).

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Books.—Numerous on Chem.

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Ed. Dun's "Vet. Medicines," 10th and 12th edns., 1901 and 1910; Fleming's "Operative Vet. Surg.," Vol. 1, 2nd edn., 1902; Neumann's "Parasites and Parasitic Dis.," 2nd edn., 1904. *Art.*—Ed. "Vet. Sci.," in *Encyc. Brit.*, 11th edn., 1910. *Contrib.*—"Abdominal Surg." (*Proc. Nat. Vet. Assoc.*, 1895); "Dis. of Tendons" (*Ib.*, 1909); "Dis. of Facial Sinuses" (*Proc. Cent. Veter. Soc.*, 1890); "Haemostasis in Castration" (*Internat. Vet. Cong.*, Hague, 1909).

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Contrib.—"Mechanism of Respiration in Norm. and Abnorm. Conditions" (*Lancet*, 1882); "Path. Pulmonary Emphysema" (*Brit. Med. J.*, 1884); "Spinal Puncture in Uræmia" (*Ib.*, 1903).

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Books.—"Gen. Foundry Practice," 2nd edn.; Chapter "Pyrometry," in Brearley and Ilbottson's "Steel Works Anal." *Contrib.*—"Elimin. of Silicon in Acid Open Hearth" (with Hatfield) (*J. Iron and Steel Inst.*, 1902); "Heat Treatment Study of Bessemer Steels" (with Barnes) (*Ib.*, 1909); "2 per cent. Chromium Steels" (with Barnes) (*Ib.*, 1910); "Adhesion of Elec. deposited Silver" (with Barclay) (*Inst. Metals*, 1911); and to *Nature*.

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Contrib.—"Rhythm of mammalian heart" (*J. Physiol.*, 1888); "Action of chloroform and ether" (*Brit. Med. J.*, 1890); "New test for Albumin and other proteids" (*Proc. Roy. Soc.*, 1891); "Properties of arterial and venous walls" (*Ib.*, 1901).

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Books.—"Math. Theory of Movements of Bodies," 1896; "Stereodynamics," 1903; "Phys. Dynamics," 1912.

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Books.—"Princ. of Phys.," 1911; Transl. Christiansen's "Elem. of Theor. Phys.," 1897. *Art.*—"Capillarity" in *Americana*. *Contrib.*—"Contact angle of liquids and solids" (*Phil. Mag.*, 1888); "Specific heats of solutions," *I. V. (Phys. Rev.*, 1899—1907).

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Books.—"Najas Monog.," 1870; "Morphol. of Spheclariaceae," 1873; "Fungi of Tyrol, etc.," 1905. *Contrib.*—"Bot. Results. of Trips to Pommerania" (*Wiss. Meeresuntersuch.*, 1871—1872); "Fungi of Franconia" (*Schr. d. Naturf. Ges. Nurnberg*, 1896—1907; and on Teratol. and Mycol., etc.

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Contrib.—"Anomalous Dispersion of Cyanin" (*Bull. Univ. Wis.*, 1900, *Phil. Mag.*, 1900); "Met. Observ." (*Bull. Univ. N. Mex.*, 1903); "Dimensional Equations and Conserv. of Energy" (*Sci. Methods*, 1904); "Electrol. Corrosion in Reinforced Concrete" (*Proc. and Trans. Amer. Inst. E.E.*, 1911).

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Gas and oil engines.

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Books on pharmacol. and toxicol. *Contrib.* to *Ungar. Archiv. f. Med.*, *Arch. internat. de Pharmacodynam.*, *Arch. f. exper. Path. and Pharm.*, *Deutsche med. Wochenschr.*, *Mitt. f. d. Gesch. d. Med.*, *Ziegler's Beiträge*, etc.

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Books.—"Jun. Teacher's Manual"; "Sci. Text-bks.," Parts 1 and 2. *Contrib.*—"Micros. Observ. on Muscle-Fat in Salmon" (*Roy. Soc. Edin.*, 1898); "Investig. on Life-hist. of Salmon" (*Trans. Cardiff Nat. Soc.*, Vol. 30); "New Form of Myograph and its Uses" (*Proc. Roy. Soc. Edin.*, Vol. 23); "Double Commutator" (*J. Physiol.*, Vol. 25).

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Contrib.—Numerous on veg. physiol., cytology, path., etc.

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Books.—"Clin. Forms of Tuberc.," 1878; "Researches on Elimn. of Phosphoric Acid in Insanity, Epilepsy and Hyst.," 1884; "Syph. Insanity," 1893; "Gen. Paralysis," 1898; "Hered. and Predisposition"; "Intellect. Work and Org. Functions," 1907; "Responsibility: a psycho-physiol. study," 1907; "Jealousy," 1908; "Simulation of Madness," 1908; "Hysterical Mental Dis.," 1910; "Moral Invalids," 1910. *Contrib.*—"Puberty" (*Ann. Med.-Psych.*); "Procurive Epilepsy" (*Rev. de Med.*); "Constitutional Vagabondage" (*Ann. Med.-Psych.*); and on Therap., etc. to *Comptes Rend.*

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Book.—"Ingleby Lects.," 1883. *Art.*—"Inversion of uterus" in Allbutt and Playfair's Syst. Gynaec., 1897. *Contrib.*—"53 cases of abdom. section" (*Lancet*, 1884); "Separation and transplant. of ovarian cysts" (*Ib.*, 1883).

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Books.—"Algebra," Part 2; "Elements of Dynamics"; "Todhunter's Mensur. for Beginners for Indian Schs." *Contrib.*—"Magnetic Induct. in Spheroids" (*Phil. Mag.*, 1907); "Mutual Induct." (*Ib.*, 1908); "Magnetic Rotation of Elec. Discharge" (*Ib.*, 1908); "Lines of Force due to given Static Charges" (*Ib.*, 1911).

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Contrib.—"Use of Liquid Air in Toxicol." (*Bull. Soc. Med.-Chir.*, Pavia, 1910); "Iodine-derivs. of Phenylarsen. Acid and their Pharmacol. Action" (*Archiv. d. Pharm. Sperim.*, 1909, 1911); "Aspiro-chyl, intro. in Therap. and Clin. Use" (*Clin. med. ital.*, 1909, and 7th Internat. Cong. App. Chem.); "Boiling Points of Phenols, Oximes, etc., in Benzene Sol." (*Gaz. chem. ital.*, 1903).

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Books.—"Land and Water-Nematodes of Dutch Fauna," 1884; "Anat. Researches on N. Sea Nematodes," 1886; "Kukenthal's Collect. of Decapoda and Stomatopoda in Indian Archip.," 1902. *Contrib.*—Numerous, since 1873.

Disc.—369 new species and 56 varieties of Indo-Pacific decapods; blowpipe in *Oncholaimus*, 1886.

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Contrib.—"On Spontaneous Rupture of Hydrocephalus" (*Med. Times*, 1884); Co-exist. of a Uric Acid and a Urate of Ammonia Stone in same Bladder" (*Lancet*, 1885); "Radium in Treatment of Rodent Ulcer" (*Amer. J. Med. and Surg.*, 1906).

Inv. flexible spiral probes, 1873, and a new lithotrite, 1886.

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Book.—Transl. 7th Ger. edn. Olof Hammarsten's "Text-bk. of Physiol. Chem." and Arnold's "Repert. of Chem." *Contrib.* to *Hoppe-Seyler's Zeitschr. f. physiol. Chem.*, *Biochem. Zeitschr.*, *J. of Biol. Chem.*, etc.

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Books on Bot. and Hyg. *Contrib.* on Veg. Physiol., Phyto-plankton, Mushroom Parasites, etc.

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Book.—"Intro. to Higher Maths.," 2 vols., 1911—12. *Art.*—"Conception of Line and Surface" and "Use of Calculus for Curves and Surfaces" in *Encyc. d. math. Wiss.*

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Books.—"Diatoms, Jewels of Plant World"; "Diatoms of U.S. S.S. *Albatross*, Pacific Ocean." *Contrib.*—"New Basis for Barley Valuation" (*Circ. U.S. Dept. Agric.*, 16).

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Books.—"Pests and Blights of Tea Plant," with Sir G. Watt, 1903; "Tea Soils of N.E. India," 1907; "Sisal-hemp Culture," 1904. *Contrib.*—"Cephalenurus virescens Kunze, the red rust of tea," with C. M. Hutchinson (*Mem. Dept. Agric. India*, 1906); "Individual and seasonal variations in *Helopeltis theivora*" (*ib.*, 1907); etc.

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Contrib. to *Bull.* and *Trans. Amer. Math. Soc.*, *Amer. J. of Math.*

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Book.—"Epidemic Cerebro-spinal Meningitis," 1866. *Contrib.* on toxicol., path. of heart and nerv. syst., etc.

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Dynam. and glacial geol.

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Books.—"Filaria Sanguinis Hominis, and Certain New Forms of Parasitic Dis. in India, China and Warm Countries"; "Trop. Dis."; Lane Lects. *Arts.*—"Filaria Sanguinis Hominis," "Distoma Ringeri," "Liver Abscess," "Sleeping Sickness," "Chyluria," etc., in Quain's "Diet. Med."; Papers on Leprosy, etc., in *Med. Repts., Chinese I.M. Customs Gaz.*, 1871-84. *Contrib.*—"Metamorphosis of Filaria Sanguinis in the Mosquito" (*Trans. Linn. Soc. Lond.*, 1884); "Filaria Sanguinis Hominis" (*Trans. Path. Soc.* 1882). "Tinea Imbricata" (*Brit. J. Dermatol.*, 1892); "Operat. for Abscess of Liver" (*Brit. Med. J.*, 1892); "Two New Species of Haematozoa" (*Lancet*, 1891).

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Books.—"Nat. Phil. Expts. on Theory of Probability," 1899; "Exptl. Res. on Psychol. Basis of Analogy in Speech," july., 1901; "Psychol. Expts. on Judgment," 1901; "Forensic Psychol.," 1913.

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Art.—"Alternating Currents," in "Modern Elec. Practice." *Contrib.*—"Alternate current a.c.s" and "High tension transmission of elec. energy" (*Inst. Elec. Engrs.*); "Absorption

of X-rays" (*Roy. Soc.*); "Elec. testing, wireless teleg., etc." (*Liverpool Engrng. Soc.*); Evidence on Elec. Haulage, before Roy. Comm. on Canals.

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Contrib.—Miscellaneous.

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Books.—"Theor. Mech." in Ger.; "Math. Theory of Equilib. of Elastic Isotropic Bodies," 1906; "Elem. of Vector Calculus," july. in Fr., 1910; "Vectorial Homography," 1910; "Gen. Vect. Anal.," 2 vols., 1912, 1913.

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Books.—"Origin and Validity in Ethics" in "Personal Idealism," 1902; "Threshold of Religion," 1909; "Birth of Humility," 1910; "Anthropol.," 1912; Jt.-ed. "Anthropol. Essays presented to F. B. Tylor," 1907; Ed. "Anthropol. and the Classics," 1908. *Arts.* in *Encyc. Brit.*,

11th edn. *Contrib.*—"Pleistocene Man in Jersey" (*Archaeologia*, 1911).

MARIE, AUGUSTE CHARLES EMILE, Prof., Pasteur Inst., Paris, Fr.
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Books.—"Exper. Study of Rabies"; "Researches on Cancer," 1895. *Contrib.*—"Tetanus Toxin" (*Ann. Inst. Pasteur*, 1897); "Some methods of neutralis. of bacterial toxins" (*ib.*, 1908); "Antirabic serum" (*ib.*, 1905—8).

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New localiz. of Aphasia.

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Book.—"Maturation of Egg of Mouse" (with J. A. Long), Pub. 142, Carnegie Inst. Washington, 1911. *Contrib.*—"Anat. and Histol. of Plant Insects" (*Arch. f. mikr. Anat.*, 1876); "Maturation, etc., Linax" (*Bull. Mus. Comp. Zool.*, 1881); "Simple Eyes in Arthropods" (*ib.*, 1887); "Studies on Lepidosteus," 1890.

Theory of polar cells; Source of trichina infection; Elec. machine for cutting wax plates in anat. reconstruction.

MARKHAM, Sir CLEMENTS ROBERT, K.C.B., F.R.S.; Past-Pres. Roy. Geog. Soc. London.

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Books.—"History of Peru"; "Memoir of Indian Surveys"; "Hist. of Abyssinian Exped."; "Life of Sir L. McClintock"; etc.

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Book.—"Steam Tables—Diagrams," with H. N. Davis. *Contrib. to Trans. Amer. Soc. M.E., Engrng. News, Power, etc.*

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Contrib.—Numerous on hydroids, ophiurid., microphotog.

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Contrib.—"Pathogen. of Cancer" (*Lancet*); "Sixty Operations for Gastric Ulcer and its Complics." (*Brit. Med. J.*); "Coxa Vara" (*Internat. Clin.*); "Tuberc. Cervical Glands" (*Scott. Med. and Surg. J.*).

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Contrib.—"Borehole Surveying"; "Deep Level Earth Temp."; "Value of Rand Deposits," to *Inst. M. and M.*

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Books.—"Hints to Met. Observers," 7th edn.; "Some Facts about the Weather," 2nd edn.; "Our Weather" (jtlly. with Fowler) 1912; *The Met. Record* (quarterly), since 1881. *Contrib.*—Numerous to *Q. J. R. M. Soc., Knowledge*.

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Books.—"Edin. Univ. Tercent. Festival," 1884; "Hist. of Birkenhead Lit. and Sci. Soc., 1857—1907." *Contrib.*—"Prep. of Adamantine Carbon or Diamond" (*Proc. Roy. Soc. Edin., 1880*); "State of Carbon in Iron and Steel" (*Ib., 1881*); "New Theory of Conversion of Bar-iron into Steel by Cementation Process" (*J. Chem. Soc., 1881*); "Product. of Pure Graphitoid and Adamantine Boron" (with Morrison) (*Trans. Roy. Soc. Edin., 1887—88*), etc.

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Art.—"Explosives," in Allen's "Commercial Org. Anal." (4th edn.). *Contrib.*—"Standard Solutions of Sulphuric Acid" (*J. Soc. Chem. Ind., 1899*); "Determin. of Moisture in Explosives" (*Ib., 1904*); "Acetone: its Manufac." (*Ib., 1904*); "Vapour Pressures of Binary Mixtures" (*J. Chem. Soc., 1906*).

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Book.—Ed. "Microbiol."

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Books.—"Textb. of Mat. Med.," 1906; "Man. of Prescribing," 1908; "Pharmacol. of Organic Nitrates," 1899. *Arts.*—"Cannabis Indica," "Cinchona Bark," etc., in Hale White's *Textb. of Pharmacol. and Therap., 1901. Contrib.*—"Antagonistic action of Digitalis and members of nitrite group" (*J. Physiol., 1897*); "Physiol. action of alkaloids of Jaborandi leaves" (*Ib., 1904*); "Pharmacol. action of Tutu" (*Trans. R.S.E., 1910*); "Pharmacol. action of Protocatechyl-tropeine" (*Ib., 1910*).

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Book.—"Physiol. of Reproduction," 1910. *Contrib. to Trans. and Proc. Roy. Soc., Lond.*

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Books.—"Geog. N.Z.," 1905; "Geol. N.Z.," 1911. *Arts.*—"Geol. of N.Z.," "Geol. of Oceania," in Wirtler's "Regional Geol.," 1911. *Contrib.*—"Geol. Dunedin, N.Z." (*Q. J. G. S., 1905*); "Distrib. of Igneous Rocks of N.Z." (*Trans. A.A.A.S., 1907*); "Glaciation of N.Z." (*Trans. N.Z. Inst., 1909*); "Younger Rock Series of N.Z." (*Ib., 1910*).

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Book.—"Testing of Materials," in Ger., Eng., Fr., Russ. *Contrib. to Mitt. Tech. Versuchsanst., Zschr. Ver. Deut. Ing., Stahl u. Eisen, etc.*

Metallography, esp. of iron.

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Books.—"Path. and Therap. of Women's Dis.," etc. *Contrib. to Zeitschr. f. Geb. u. Frauenkr., Volkmann Vortr., Berl. Kl. Woch., etc.*

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Art.—"Snake Poisons and Snake-bite" in Clifford Allbutt's "Syst. Med." *Contrib.*—"Physiol. action of venom of Australian Black Snake" (*Proc. Roy. Soc. N.S.W., 1895*); "Nature of antagonism between Toxins and Anti-toxins" (*Proc. Roy. Soc. Lond., 1898*);

"Separation of colloids and crystalloids by filtration" (*J. Physiol.*, 1896); "Thermal adjustment and respiratory exchange in monotremes, marsupials and mammals" (*Phil. Trans.*, 1901).

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Books.—"Affinities of Elements," 1905; "Pract. Chem.," 1907; "Triumphs and Wonders of Mod. Chem.," 1911; "Indust. and Manuf. Chem.," 1912. *Contrib.*—Over 50 to *J. Chem. Soc.*, *J. Phys. Chem.*, *Ber. deut. Chem. Ges.*, *Chem. News*, *Knowledge*, *Nature*, etc., on Org. Silicon Compounds (with Kipping), Theory of Solution and Phys. Chem.

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Books.—"Dutch and N.W. Ger. Sediments," 1878; "Java," 1880; "Journey in Dutch W. Indies," 1888; "Travels in the Maluccas," 1894—1903; "Fossils of Java," 1891—1910. *Contrib.* on Fossils of Java, Philippines, etc., to Public. of Leyden Mus., since 1881.

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Books.—"Anal. of Diff. Sensibility," jtyl. 1899; "Aesthetic Synaesthesia," 1909; "Theory of Conception of Motion," 1910; "Project. Meth. and Localism. of Visual and other images," *Contrib.* on suggestion method, imaged and imageless consciousness, etc.

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Publ.—"Diph. toxin and anti-diph. serum"; "Hosp. Hyg. of Contag. Dis.," "Treatment of Sleeping Sickness"; "Tuberc. Meningitis."

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Contrib.—Pres. and other Addresses on Chem., Pharm., and Micros.

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Books.—"Inland Races of Malayan Penins.," "Textb. of Anthropol."

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Book.—"Functional and Org. Dis. of Stomach," 1895; Rept. (Part 2) Roy. Comm. on Tuberc., 1895; "Text-bk. Gen. Path.," 1903. *Arts.*—"Food," in Stevenson and Murphy's Treatise on Hyg., 1892; "Dis. of Stomach," Gibson's "Text-bk. of Med.," 1901; "Albumosuria," "Immunity," "Phagocytosis," and "Functional Dis. of Stomach" in Quain's "Dict. Med.," 3rd edn.; "Dis. of Alimentary Syst.," in Bain's "Text-bk. Pract. Med.," "Gulst. Lects. on Diphtheria," 1892; "Croon. Lects. on Enteric Fever, etc.," 1898; "Lettsomian Lects. on Functional Dis. of Stomach and Intestines," 1909.

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Late Ed. *Scott. Morning J.*, 1890—1910; Chairman, Scott. Agric. Comm. to Canada, 1908, to Australia, 1910—11.

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Contrib.—"Variations in Weight accompanying Radioactiv." (*Rendic. Accad. Lincei*, 1904); "Calabri Earthquake of Dec. 28, 1908" (*Boll. Soc. Met. Ital.*, vol. 28); "Seismic Centres" (*Boll. Soc. Sismol. Ital.*, vol. 13); "Earthquake Forecasts, Hist. and Bibliog." (*Ib.*, vol. 15).

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Contrib.—"Cremonian Involution" (*Ann. di Mat.*, vols. 12, 13); "Configuration" (*Ib.* vols. 14, 15).

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- Books*.—"Path. of Infectious Dis.;" "Anat. Instruct. at Bologna before 19th Cent.;" "Lateral Transposition of Viscera;" "Secondary Degen. of Spinal Medulla," 1885.
- Contrib.* on bacteria in body, etc.
- MARTIUS, FRIEDRICH**, Prof. of Med., Rostock Univ., Ger.
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- Book*.—"Treatise of Phys. Geog.," 1909.
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- MARVIN, D.**, Prof., since 1911, of Pharmacol., Univ. Vermont and State Agric. Coll., Burlington.
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- Book*.—"Lab. Guide in Exper. Pharmacol." *Contrib.*.—"The cell: its relation to Pharmacodynam." (*Vt. Med. Monthly*, 1912); "Tobacco, its use and abuse" (*Ib.*, 1912); "Blood press., its control by drugs" (*Ib.*, 1913); "Effect of strychnine and digitalis on Man" (*Arch. Int. Med.*, vol. II.).
- MARX, CHARLES DAVID**, Prof. of Civil Engrng., Stanford Univ., Cal., U.S.A.
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- Book*.—"Machine Design," jtl. *Contrib.*.—"Isometric plotting of graphical charts" (*Amer. Machinist*, 1902); "Some trends in higher educ." (*Sci.*, 1909); "Problem of the assist. prof." (*Proc. Assoc. Amer. Univs.*, 1910); and on strength of gear-teeth.
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- on Pub. Works; Sen. Demonstr. Engrng. Dept., King's Coll., Lond.
- Contrib.*.—"Mild Steel Tubes under Combined Stress" (*Proc. Inst. M.E.*, 1909); "Lüder's Lines on Mild Steel" (*Proc. Phys. Soc. Lond.*, 1911).
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- Books*.—"Hist. of Fr. Commerce in Levant," 1896, 1911; "Fr. Ports, Past and Present," 1904; "Marseilles and Fr. Colonisation," 1906, 2nd edn. 1912; "Mouths of the Rhone," 16 vols. in prep.; etc.
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- B. 1872, Washtenaw Co., Mich. *Educ.* State Norm. Coll. and Univ., Michigan; Univs. Harvard, Johns Hopkins. S.B. (Mich.) 1899; Ph.D. (Harv.) 1906; Hon. M.Pd. (Mich. State Norm. Coll.) 1912. *Soc.*—F.A.A.; Amer. Zool.; Amer. Nat. *Late* Instr. and Prof. of Biol., Hope Coll., 1899—1908; Assoc. Prof. of Biol. and Prof. of Bot., Goncher Coll., 1908—11.
- Book*.—"Light and Behaviour of Organisms," 1911. *Contrib.*.—"Light reactions in lower organisms: I. Stentor coeruleus" (*J. Exper. Zool.*, 1906); II. "Volvox" (*J. Comp. Neurol. and Psych.*, 1907); "Reactions of Didymum nasutum with special ref. to feeding habits and function of Trichocysts" (*Biol. Bull.*, 1909); "Behaviour of fire-flies with special ref. to problem of Orientation" (*J. Animal Behaviour*, 1912).
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Univs.; Sec., Treasury Comm. on Fishery Investig., 1908.

Books.—"Elem. Text-bk. of Zool.," 1901—02; Jt. author "Life Hist. of Brit. Marine Food Fishes," 1897. *Contrib.*—"Series of Researches on Diplochorda" (*Q. J. Micros. Sci.*, 1896—1902); "Series of Fishery Memoirs" (Repts. Scott. Fishery Bd., 1893—97); "Development of *Cribrella Oculata*" (*Trans. Roy. Soc., Edin.*, 1902); "Fishery Repts.," *Procès-verbaux* (Internat. Conc. for Expor. of Sea, Copenhagen, 1908—11).

Chordata; Echinodermata.

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Books.—"Chem. Properties and Tests of Precious Stones," 1911; New Edn. of "Pepper's Boys' Playbook of Sci.," and many Sci. Works and Textb.

Inv. and disc. in extraction of essences, drugs, etc.; Identified new species of moss growing in Eng. and composed largely of *Silica*; Disc. on Eng. shores *Polycistina* brought from W. Indies by Gulf Stream.

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Books.—"Pract. Elec." (with Ayrton); "Exercises in Elec. Engrng." (with Howe). *Contrib.*—"Shape of movable coils used in elec. measuring instruments" (*Phys. Soc.*, 1890); "Universal shunts for galvanometers" (*J. Inst. E.E.*, 1894); "New current weigher and absolute determ. of E.M.F. of norm. Weston cadmium cell" (*Phil. Trans.*, 1908); "Electrochem. equiv. of silver" (*Ib.*, 1908).

Improvements in elec. measuring instruments, galvanometers, electrometer, electrostatic voltmeter, wattmeter, non-inductive resistances, universal shunts.

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Contrib.—"Theory and Practice of Thomas Process" (*Stahl u. Eisen*, 1886); "Graphic Estim. of Mixing Ores and Fluxes" (*Ib.*, 1908); "Rise of Iron Indust. in Ger." (*Ib.*, 1910).

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Contrib.—"Struc. and metab. of Pancreas Cell" (*J. Morph.*, 1899); "Artif. Parthenogenesis by mech. shock" (*Amer. J. Physiol.*, 1901); "Nature of chem. and elec. stimulation" (*Ib.*, 1904); "Gen. Princ. of Pharmacodynamics of salts and drugs" (*Biol. Studies by pupils of W. T. Sedgwick*, 1906).

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B. 1869, Portland, Me. A.B. (Colby) 1891; Ph.D. (Hopkins) 1894. Soc.—Amer. Geol.; Wash. Acad.; Wash. Geol.; etc. *Late* Field Assist., U.S. Geol. Survey, 1891—94; Instr., 1894, Assoc., 1895, Assoc. Prof. of Miner. and Petrog., 1899—1904, Johns Hopkins Univ.

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Contrib.—Numerous on Calometric Determ., Halides of Rare Earths, Sodium Carbide, Alloys of Vanadium, etc., to *Comptes Rendus, Ann. de Chem. et de Phys.*, etc.

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Books.—"Pictures of Animal Life," 1904; "Ger. E. African Mammals," 1895; "Megachiroptera of Berlin Zool. Mus.," 1894; "Propag. of Mammals in Man and on the Earth," 1904. *Contrib.*—Numerous on Mammals, Watersheds, etc., in *Sitz-ber. Ges. nat. Freunde Ber., J. f. Ornith., Zool. Anzeig., Arch. f. Naturgesch.*, etc.

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- Book.*—"Index Plantarum Japonicarum." *Contrib.*—"Tentamen Florae Lutchnensis" (*J. Coll. Sci.*, 1899); "Enumeratio Plantarum in Insula Formosa" (*ib.*, 1906); "Revisio Alni Specierum Japonicarum" (*ib.*, 1902); "Conceptus of Leguminosae" (*Tokio Bot. Mag.*, 1902).
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- Several Topog. Maps. *Contrib.*—"Alps of Montana" (*Appalachia*, 1902); "Mapping the Grand Canyon" (*Technol. Review*, 1905); "Air Currents of Yosemite Valley" (*Science*, 1910); "Extinct Eagle Peak Falls" (*Sierra Club Bull.*, 1910).
- Glac. cirque develop. in Bighorn Mountains, Wyoming.
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- Contrib.*—"Faunas of St. John Group" (*Trans. Roy. Soc. Can.*, 1882—93); "Protolenus Fauna" (N.Y. Acad. Sci., 1895); "Plant Beds and Flora of Little R. Gr." (*Trans. Roy. Soc. Can.*, 1906—09); "Palaeozoic Batrachian Footprints" (*Nat. Hist. Soc. N.B.*, 1903—04).
- Cambrian faunas in N.B. and N.S.; Devonian and Silurian floras in N.B.
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- Action of sodium on isoprene, 1910.
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- Books.*—"Textile Fibres," 1907; "Lab. Man. of Dyeing and Textile Chem.," 1908. *Contrib.*—Numerous on textile chem.
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- Contrib.*—"Coast Lighting in G.B." Internat. Engrn. Cong., St. Louis, U.S.A., 1904.
- Lighthouses, lighted gas buoy and beacon systems, carbon wick burner and incandescent oil burners, coast signals, manual fog signal, flashing dioptric light for automatic gas-boats, dioptric apparatus for light vessels and submarine bell signalling, etc.
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- Books* on Mycol., Anat., Physiol., Systematics. Hymenolichens.
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- Book.*—"The Heavens and their Story." *Contrib.*—"Date of passage of vernal equinox from Taurus into Aries" (*Monthly Notices R.A.S.*, 1904); "Apparent influence of earth on numbers and areas of sunspots" (*ib.*, 1907); Photographs of outer streamers of corona in total solar eclipse of 1898 to distance of 13.9 lunar radii from sun's centre. ("Indian Eclipse, 1898").

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Books.—"Roy. Observ., Greenwich: its Hist. and Work"; "Astron. without a Telescope"; "Indian Eclipses, 1898"; "Total Solar Eclipse of 1900"; "Astron. of the Bible"; "Sci. of the Stars." *Arts.*—"Astron." and "Astrol.," in *Internat. Standard Bible Encey. Contrib.*—"Solar rotation period" (*Monthly Notices, R.A.S.*, 1905); "Limits of vision for lines and spots as applicable to actuality of canals on Mars" (*ib.*, Vol. 63, and *J. Brit. Astron. Assoc.*, 1903); "Distrib. of sun-spots in heliogr. latitudes" (*Monthly Notices, R.A.S.*, 1904).

Disc. solar origin of terrest. magnet. disturbances.

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Contrib. on Phys. and Aerodynam. to *Bull. Inst. Aérotech. Univ. Paris.*

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Contrib.—"Making of a Dynamo" (*Brit. Assoc.*, 1902); "Heat Economy in Factories" (*Inst. C.E.*, 1905); "Elec. Propuls. of Ships" (*Inst. Engrs. and Shipbuilders in Scotl.*, 1908); "Marine Propuls. by Elec. Motors" (*Inst. C.E.*, 1909).

Applic. of alternat. currents to ship propulsion.

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Contrib.—"Measures of double stars" (*Mem. Roy. Astron. Soc.*); numerous to *Engng.* since 1866.

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Soc.—Ger. Anat.; Amer. Assoc. Anat.; Imper. Geog. Russia.

Contrib. on Histol. and Embryol.

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Contrib.—"Cerebral physiol. of Annelids" (*Pflügers Arch.*, Vol. 67); "Nerve impulse a chem. or phys. process?" (*J. Biol. Chem.*, Vol. 3); "Chem. stimulation of cerebral cortex" (*ib.*, Vol. 2); "Expts. on functions of intern. ear" (*Univ. Cal. Publ. in Physiol.*, Vol. 4).

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Book.—"Chem. of Synthetic Drugs."

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Book.—"Medusae of the World," 3 vols., 1910. *Contrib.*—Numerous on Development of Colour in Insects; Laws of Variation in Butterflies; Cause of Pulsation and Movements in Mar. Inverteb.; Relation between Movements of Muscles and of Cilia; Temp. reactions.

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Arts.—"Cyprinus Levitius" in *Bibl. Math.*, 1903. *Contrib.*—"New Stars 945 and 1,264" (*Sirius*, 1913); and numerous in Math.

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Book.—"Ophthalm. Operations," 1908. *Contrib.*—"Ophthalm. Complications of Plague" (*Indian Med. Gaz.*, 1901); "Anals. of 1,000 Consec. Cataract Extractions" (*ib.*, 1903); "Orbital Sarcoma—Kronlein's Operation" (*Ophthalm. Rev.*, 1904); "Exophthalmos and Internal Hydrocephalus" (*Trans. Ophthalm. Soc.*, 1904).

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Book.—"Collected Papers by Staff of St. Mary's Hosp.," 5 vols. *Art.* in "Keen's Surg.," vols. III, V. and VI. *Contrib.*—"Parathyroids and their surg. relation to goitre" (*Ann. of Surg.*, 1912); "Factors of safety in operat. for exophthalmic goitre" (*J. Amer. Med. Assoc.*, 1912); "Diagn. and surg. treatm. of oesophageal diverticula" (*Ann. of Surg.*, 1910); "Transperitoneal removal of tumours of bladder" (*ib.*, 1908).

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Book.—"Collected Papers by Staff of St. Mary's Hosp.," 5 vols. *Contrib.*—"Radical operation for relief of Cancer of Rectum and Recto-sigmoid" (*Ann. of Surg.*, 1912); "Study of Gastric and Duodenal Ulcers, with espec. refer. to their surg. cure" (*ib.*, 1908); "Princip. underlying surg. of stomach and associated viscera" (*Edin. Med. J.*, 1907); "Med. profession and issues which confront it" (*J. Amer. Med. Assoc.*, 1906).

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Book.—"Textb. of Met. and Oceanog," 2nd edn. *Contrib.* on Met. and Seismol. to *Sitz. Akad. Wien.*

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Books.—"Radio-teleg. and telephony," 1905, 2nd edn. 1912, and in Fr., Czech, Eng. (by Bottone), and Span. *Contrib.*—"Thermal phenom. accompanying formn. of alloys" (*Rendic. Ist. Lomb.*, 1885); "New meth. for determ. crystals in alloys" (*Nuovo Cimento*, 1909); "Nатуро (exotherm.) of Transform. in Pb-Sn alloys in solid state" (*Zschr. f. Metallog.*, 1911); "Magnetic alteration of iron and the molec. theory of magnetism" (*Phys. Zschr.*, 1906).

Double oscilns. of coupled circuits, 1893.

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Book.—"Law Relating to Elec. Energy in India."

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Book.—"Artistic Develop. of Buildings in Reinforced Concrete," 1911. *Art.*—"Building Materials and Construc.," in Prausnitz's Atlas of Hyg., 1909. *Contrib.*—"Design of Cabinets in Museums" (*Deut. Bauz.*, 1906).

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Book.—"Cotton, Tobacco and Coconut Cultiv. in Ceylon," and other Deptl. Repts.

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Author.—"Cullercoats and Mar. Biol." in "Dove Mar. Lab.," 1910; "Fishes of N'umberland and Durham" in "Vict. Co. Hist.,"; "Hist. of Fisheries" in "N'umberland. Co. Hist." *Contrib.*—"Post-embryonal Hist. of Voluntary Muscles" (*J. Anat. and Physiol.*, 1899); "Growth of Ungulates" (*Veterinarian*, 1900—01); "Cranial Segments and Nerves of Rabbit, etc." (*Anat. Anzeig.*, 1910); "Morphogen. of Head of Crocodile" (*J. Anat. and Physiol.*, 1911).

Factors of growth; Migration of fish, etc.

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Book.—"Fresh-Water Fishes of Mexico" (Field Mus. Publication, Vol. 5). *Contrib.*—"Fishes of Iowa" (*Bull. U. S. Fish Comm.*); "Fishes of Missouri and Arkansas" (*Ib.*); "Zool. of Lakes Amahtlan and Atlan, Guatemala" (*Field Mus. Pub.*, 1908); "Fishes of Great Lakes of Nicaragua" (*Ib.*, 1907).

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Books.—"Investig. on Theory of Photog. Process" (with S. E. Sheppard); "Atlas of Absorption Spectra." *Contrib.*—"Chem.

Dynamics of Development" (*Proc. Roy. Soc.*, 1905); "Resolving Power of Photog. Plates" (*Ib.*, 1909); Many in *Photog. J.*, 1903—1911.

Colour sensitive plates and colour filters.

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Book.—"Leets. on Point and Vector Calc." *Arts.*—Numerous in *Enzyk. math. Wiss. Contrib.*—Numerous to *Zsch. Math. Phys.*, since 1889.

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Contrib. on sleeping sickness, etc.

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Books.—"Intro. to Comp. Study of Indo-Europ. Languages"; "Studies on Vocab. of Old Slav." *Contrib.* to *Mem. Soc. Ling. Paris.*

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Books.—"Met. Results of Ger. S. Pole Exped. of 1901—03," 1909, 1911; "Air Envelope of the Earth" in Scobel's "Geog. Handbk.," 1909. *Contrib.*—"Climate of N.E. Indian Ocean" (*Archiv. d. Seewarte, Hamburg*, 1894); "Relation between N. Atlantic and Europe" (*Met. Z.*, 1898); "Great Dust-fall of March, 9—12, 1901" (with Hellmann) (*Abhdl. Meteor. Inst. Berlin*, 1901); "Average Height of Antarctic Continent" (*Peterm. Mit.*, 1909).

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Books.—"Studies on Hume," 1887, 1882; "Didactic and Phil. of Nat. Sci.," 1906; "Cell.

Works," 2 vols., 1913; and numerous others. *Contrib. to Zsch. f. Psych. u. Physiol. d. Sinnesorg., Arch. f. d. gesamte Psych., Logos, etc.*

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Books.—"Microsc. Exam. and Pure Culture of Most and Wine Fungi," 1901; "Cider Manuf.," 1904; "Cooper's Winebook," 1909; Ed., Barth's "Treatm. of Vine-clusters," 2nd and 3rd edns.; "Protection of Plants," 1911. *Art.*—"Nycodermæ" in Lafar's *Handb. of Tech. Mycol.*, 1905-7; "Alcoholic Fermentn." in Babo and Mach, 1910. *Contrib.*—"Growth of Pine-needles, etc." (*Bot. Z.*, 1894, 1897, 1901); "Morphol. and Physiol. of Yeast-mould and Saccharomycetes" (*Landwirtsch. Jahrb.*, 1901); "Fermentn. of Moscato d'Asti" (*Jahresber. Ver. angew. Bot.*, 1903); "Ropiness of Most and Wine" (*Landwirtsch. Jahrb.*, 1898).

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Books.—"Bridge Construc.," 2 vols., 1911; Co. Ed. "Handb. of Reinforced Concrete." *Art.*—"Theory of Arch and Suspension Bridges"; "Construc. of Suspension Bridges" in "Handb. d. Ing.-wiss.," 1906; various in *Rolls' Encyc. of Railways and Luezer's "Lex. Techn."* *Contrib.*—Numerous.

Disc. reinforced concrete (Austrian Pat., 1892; U.S. Pat., 1893); Constructed bridges in Austria, Switz., Ger., N. America.

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Books.—"Elem. Inorg. Chem.," 1872; Transl. and Ed. Weisman's "Studies in Theory of Descent," 1882; "Chem. Photog.," 1891; "Coal," 1891; "Chem. Synthesis of Vital Products," 1904; "Evolution Darwinian, and Spencerian," 1910. *Arts.* on Chem. in *Encyc. Brit.*, 9th edn.; Watt's "Dict. of Chem.," *Thorp's* "Dict. of App. Chem." *Contrib.*—"Report on E. Anglian Earthquake of 1884" (with W. White) (*Essex Field Club Spec. Mem.*, 1885); About 200 papers on Chem. Structure of Org. Compounds containing Nitrogen; Synthetical Methods for Product. of large Classes of New Compounds, many of which are Colouring Matters; Colour Adaptation among Insects

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Book.—"Ophthalm. Surg.," 2nd edn.

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Contrib.—"Some Relations of Met. with Agric." (Pres. Address, *Q. J. Roy. Met. Soc.*, 1910); "Present Position of Brit. Climatol." (Pres. Address, 1911).

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Books.—Transvaal Geol. Survey Memoirs: "Geol. of Transvaal Coal-Measures," 1906; "Geol. of Waterberg Tin-field," 1909; "Geol. of Middleburg District," 1909. *Contrib.*—"Norm. sect. and structural features of Lower Witwatersrand syst. on the Central Rand" (*Trans. Geol. Soc. S.A.*, 1911); "Glacial (Deyvka) Conglomerate in Transvaal" (*Q. J. Geol. Soc. Lond.*, 1905); "Glacial Conglomerate of S. Africa" (*Amer. J. Sci.*, 1905); etc.

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Books.—"Higher Maths. for Students of Chem. and Phys.," "Chem. Dynamics"; "Inorg. Chem.," 1912; "Quant. Inorg. Anal.," 1913; etc. *Contrib.* on Constit. of Kaolinite Molecule, Microphotog., etc.

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Book.—"Histol. Studies on Echinococcus alveol. sive multilocularis," 1901. *Contrib.*—"New meth. of prep. of anat. specimens with natural colours" (*Compt. rend.*, 1897); "Histol. of normal struc. of Dura mater and of Pachymening. interna" (*Beitr. Path. Anat. Ziegler*, 1900); "Histol. of Elastic tissue in health and dis.," (*ib.*, 1899).

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Contrib. on Deglutition, Respiration, Inhibition; Magnesium Salts, Antag. of Calcium and Magnesium; Intratracheal Insufflation; Circulation in Animals without a Heart, etc.

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Contrib.—"P.M. Case of Ovary free in Pelvic Cavity" (*Edin. Med. J.*, 1906); "Primary Broncho-Pneumonia in Adults" (*Ib.*, 1906).

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Contrib. on physiol. physiol. chem., especially on nutrition and growth, to *Amer. J. Physiol.*, *J. Biol. Chem.*, etc.; Monographs in *Ergebn. d. Physiol.*, *Publ. Carnegie Inst. Wash.*

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Books.—"Rept. of Investig. on Atmospheric Elec." (Nat. Acad. Sci.); "Century of Elec."; Ann. Repts. Coast and Geod. Survey; "Sci. and Tech. Educ. in U.S." *Contrib.*—Numerous on Gravity, Pendulums, etc.

Geog. and phys. investig. in Alaska (gold medal, Amer. Geog. Soc.); educational work in Japan (gold medal).

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Books.—"Trop. Hyg.," 1896; "Handb. of Trop. Dis.," 1906; etc.

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Contrib.—"Method for determ. molec. weights of dissolved subs. by meas. lowering of vapour press." (*J. Amer. Chem. Soc.*, 1910); "Liquidus surface of ternary syst. composed of nitrates of K, Na and Ca," *jtly.* (*Ib.*, 1911); "Vapour press.," with A. Smith (*Ib.*, 1910 *et seq.*); "Retention of small quantities of water by arsenic pentoxide at elevated temperatures," with P.D. Potter (*Proc. 8th. Internat. Cong. App. Chem.*, 1912).

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Books.—"Flow of Water and Petroleum in Pipes," 1892; "Methods for Determ. Wave-length of Light," 1894; "Electrotech.," 1897; "Hydraulics," 1899; "Laws of Direct and Alternating Elec. Current," 1905; and on Hist. of Sci., etc. *Contrib.* on elec. spectrum, elec. wave-length, optics and hydraulics, to *Wied. Ann. d. Phys.*, *Proc. Acad. Cracow.*

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Books.—"Morphol. and Systemat. of Diatomac."; "Law of Endochrome in Diatomac."; "Enumeratio Lichenum Rossiae"; "Tabulae Generum Lichenum." *Contrib.*—"Theory of the two Plasmas" (*Biol. Centrall.*); "Studies on endochrome of diatoms" (*Mém. Acad. Petersb.*).

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Book.—"Flora of Manila." *Contrib.*—60 on Flora of U.S., Mexico, Alaska, and Philippines; Descr. nearly 1,000 New Species of Philip. Plants; Ed. *Philip. J. Sci. (Bot.)*.
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Contrib.—Relating chiefly to Nutrition Investig., *Repts. and Bull. Maine Exper. Sta., 1886—1908.*
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Contrib.—*Phys. Review, Amer. J. Sci., Annalen der Physik, Physik. Zech. Assoc. Ed. Phys. Review.*
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Contrib.—"Output of Polyphase Generators and Rotary Transformers," 1895; "Drop in
- Alter. Current Lines," 1897; "Max. Distance to which Power can be Economically Transmitted" (Internat. Elec. Cong., St. Louis, and Amer. Inst. E.E., 1904); "High Voltage Measurements at Niagara" (*Ib.*, 1908).
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Contrib.—"Work of external forces in deformation of an elastic solid" (*Ann. Assoc. Ingen. Gand*, 1908); "Fundamental theorems of hydraulics of rivers" (*Ib.*, 1912); "Decomp. of eqns. of more than 2 independ. variables" (*Ann. Soc. Sci. Bruxelles*, 1910—11).
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Contrib.—"S. Altmark" (*Mitt. d. Ver. f. Erdk. Halle*, 1892); "Hop-culture in the Altmark" (*Ib.*, 1900); "The Auroch" (*Abh. u. Ber. d. Museum Natur-u-Heimatk. Magdeburg*, 1906).
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Contrib.—"Central Amer. Climate and Hydrog." (*Mitt. Ver. f. Erdk., Leipzig*, 1907); "Hydrog. Studies in Gulf of Trieste" (*Denkschr. Akad. Wiss. Wien.*, 1911).
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Contrib.—"Perfect gases" (*J. de Phys.*, 1885); "X-rays photometer" (*Ib.*, 1896); "Dichroism" (*Comptes rendus*, 1903); "Stellar photometry" (*Assoc. Av. Sci., Cong. de Clermont*, 1908).
- MESNAGER, AUGUSTIN**, Prof. of Reinforced Concrete and Materials of Construc., and Direc. of Labs., Sch. of Bridges and Roads; Prof. of Civ. Construc., Conserv. Natl.; Prof. of Resist. of Materials, Aviation Sch.; Tutor, Ec. Polytech., Paris.
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Internat. Assoc. Testing Materials (V.-P.); Phys. Fr. (Counc.); Soc. Encouragen. (Counc.); Hon. Mem. Concrete Inst. London. *Late Prof. of Phys., Sch. Bridges and Roads.*

Contrib. to Comptes-Rendus, Ann. des Ponts et Chauss., Génie Civil, Intermed. des Math., Technique Mod., etc., on joints, elasticity of uniformly charged beams, distrib. of stress by polarised light, permanent deformn., tests by shock, tests of reinforced concrete, etc.

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Prior to Winkler, devised, conjtly. with Squire, catalytic process for manuf. of sulphuric anhydride.

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Books.—"Elast. and Resist. of Human Bones," 1880; "Exper. Enquiry into Fract. of Skull." *Contrib.*—"Healing of Skull-wounds" (*Mun. Krankenh. Ann.*); "Med.-forensic import. of form of fractures," etc.

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Book.—"Theory of Org. Evol." *Contrib. on Tunicata, Mollusca, Protozoa, Evol.*

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Books.—"Immunity in Infect. Dis." Eng. transl.; "Nature of Man"; "Prolongation of Human Life"; "Nemertines and Echinoderms"; "Siphonophora and Medusae"; "Insects, Scorpions, Centipedes, Worms, Sponges."

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Contrib.—16 on Inorg. and Anal. Chem., to *J. Amer. Chem. Soc., Zeits. f. Anal. Chem., Sch. of Mines Q., J. Indust. Engng. Chem.*

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Book.—"College Algebra," jty. *Contrib.*—"Compound determinants" (*Amer. J. Math.*, 1898); "Vanishing aggregates of determ. minors" (*Proc. R. S. E.*, 1905); "New symmetric function tables" (*Trans. R. S. C.*, 1909); "Formal discipline" (*Math. Teacher*, 1910).

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Contrib. on theory of earth, activism; comp. geol., study of meteorites; exper. geol., imitation of geol. phenomena.

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Books.—"Chlorophyll," 1883; "Qual. Chem. Anal. for Apoth.," 1884; "Starch Grains," 1895; "Micros. Expts. with Plant Dust," 1900; "Bot. Bacteriol.," 1903; "Cells of Bacteria," 1912. *Contrib.*—"Morphol. and Hist. of Bacteria" (*Flora*, Vol. 87); "Plasma and Membranes of Volvox Globator, etc." (*Bot. Zeit.*, 1896); "Propagation, Morphol. and Chem. of Volutin" (*ib.*, 1904); "Circulation of Alkaloids" (*Ber. Bot. Ges.*, 1907).

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Contrib.—"Recur. and Regener. of Lymphatics"; "Lymphatic Glands of Sheep"; "Haemolymph Glands of Sheep"; "Subcutaneous and Subpanicular Haemolymph Glands"; "Foetal Anat. of Domestic Animals."

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Books.—"Causes of Ment. Dis.," 1907; "Path. Anat. of Psychoses." *Contrib.*—"Prognosis of Dementia Praecox" (*Arch. f. Psy.*, 1908); "Body Appearances of Dem. Praec." (*Z. f. Psy.*, 1909); "Puerperal Psychos." (*Arch. f. Psy.*, 1911); etc.

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Book.—"Text-bk. of Pharm." (with Gottlieb). *Contrib.*—Numerous on Tetan. Intox., Narcosis, etc.

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Books.—"Normal Pregnancy," 3rd edn. 1899; "Path. of Pregn.," 1906; "Textb. of Gynaec.," 2nd edn. 1901. *Contrib.*—"Intest. Occlus. during Pregnancy and Birth" (*Monatsch. f. Gebursth. u. Gynaek.*, 1899, *Gynaek. Rundsch.*, 1910); "Neuritis cruralis in Childbed" (*Centralbl. f. Gynaek.*, 1901); "Dilatation after Bossi" (*Ib.*, 1903); etc.

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Book.—"Hist. of Diesel Motor," 1913.

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Books.—Numerous, on Bot.

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Books.—"Nat. Hist. of Aquatic Insects," 1895; "Round the Year," 1896; "The Early Naturalists, their Lives and Work," 1912.

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Arts.—"Brit. Oribatidae" (*Ray Soc.*, 1884—88); "Brit. Tyroglyphidae" (*Ib.*, 1901—03); "Oribatidae" (*Das Tierreich*, 1898). *Contrib.*—"Variations in intern. anat. of Gamasinae" (*Trans. Linn. Soc. Zool.*, 1892); "Intern. Anat. of Bdella" (*Ib.*, 1896); "Assoc. of Gamasids with ants" (*Proc. Zool. Soc.*, 1891); "Study of intern. anat. of Thyas petrophilus" (*Ib.*, 1895).

Anat., life-hist., habits and classif. of Acarina.

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Public. on org. chem.
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Books.—"Oligochaeta," 1900; "Geog. Distrib. of Oligochaeta," 1903; "Revis. of Composite Styelid. of Polyzoinae," 1904; "Oligoch. of India, etc.," in Eng. 1907; "Oligoch. of Baikal Sea," 1905. *Art.*—"Fauna" in Rept. of Hamburg S.W. Australian Exped. of 1905.
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Books.—"Fine Struct. of Nerv. Syst." 2nd edn., 1895; "Histol. and Develop. of Nerv. Syst. and Sens. Organs," 1895; "Embryol., 2nd edn., 1911. *Contrib.* on Histol. and Develop. of Nerv. Syst. and Sens. Organs; Spermatogenesis, Histol. Ciliary Epithelium, Centrosomic Formations, etc., to *Arch. f. mikr. Anat.*, etc.; "Etiol. and Therap. of Haemorrhoids" (*Deut. Med. Woch.*, 1912).
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Art.—Revised "Algonquian," in "Handb. Amer. Indian Lang.," 1911. *Contrib.*—"Notes on Pillar Edicts of Asoka" (*Indogerm. Forsch.*, Vol. 23); "Notes on Shahbazgarhi and Manshra redactions of Asoka's Fourteen-Edicts" (*Amer. J. Philol.*, Vols. 30 and 31); "Interrelation of dialects of 14 edicts of Asoka" (*J. Amer. Orient. Soc.*, Vols. 30 and 31); Prelim. Rept. on "Linguistic Classif. of Algonquian Tribes" (28th *Ann. Rept. Bur. Amer. Ethnol.*).
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"Les Ravins," 173 Chaussée de Tirlemont, Louvain, Belg. B. 1881, Brussels. Agregé 1905, Cand. Sci. 1902 (Louv.). *Soc.*—Ger. Exper. Psych.
Books.—"Regional Signs," 1905; "Voluntary Choice and its Immediate Antecedents," 1910; "Studies in Psychol.," 1912.
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Books.—"Water Supply"; "Treatise on Surveying" (jtly.). *Contrib.* on Village Water Supplies, Pollution of Water and its Correction, Rel. Value of Percolation Gauges, Pollution of Rivers, etc.
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Books.—"Molecules, Atoms and Ether"; "Textb. of Elec. and Magnetism."
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Contrib. on Protozoa, espy. Radiolaria; Plankton; Sea Fishery.
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Books.—"3-Colour Photog.," "Artistic Landscape Photog.," "Textb. of Praet. Photog." *Contrib.*—Numerous on photog.
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Books.—"Meteorology"; "How to Identify Stars"; several Pamphlets. *Contrib. to Astron. Nachr.* Monthly *Weather Review*, *Phys. Zschr.*

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Books.—"Realm of Nature," 1892, new edn. 1912; "New Lands," 1900; "Siege of S. Pole," 1905; Ed. and part Author "Internat. Geog.," 1899, new edn., 1911; *Arts.*—"Geog.," "Oceanography" (with O. Krümmel), "Polar Regions" (with F. Nansen) in *Encyc. Brit.*, 11th edn.; *Contrib.*—"Clyde Sea Area, Configuration, Salinity, Temperature" (*Trans. Roy. Soc., Edin.*, 1891—94); "Bathymetrical Surv. of English Lakes" (*Geog. J.*, 1895); "Rainfall of Brit. Isles" (*Mn. of Proc. Inst. C.E.*, 1903—04); "Map Studies of Rainfall" (*Q. J. Roy. Met. Soc.*, 1908).

Circulation of water in fjord basins; Unsymmet. distrib. of rainfall in cyclones.

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Book.—Ed. and revis. 4th edn., Hodgen's "Dental Metall."

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Book.—"Determinants," 1892; Co. Ed. "Encyc. des Sci. math.," and *Amer. Math. Monthly*; Co-Ed. "Monog. on Mod. Maths.," 1911.

Determ. of substitution groups represented on 10 letters (Internat. Math. Prize, Cracow Acad., 1900).

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Book.—"Geom. of Conic and Triangle." *Contrib.* various to *Proc. Edin. Math. Soc.*

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Book.—"Munic. Elec. Supply."

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Liverpool Roy. Inst. Derby Gold Med. of
Liverpool Engrg. Soc. in 1900. *Soc.*—Mem.
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E.E. *Late Lect.* Engrg. Univ. Coll., Liver-
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Soc.

Contrib.—"Effic. of Gas Engines" (*Trans.
Liverpool Engrng. Soc.*, 1890); "Elec. Distrib.
in Cities" (*Ib.*, 1900).

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Lond. *Late Fell.*, Toronto Univ., 1890—93;
Lect. and Prof. Geol., Queen's, 1893—1902.

Papers and Repts. on pre-Cambrian and
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Surveys 1904—06.

Books.—"Geol. Hist. N.Y. State" and other
N.Y. State Mus. Bulls. *Contrib.*—"Ice move-
ment and erosion along S.W. Adirondacks"
(*Amer. J. Sci.*, 1909); "Garnet deposits of
Warren Co., N.Y." (*Econ. Geol.*, 1912); etc.

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Book.—"Pract. Handbk. Dis. of Ear."
Contrib.—"Tuberc. Dis. of Mucous Memb. of
Mid. Ear." (*Brit. Med. J.*, 1895); "Aetiol. and
Treatment of Labyrinthine Suppuration" (*J.
of Laryngol.*, 1907); "Aetiol. and Treatment of
Suppurative Dis. of Frontal Sinuses" (*Lancet*,
1898); "Develop. of Auditory Nerve in
Vertebrates" (with J. Cameron) (*J. Anat. and
Physiol.*, Vol. 44).

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Soc.—Amer. Assoc.; Amer. Phys., etc.

Books.—"Mechs. Molec. Phys. and Heat,"
1903; "Elec., Sound and Light," 1908, jtlly.;
Transl. Drude's "Optics," 1902; etc. *Contrib.*—
"Isolation of an Ion" (*Phys. Rev.*, 1911);
"Emission of High Speed Electrons through
infl. of Ultra-violet Light" (*Verh. d. deut.
phys. Ges.*, XIV.); "Valency in gaseous
ionisation" (*Phil. Mag.*, 1911); "Precision
meas. of e" (*Phil. Mag.*, 1912).

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Mem. Phil. Soc., Glas. *Late Prof. Tech. Chem.*,
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Book.—"Destructive Distillation," 4th edn.
Contrib.—Numerous to *Procs. Roy. Soc., J. Chem.
Soc.*, on Electrostriction, Chem. Repulsion, etc.

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Soc.—Amer. Chem.; Amer. Electrochem.;
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Book.—"Binders for Coal Briquets" (*Bull.*
373, U.S. Geol. Surv.). *Contrib.*—"Molecular
Attraction" (*J. Phys. Chem.*, 1902—11, and
Phil. Mag., 1910—11); "Chem. Energy"
(*Trans. Amer. Electrochem. Soc.*, 1908); "Heats
of Vaporization" (*J. Amer. Chem. Soc.*, 1909
—10).

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Books.—"Amer. Medicinal Plants"; "Flora
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Contrib.—"Surface concentr. and formn.
of liquid films" (*Phil. Mag.*, 1907); "Nature
of streamers in elec. spark" (*Phil. Trans.*,
1908); "Series spectrum of mercury" (*Phil.
Mag.*, 1910); etc.

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Book.—"Text-bk. Pract. Physiol. Chem."
(with J. G. Milroy). *Arts.* in "Encyc. Med."
Contrib.—Various, in *Physiol. J.*

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Books.—"Introduct. to Study of Protozoa." *Art.*—"Sponges and Sporozoa" in Lankester's "Treatise on Zool."; "Protoplasm and Sponges" in "Encyc. Brit. Suppl." *Contrib.*—Numerous.

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Contrib.—"Hist. Incandes. Gas Lighting" (*J. Amer. Chem. Soc.*).

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Contrib.—"Mot. Visual and Applied Rhythms" (Monog. Suppl., *Psych. Rev.*, 1903); "Case of Vision acquired in Adult Life" (*Ibid.*, 1905); "Changing attitude of Amer. Univs. towards Psych." (*Sci.*, 1904); "The College Laggard" (*J. Educ. Psych.*, 1910).

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Books.—"Gout"; "Diabetes"; "Dis. of Liver."

Disc. exper. pancreatic diabetes.

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Books.—"Human Embryol." 1892, and in Ger., 1893; "Lab. Textbk. of Embryol.," 1894,

1910; "Age, Growth, and Death." *Contrib.*—181 on embryol., etc.

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Books.—"Flesh Foods"; "Inks: their Compos. and Manufac.," "Sci. and the Criminal"; "Aerated Waters," in Thorpe's "Diet. Chem." *Contrib.*—"Zem-zem Water" (*Proc. Chem. Soc.*, 1891); "Compos. of English Inks" (*Analyst*, 1908); and on Oils and Fats.

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Contrib.—"Problem of Unity" (*Monist*, 1905); "Honour Courses in Columbia Coll." (*Educ. Review*, 1910); etc.

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Contrib.—"Normal constit. of potable water of San Francisco Penins." (*Stanford Univ. Pub.*).

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Books.—"Outlines of Biol."; "Huxley"; Various transl. from Fr. and Ger.; "Childhood of Animals." *Arts.* in *Encyc. Brit.*, edns. 10 and 11. *Contrib.*—Many, to *Anat. J.*, *Q.J. Micros. Sci.*, *Proc. Zool. Soc.*, etc.

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Book.—"Structure and Growth of Mind," 1907.

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Books.—"Peripheral Nerv. Syst.," 1887; "Develop. of Vertebrates," 1891; Works of Zoatomic Lab., Warsaw, 1891—1911. *Contrib.*—"Haematozoa" (*Biol. Centralbl.*, 1883); "Organis. of Bacteria" (*Monatschr. v. W. Kremse*, 1893); "Evol. of Birds" (*Z. f. Wiss. Zool.*, 1901); "Paramaceae" (*Arch. Zool. Exp.*, 1910).

Peripheral nervous system.

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Books.—"Anal. of Elliptic Functions," 1876; "Extens. of Taylor's Series"; "Life of Weierstrass," 1900; "Class of Entire Functions," 1904; "Arith. Represent. of Gen. Anal. Functions of Complex Variable," 1908; "Arith. Foundations of Theory of Functions after Weierstrass," 1909. *Arts.* in "Encyc. Nordisk Familjebok." *Contrib.*—"Anal. Represent. of Uniform Homog. Func. with an Indep. Variable" (*Acta Math.*, 1884); "New Demonstr. of Laurent's Theorem" (*ib.*); "Anal. Represent. of Integrals" (*ib.*, 1891); "Anal. Represent. of Homogen. Func." (*ib.*, 1900); Ed.-in-Chief, *Acta Mathematica*.

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Book.—"Textb. of Chem." *Contrib.*—"New Allotrope of carbon" (*Amer. J. Sci.*, 1905); "Heat of combination of acidic oxides with sodium oxide" (*ib.*, 7 papers); "Heat of formation of various oxides" (*ib.*).

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Contrib. on pharmacol.

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Contrib. 70 in *Geol. Forh. Acad. Sci. Stockholm, Sver. Geol. Unders.*, etc., on Stratigraphy and Paleont. of Sweden (Silurian, Lias and Cretaceous); Petrog. and Miner. (Kaolin, Diabase, Calcite); Pleistocene in Sweden; Late Glacial Clay of Lomma.

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Books.—"Up the Niger," 1892; "In the Northman's Land," 1896; "Annals of Sandhurst," 1900; "Brit. W. Africa," 2nd edn., 1900; "Brit. Nigeria," 1902; etc.

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Books.—"Propagatn. of Shoots," 1897; "Biog. of I.M. Schleiden," 1904; "Bot.-Microsc. Pract. for Beginners," 2nd edn. 1909; "Microsc. Pract. for Bot. Systematics," 1912; Ed., "Warming's Handb. of Syst. Bot.," 1911; Ed., "Rousseau's Letters on Bot.," 1903. *Contrib.* to *Pringsheim's Jahrb.*, *Ber. Bot. Ges.*, *Ber. Senck. Nat. Ges.*

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Book.—"Tuberc. of Lungs." *Contrib.*—"Treatment in Sanatoria" (*Deutsche Klinik*, 1903); "Acidfast Bacilli in Grass" (*Med. Wochenschr.*, 1897); "B. Timoth." (*Centralbl. f. Bakt.*, 1896); "Treatment of Tuberc. at Home" (*Z. f. Gesund.-pflege*, 1910).

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Contrib. on respiratory nervous system, etc.

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Contrib.—"Develop. of hybrids between *Fundulus heteroclitus* and *Menidia notata* with refer. to chromosomes" (*Amer. J. Anat.*, 1904); "Effects of inbreeding and selection on fertility, vigour and sex-ratio of *Drosophila ampelophila*" (*J. Morph.*, 1911); "Cross-fertiliz. among fishes" (*Ind. Acad. Sci.*, 1910); "Variations in N. Amer. fishes" (*Ind. Acad. Sci.*, 1896, 1897, etc.).

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Contrib.—"Absolute disturb. of Themis by Jupiter" (*Diss.*); "Gen. disturb. of Themis by Mars and Saturn" (*Habil. schr.*); "Observns. on nebulae through 6" refractor at Bonn," and numerous other Publ. from Bonn Observ.

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Books.—"Qual. Chem. Anal.," 1905; "Lab. Manual," 1909, Rev. edn., 1911.

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Books.—Co-transl. of Edelmans's "Meat Hyg.," and Hutyra and Marek's "Spec. Path. and Therap. of Domestic Animals"; Sci. Bulls. U.S. Dept. Agric. *Arts.* on abattoirs, meat inspection and dis. of animals, in Nelson's *Encyc.*, Internat. *Encyc.*, Cyc. of Amer. Agric.

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Books.—"Storm Atlas"; "North Ocean"; "Principles of Met.," and Chapters in "Sci. Results of Norweg. N. Polar Exped., 1893—96."

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Books.—"Molesworth's Pocket Book of Engrng. Formulae," 26th edn., 1908; "Econ. and Fiscal Facts and Fallacies," 1909; "Silver and Gold," 1894. *Contrib.*—"Wood Machinery" (Watt Medal, *Inst. C.E.*, 1857); "Instinct and Reason" (*Nat. Hist. Assoc.*, *Simla*, 1886); "Polit. Econ. and Strikes" (*Nat. Rev.*, 1890); "Indian Currency" (*Amer. Acad.*, 1894).

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Books.—"Treatise of Indust. Chem.," Inorg. 1905, 3rd edn. 1911, Org. 1909, 2nd edn. 1912 (and in Eng. and Ger.); "Chem. of XIX. cent.," 1906. *Contrib.* to *Ber. Chem. Ges.* since 1889 and to *Scienze per Tutti* since 1909; "New Apparatus for Fat and Milk Estim." (*Ber.*, 1891); "New Gen. React. for Discrimn. of Double and Triple Org. Comps. through Ozone" (*ib.*, 1906—1908).

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Books.—"Histochem. of Bot. Organs," 1892; "Relation of Plants to Iron," 1892; "Exper. on Freezing Plants," 1897; "Studies on Milk and Mucous Juices of Plants," 1897; "Phosphorescent Plants," 1904; "Staining Bacteria," 1907; "Warm Bath for Forcing Plants," 1909; "Iron Bacteria," 1910.
Scientific travel (Java, etc., 1897—98); Sugar test; Bact. lamp.

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Books.—"Hydraulics of Rivers, Weirs and Sluices," 1908; "Kinetic Theory of Engrng. Structures," 1911. *Art.*—"Aesthetic Design of Bridges," Chap. 26, "Modern Framed Structures," "Distortion of a Framed Struct." (*J. Assoc. Engrng. Soc.*, 1894); "Masonry Construction" (*ib.*, 1900); "Three-arched Masonry Arches" (*Trans. Amer. Soc. C.E.*, 1898); "Precise Spirit Levelling" (*ib.*, 1901).

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Books.—"Sci. Results of Yacht Voyages"; "A Navigator's Career"; "Bathymetric Ocean Chart."

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Books.—"Pathol. of Brain," 2nd edn. 1905; "Path. Res. on Tegmentum, etc.," 1895. *Arts.* on Deformities of Central Nerv. Syst.; Group Localis. *Contrib.* on Ophthalm., Otol., Sec. Degen., Extirpat. of cortical areas, etc.

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Contrib. on Chem. Industry, etc.

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Contrib. on Electrochem.

Disc.—Carbonyls, jtly. with late Ludwig Mond.

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Books.—"Surg. Technics"; "Indications for Operation." *Contrib.*—Various, on Surg.

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Books.—"Bronze Age in Sweden"; "Civilis. of Sweden in Heathen Times," Eng. transl.; "Bronze Age in Egypt," Eng. transl.; "Pre-hist. Age in Sweden"; "Prim. Civilis. in Italy"; "Ancient Dwellings in Europe"; "Bronze Age in N. Ger. and Scandinavia."

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Books.—"Elem. Lessons on Calc. of Probabilities," 1908; "Lessons on Numer. Calculus," 1910. *Contrib.*—"Continuous Algebraic Fractions" (*Acta Math. Circ. Mat. Palermo*); "Chance" (*Cong. Phil. Geneva, 1908*); etc.

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Book.—"Textb. of Pract. Gynaec.," 4th edn.

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Book.—"Examining and Grading Grains," jtly., 1906. *Art.*—"Sorghums" in *Cyc. of Agric.*

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- Arts.*—"Stone Ages in Utah, Dakota, and Canada," in "Stone Age in N. Amer.," 1910. *Contrib.*—"Blastoid found in Devon. Rocks of Ontario" (Can. Nat., 1881); "Prehist. Man in Utah" (*Archaeol.*, 1894); "Remains of Prehist. Man in the Dakotas" (*Amer. Anthropol.*, 1906); "Calf Mountain Mound in Manitoba" (*ib.*, 1910).
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- Contrib.*—"Muscular tunic of large and small intestines of man in vicinity of Caecum" (*Proc. Amer. Micr. Soc.*, 1894); "Research and Med." (*Amer. Med.*, 1904); "Diaphragmatic grooves on Liver" (*Johns Hopkins Hosp. Bull.*, 1905); "Histogenesis of thyroid gland in pig" (*Anat. Record*, 1910).
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- Contrib.*—"Temp. Coeff. for Regeneratn. in Tubularia" (*Arch. f. Entw.-mech.*, Vol. 29); "Mendelian Dominance" (*ib.*, Vol. 34); "Nerv. mech. of righting of Starfish" (*Amer. J. Physiol.*, Vol. 27).
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- Books.*—"Dawn of Health Age," 1911; "Origin and Nature of Life," 1913. *Arts.*—"Chem. of Digestive Processes" in Schäfer's *Textb. of Physiol.*; "Biochem. Energy Changes" in Hill's *Recent Adv. in Bio-chem. Contrib. to Bio-chem. J.*, etc.
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- Contrib.*—"Polariz. and intern. resist. of copper voltameters" (*Phys. Rev.*, X.); "Spectrophotom. study of solutions of copper and cobalt" (*ib.*, XXIII.); "Sepn. of spectral lines of barium, yttrium, zirconium and osmium in magnet. field" (*Ann. d. Phys.*, 1908); "Sepn. of spectral lines of Thorium in magnet. field" (*Astrophys. J.*, 1909).
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- Book.*—"Introduct. to a Form of Gen. Anal." in "New Haven Math. Colloq.," 1910. *Contrib.*—"Transcend. Transcend. Functions" (*Math. Annalen*, 1896); "Gen. Eqns. of 7th and 8th Degrees" (*ib.*, 1899); "Theory of Improper Def. Integrals" (*Trans. Amer. Math. Soc.*, 1901); "Foundns. of Theory of Lin. Integ. Eqns." (*V.-P. Address, Amer. Assoc.*, 1911; *Bull. Amer. Math. Soc.*, 1912).
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- Contrib.*—"Bog Iron Deposits in Ontario" (*Econ. Geol.*, 1910); "Geol. of Onaman Iron Range Area" (Ont. Bur. of Mines *Ann. Rept.*, 1909); "Diabases near Lake Nipigon" (*J. Geol.*, 1911); "Silicious Oolites and other Structures near State Coll., Penna." (*Trans. Brit. Assoc.*, 1911).
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- Books.*—"Outlines of Org. Chem.," 1910; "Expts. in Org. Chem.," 1911. *Contrib.*—Numerous.
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Contrib.—"Cholesterin" (*Med. Chron.*, 1907); "Compensatory and Regenerative Changes in Liver" (*Brit. Med. J.*, 1908); "Rôle of Fats in Treatment of Disorders of Stomach" (with R. L. Ferguson) (*Proc. Roy. Soc. Med.*, 1909); "Belladonna in Dyspepsia" (with L. Kilroe) (*ib.*, 1910).

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 Ed., "Botany" in *Amer. Yearbook*, "Plant Physiol." in *Bot. Centralbl.*; reviser "Algae," *Century Dict.*
 Prevention of bad odours and tastes due to algae in water supplies. New method of growing and preserving virulence of nodule-forming organisms in legumes.

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Contrib.—"Constants and formulas for lubrication" (*Amer. Machinist*, 1903); "Effect of keyways on strength of shafts" (*Univ. Ill. Engrng. Expt. Station Bull.*, 1909); "Built-up columns under load" jtly. (*ib.*, 1909); "Strength of rolled zinc" (*ib.*, 1911).

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Books.—"Text-bk. of Eruptive and Continued Fevers," 1892; "Text-bk. of Met.," 2nd edn.,

1910; "Man. of Pub. Health for Irel." (jtly.), 1875. *Art.*—"Climate of Irel." in "Climates and Baths G.B. and I.," Vol. 11. *Contrib.*—"Repts. on Scandinavian Med." (*B. and F. Med. Chir. Rev.* 1872—74); "Pythogenic Pneumonia" (with Grimshaw) (*Dub. Med. J.*, 1879); "Smallpox" ("20th Century Pract. of Med.," 1898); "Tuberc., its Prevention and Cure" (*Brit. Med. J.*, 1896); Ed. of *Dub. Med. Sci.*, since 1873.

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Book.—"Designing of Plate Girders" (in press). *Contrib.* (jtly.).—"Stresses in chain links" (*Bull.* 18, *Univ. Ill.*); and to *Engrng. News*.

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Contrib.—Numerous, in *J. Soc. Chem. Ind.*

Compos. marine oils.

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Chapter "Relat. betw. Elec. Conductivity and Chem. Constit." in Lehfeldt's "Elec. Chem.," 1904. *Contrib.*—Various to *J. Chem. Soc., Phil. Mag., Ber. d. Chem. Ges., Zschr. f. Phys. Chem.*

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Books.—"Lab. Directions for Beginners in Bact.," "Path. and Differentiation of Infect. Dis. of Animals.," "Princ. of Microbiol.," etc.

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Books.—Annual and other publics. of Observ. since 1895.
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Books.—“Psychiatry”; “Neurology.” *Contrib.* on psychiat. and neurol.
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Books.—“Précis de Ophthalm.” *Arts.* on Maladies of Conjunctiva and Cornea in *Encyc. Fr. d'Ophth.*, and on Ocular Seineiol. in *Traité de Path. gen. Contrib.* on Diplobacillus Conjunc.; Saprotrichosis Conjunc.
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Contrib.—Numerous on Elec., Light and Sound to *Phys. Rev.*, *Phil. Mag.*, etc., and on Phil. of Sci. to *Hibbert J.*, *Nation*, etc.
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Books.—“Short Course in Elec. Testing,” 1912; “Lab. Manual for Alternating Currents,” 1912; “Elec. Machinery” (in press). *Contrib.*
- “A.C. meters” (*Elec. World*, 1911); “Current forms in a synchronous converter” (*ib.*, 1912); “Simple anal. of induction generator” (*Sch. of Mines Q.*, Vol. 22).
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Books.—“Crustacea of Brazil,” Ponta do Pharol,” etc.; “Oligochet. of Brazil”; “New Species of Amphipoda Orchestides”; “Aspidiotus cydoniae.”
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Books.—“Etiol. of Syphilis Maligna Praecox”; “Mental Dis. in Brazil,” etc. *Contrib.*—“Dementia Paralytica in Brazil” (*J. Ment. Sci. Lond.*, 1907); “Lunacy through Leprosy” (*Z. f. Psychiat.*, 1910); and on Endemical Boil, Madura Foot, etc.
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Books.—“Habit and Instinct”; “Animal Behaviour”; “Instinct and Experience.”
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Arts. on “Analysis,” “Metals of Rare Earths,” “Diazo-compounds,” “Sulphide Dyes,” in “Thorpe’s Dict. of App. Chem.” *Contrib.* to *J. Chem. Soc.*, *J. Soc. Chem. Ind.*, *Analyst*, *Proc. Cong. App. Chem.*
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Books.—“Theory of Solution”; “Math. Chem.”; “Elem. of Phys. Chem.” (4th edn.);

"Phys. Chem. for Elec. Engrs." *Contrib.*—Numerous, in various J.s. on Hydrated Salts in Molten State as Solvents; Weight of a Falling Drop, and the Laws of Tate (12 papers); Calculation of Crit. Temperatures; etc.

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Contrib.—"Geol. of Mikoni Sub-division N. Westland" (*Bull.* 6, N.Z. Geol. Surv., 1908); "Geol. of Grey-mouth sub-division N. Westland" (*Bull.* 13, 1911); "Notes on geol., quartz reefs and minerals of Waihi gold-field" (*Trans. Austral. Inst. Min. Engrs.*, 1902); "Igneous rocks of Waihi gold-field" (*Trans. N.Z. Inst.*, 1911).

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Contrib.—"Carburettor action" (*Proc. Inst. Auto-Engrs.*, 1910—11) "Paraffin as a fuel" (*Ib.*, 1911—12).

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Book.—"An Introd. to Surg." *Arts.*—"Intest. Obstruct." in "Encyc. Med.;" "Aneurysm, Varicose Veins, Varicocele," in "Index of Treatment." *Contrib.*—"Abscess in connection with Vermiform Appendix" (*Lancet*, 1901); "Breast Cancer" (*Med. Press and Circ.*, 1908); "Indications for Operation" (*Lancet*, 1905).

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Inve. Moritz acid chambers for manuf. of sulphuric acid, 1907.

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Books.—"Plane Trigon." 1911; "College Math. Book"; "College Engrg. Notebk.;" "High Sch. Math. Notebk." *Contrib.*—"Generalization of Different Process" (*Amer. J. Maths.*, 1902); "Continuants" (*Dissert.*, Göttingen, 1902); "Significance of Characteristic Curves in Composition" (*Pop. Sci. Mo.*, 1904); "Quantitative Relation governing certain Linguistic Phenom." (*Mod. Language Notes*, 1910).

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Book.—"Signs of Early Pulmonary Tuberc." *Contrib.*—"Laryngeal Manifestations of Locomotor Ataxy" (*Med. Chron.*, 1894); "Ozaena" (*Ib.*, 1895); "Tracheo-oesophageal Fistula" (*Arch. Laryng.*, 1894); "Adnasal Dis." (*Brit. Med. J.*, 1906).

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Books.—"Cathode and Röntgen Rays," 1898; "Climatol. of Brazil," 1891. *Contrib.*—"Astrophys. Study of 20th Cent. Comets" (*Osannaes*, 1905); "Location of Foreign Bodies by Radiog." (*Comptes Rendus*, 1898); "Zinger's Method for Time Calculation" (*Rev. maritima Brazil*, 1908); "Simplific. of Comstock's Method for Theodolite Constant" (*Rev. d. Cursos. d. Esc. Polytech.*, 1909); "Influence of Humidity on Thermal Sensation" (*Bull. Minist. Agric.*, 1911).

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Books.—"Outlines of Org. Chem.;" Jt. Ed. Watt's "Dict. of Chem." *Contrib.*—Various in *Trans. Chem. Soc., Lond.*, etc.

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Books.—"Phys. Chem. in Med. and Nat. Sci.," 1895—7; "Oneness of Proteins," 1892, and in Ger. 1906—10. *Contrib.*—"Vowels in Speech and a Universal Alphabet" (*Physiol. Russe*, vol. 5).

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Book.—"Lab. Ex. in Gen. Bact." *Contrib.*—"Meth. of staining bact. in tissues" (*Centr. Bact.*, etc., 1898); "Origin of natural gas" (*Ohio Geol. Survey*, 1907); "Vaccination in colds" (*J. Amer. Med. Assoc.*, 1909); "Convenient 20° inoculator" (*Sci.*, 1912).

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Books.—"Surg. Dis. of Kidneys and Ureter," 2nd edn., 1901; "Dis. and Injuries of Genito-Urinary Organs of the Male"; "Anat. of Joints of Man"; Hunt. Lects., "Origin and Progress of Renal Surg. with Spec. Reference to Calculus in Kidney and Ureter and Treatment of Calculous Anuria," 1898. *Arts.*—"Injuries to Lower Extremities," Holmes's "Syst. Surg.," Vol. 1; "Injuries and Dis. of Abdomen," Ashhurst's "Encyc. Surg.," in Playfair's "Syst. Gynaecol.," and Allbutt's "Syst. Med.;" Ed. "Morris's Syst. Anat.," 4th edn. *Contrib.* to *Lancet*, *Brit. Med. J.*, *Amer. J. Med. Sci.*, etc.

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Contrib.—"Expts. on Carbon, Osmium and

Tantalum Lamps" (*Electrician*); "Expts. on Osram, Wolfram, Zircon and other Lampe," with Stroude and Ellis (*ib.*); "Tests of recent flame arcs, and of high and low press. incandes. gas lighting" (*Illum. Engr.*); "Method of constant rate of change of flux as a standard for determ. magnetization curves of iron," with Langford (*Phys. Soc. London*, 1911).

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Books.—"Light and X-Rays in Treatment of Skin Dis." (with Dr. Dore); "Skin Dis.: Outline of the Principles and Pract. of Dermatol.," revised edn., 1911. *Arts.*—"Lupus," "Elephantiasis Arabum," "Scabies," etc., in Heath's "Dict. of Surg.;" "Parasitic Dis. of Skin," in Allbutt's "Syst. Med.," new edn. *Contrib.*—"Treatment of Lupus during the last 25 Years" (*Lancet*, 1904); "New Therap. Methods in Dermat." (Harv. Lect.) (*Brit. Med. J.*, 1905); and Papers to *Path. Soc. Trans., Pract., Brit. J. Dermat.*, etc.

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Art.—"On Wounds" in *Encyc. Med. Contrib.*—"Spinal anaesth. by tropacocaine" (*Brit. Med. J.*, 1913); etc.

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Books.—"Transfusion of Blood," 1875; "Suicide" (in Eng.), 1880; "Reform of Anthropol.," 1880; "Animal Magnetism," 1886; "Psychiatry," 1881; "Ment. Dis.," 3rd edn., 1895; "Gen. Anthropol.," 1887—1910; "Note on Haeckel's Riddle of the Universe," 1906; "Psychol. and Spiritualism," 2 vols., 1907—08, etc. *Contrib.*—390.

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Books.—"Prehistory," 1910 (with G. de Mortillet); "Prehist. Museum," 1903 (with G. de M.). *Contrib.*—Numerous since 1881. Ed. of *L'Homme Préhistorique* since 1903.

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Contrib.—"Successful Resection of Three-quarters of Stomach for Malignant Dis." (*Brit. Med. J.*, 1899); "Study of 155 Cases of Appendicitis" (*ib.*, 1905); "50 Cases of Operation for Cancer of Breast" (*ib.*, 1905); "Treatment of Dyspnoea in Goitre" (*Brit. Med.-Chir. J.*, 1896).

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Books.—"Characters of Crystals," 1899; "Elements of Miner., Crystall., and Blowpipe Anal.," 6th edn., 1911; "Guide to Sight

Recognition of Common Minerals," 1912. *Contrib.*—"Formulae and graphic methods for determ. crystals" (*Z. f. Krystall.*, 1903); "Eglestonite, Terlinguaite, and Montroydite, new mercury minerals from Texas" (*Amer. J. Sci.*, 1903); "Tests upon synthetic sapphires of Verneuil" (*ib.*, 1910); "Determ. of geom. constants of a crystal in terms of interfacial angles" (*Sch. Mines Q.*, 1906).

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Books.—Co-Ed. "Treat. on Hyg.," 23 vols. *Contrib.* on meningitis, pleurisy, plague in animals during hibernation, etc.

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Contrib.—Many on Neurol. and Psychiatry, in *Proc. and Phil. Trans. Roy. Soc.*, *Proc. Roy. Soc. Med.*, *Encyc. Brit.*

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Book.—"Fecundation in Plants." *Contrib.*—"Develop. of Embryo-sacs" (*Jahrb. f. Wiss. Bot.*, 1898); "Divis. in Pollen Mother-Cells of Di- and Monocotyledons" (*ib.*, 1897); "The Develop. of Heterotype Chromosomes in Pollen Mother-Cells" (*Ann. Bot.*, 1907); "Prophases of Heterotype Mitosis in Embryo-sac Mother-Cells of Liliun" (*Ann. Bot.*, 1909).

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F.Z.S.; F.L.S.; F.E.S.; Roy. Asiat., Straits Branch; Ger. Entom.

Contrib.—“Some Principal Mimetic (Müllerian) Combinations of Trop. Amer. Butterflies” (*Trans. Entom. Soc., Lond., 1909*); “Lepidoptera Rhopalocera Collected by Burchell in Brazil, 1825—30” (*Ann. Mag. Nat. Hist. 1908—09*); “Bornean Cicadidae” (*J. Str. Br. Roy. Asiat. Soc., 1910*); “Bornean Lycaenidae” (*Ib., 1911*).

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Books.—“Congo Independent State,” 1906; “Maize, Cocoa and Rubber,” 1907. *Contrib.*—“The unknown heart of Centr. Africa” (*Soc. Arts, 1905*); “Notes on Jamaica Earthquake” (*Trop. Inst., 1907*); “Commercial possibilities of W. Africa” (*Colonial Inst.*).

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Books.—“Descriptive Geom. for Students of Engrng.,” 1904; “Steam Turbine,” 1908; “Power Plant Testing,” 1911. *Contrib.* on nozzle and blade losses in steam turbines.

Inv. continuous gas calorimeters, Allen-Moyer gas apparatus, and Weir recording water weighers.

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Books.—“Abdom. Operations,” 2nd edn., 1906; “Gall-stones and their Surg. Treatm.,” 2nd edn., 1905; “Duodenal Ulcer,” 2nd edn., 1911; “Path. of the Living,” 1910; “Retro-

periton. Hernia,” 2nd edn., 1906; “Dis. of Stomach and their Surg. Treatm.” (jty.), 2nd edn., 1904; “Dis. of Pancreas” (jty.), 1902; “Surg. Treatm. of Gastric and Duodenal Ulcers” (jty.), 1903. *Arts.*—“Hernia” *Encyc. Med., Vol. 4*; “Operations on Stomach” *Kelly and Noble's Gynec. and Abdom. Surg., Vol. 2*; “Dis. of Pancreas,” and “Dis. of Spleen” (*Keen's Syst. Surg.*). *Contrib.*—“Hour-glass Stomach” (*Lancet, 1901*); “Pancreatic Calculus” (*Ib., 1902*); “Mesenteric Cysts” (*Ann. of Surg., 1897*); “Gastric and Duodenal Ulcer” (*Trans. Roy. Med.-Chir. Soc., 1903 and 1906*).

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Contrib.—Numerous on surveying, geol. instruments, to Z. f. Vermess.: Ann. Rep. in *Kal. f. Vermess.*

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Books.—“Textb. of App. Geom. for Tech. Sch.,” 2 vols., 1908, 1912. *Art.*—“Various syst. of Co-ordinates” (*Enzyk. d. math. Wiss., 1910*). *Contrib.*—“Teaching of App. Geom. in Tech. Hochschule,” (*Ber. d. Math. Unterrichts in Oesterreich, 1911*); “Grassmann's Coeff.-Theory of Line Geom.” (*Monatsch. Math. Phys., 1891*); “Rotor surfaces” (*Sitz-ber. Akad. Wien., 1909*); “Motion of uneven surfaces on a plane” (*Ib., 1911*).

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Pats. on persulphates and galvanising.

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Books.—Many works on Internal Medicine, esp. Metabolism, Path. Chem., Nerv. Dis. of Respir. Syst., Nephritis, Phys. Exams., etc.

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Contrib. to *Pringheim's and Engler's Jahrb.*, *Hedwigia*, and *Ber. Deut. Bot. Ges.*, etc.

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Books.—"Principles of Chem."; "Hist. of Chem. Theories and Laws"; "Elements of Chem."; "Elements of Thermal Chem."; "Course of Prac. Chem."; "Heroes of Sci."; "Alchemy." *Contrib.*—Many to *J. Chem. Soc.*, 1870—1908.

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Books.—"Man. of Bact." (jty.), 6th edn., 1913; "Studies on Immunity," 1909. *Arts.*—"Bacteriology," in *Encyc. Brit.*; "Leukaemia" in Allbutt and Rolleston's *Syst. of Med.*; "Leucocytosis," in *Encyc. Med. Contrib.*—"Changes in bone-marrow in Leucocytosis" (*J. Path.*, 1901); "Proliferation of cells of liver" (*ib.*, 1908); "Anaemia produced by a Haemolytic Serum" (*ib.*, 1912); "Relat. betw. complements and immune-bodies of different animals" (*ib.*, 1912).
 Immunity and pathology of blood.

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Books.—"Expression of Quadratic Surd as Continued Fraction," 1874; "Treatise on Theory of Determinants," 1882; "Hist. of Determinants," Vol. 1, 1906, Vol. 2, 1911. *Art.*—"Circle Quadrature" in *Encyc. Brit. Contrib.* to *Messenger of Maths.*, *Q. J. Maths.*, *Amer. J. Maths.*, *Proc. and Trans. R.S.E.*; *Proc. Lond. Math. Soc.*, etc.

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Book.—"Treat. on Geom. of Conics." *Contrib.*—"Ellip. Functions" (*Q. J. Math.*,

1884); "Monge's Equation" (*J. Asiat. Soc.*, 1886—89); "Salmon's Theorems" (*Mess. of Math.*, 1882); "Plane Anal. Geom." (*J. Asiat. Soc.*, 1886).

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Contrib.—"Utah Juniper in Centr. Arizona" jty. with F. J. Phillips (*Circ.* 197, U.S. Forest Serv.); "Improvem. of Woodlot" (*Cornell Reading Courses*, Vol. 1).

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Books.—Bulls. Mich. Expt. Sta., 84, 107, 113, 114, 128; Bulls. Missouri Expt. Sta. 53, 90. *Art.*—"Animal Breeding" in Amer. *Encyc. Agric.*

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Books.—"Beef Production" and "Pract. Farming and Gardening" (jty.). *Arts.* in "Cyc. Amer." and "Cyc. Amer. Agric." *Contrib.*—Numerous *Bull.* of Mich. and Ill. Expt. Sta.

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Books.—"Ancient Scottish Lake Dwellings," 1882; "Lake Dwellings of Europe," 1890, Fr. edn. 1908; "Rambles and Studies in

Bosnia," 1895, 2nd edn. 1900; "Prehist. Problems," 1897; "Prehist. Scotland," 1899; "Archaeol. and False Antiquities," 1905; "Munro Lects. in Anthropol. and Prehist. Archaeol.," 1912. *Arts.*—"Stone Monuments," *Encyc. Brit.*; "Anthropol.," *Encyc. of Ethics and Religion. Contrib.*—"Prehist. Trepanning in Old and New Worlds" (*Proc. Soc. Antiq. Scot.*, 1898); "Prehist. Horses of Europe and their supposed Domestic. in Palaeolithic Times" (*Archaeol. J.*, 1902); "Man as Artist and Sportsman in Palaeolithic Period" (*Proc. Roy. Soc. Edin.*, 1904).

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Contrib.—On Elec. Power Transmis., Railway Electric., esp. in Three-phase Alternat. Currents.

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Books.—"Glow of Firefly"; and various on Elec.

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Book.—Jt. Ed. "Treatise on Hyg. and Pub. Health." *Contrib.* to Heath's "Diect. Surg." and Quain's "Diect. Med."

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Book.—"Dis. of Thyroid Gland," Part 1, 1900. *Arts.*—"Dis. of Thyroid Gland" in 20th Cent. Pract. of Med., Encyc. Med., Vol. 12; Quain's Diet. Med., Index of Treatment; "Lymphadenoma," "Myxoedema" in Allbutt and Rolleston's Syst. of Med. *Contrib.*—"Treatment of Myxoedema by Extract of Thyroid Gland of a Sheep" (*Brit. Med. J.*, 1891—92, 1896—98); "Clin. Hist. and Symptoms of 120 Cases of Exophthalmic Goitre" (*Trans. Med.-Chir. Soc.*, Vol. 86).

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Books.—"Summary of Sci. Results of *Challenger* Exped."; "Narrative of Cruise of H.M.S. *Challenger* (jt.); "Rept. on Deep Sea Deposits" (jt.); Jt. Direc. of Bathymetrical Surv. of Scot. Freshwater Lochs and Ed. of *Report*; "Depths of the Ocean" (jtl.), 1912; "The Ocean," 1913. *Arts.*—"Lake," "Pacific Ocean," "Atlantic Ocean," etc., in *Encyc. Brit.*, 11th edn. *Contrib.*—Many on Geog., Oceanog., Mar. Biol., and Limnol., in *Proc. Roy. Soc.*, *Proc. and Trans. Roy. Soc. Edin.*, *Geog. J.*, *Scot. Geog. Mag.*, *Nature*, *Nat. Sci.*, *Brit. Assoc. Repts.*; etc.

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Books.—"N. Amer. Flora," Vol. 9; "Shade Trees in Cities." *Contrib.*—Numerous, since 1897, on Cytol. of Gymnosperms; Poly-pores of N. Amer. and W. Indies; Hymenomy-cetes; Fungi; Chestnut Canker (*Diaporthe parasitica* Murrill); Poisonous Mushrooms, etc.

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Contrib. on trypanosom., paragonum., strepto-thricosis, etc., to *Bombay Med. Cong. Proc.*, *Index Medicus*, *Philippine J. Sci.*

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Contrib. on Anat.

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Contrib.—"Chiasma of the Toad" (*Bufo Lentiginisus*) (*Zeitschr. f. Morph. u. Anthropol.*, 1901); "Chiasmata and Third Ventricl." (*Arch. f. Anat. u. Physiol.*, 1902); "Fixation of Tissues by Injection" (*J. App. Micros.*, 1903).

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Ethics; "Ethnol. Study of Music," in "Anthrop. Essays," Oxford; "Music," in Seligmann's "Veddas," *Contrib.*—"Egyptian Anthrop." (*J. Roy. Anthropol. Inst.*, 1903, 1905, 1908, 1910); "Study of Rhythm in Primitive Music" (*Brit. J. of Psychol.*, 1905); "Perception of Direction of Sound" (*Proc. Roy. Soc.*, 1908); "Instinct and Intelligence" (*Brit. J. Psychol.*, 1910). Ed. of *Brit. J. Psychol.*

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Contrib.—"Fractured Patella: Treatment by Intra-articular Suture"; "Cholecystotomy"; "Operative Treatment of Fractures," and other Papers, in *Trans. Acad. Med., Irel.*, 1889-90; "Amputation through Hip-joint: New Method" (*Brit. Med. J.*, 1889).

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Books.—Transl. Laveran and Mesnil's "Trypanosomes and Trypanosomiasis," 1907; "Laws of Health," 1905. *Contrib.*—"Blood Gases in Muscle and in Brain" with L. Hill (*J. Physiol.*, 1895); "Splenomyelogenic Leucocythaemia" (*Internat. Clinics*, 1902); "Effect of certain Metallic Salts on Growth of Micro-organisms" (*Trans. Path. Soc., Lond.*, 1903); "Acid-fast Organisms in Butter and Margarine" (*Supplem. Brit. Med. J.*, 1906).

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Books.—"Mech. Appliances of Chem. and Metall. Indust.," 1908; "Producer Gas Fired Furnaces," 1909; "Layout, Design and Construct. Chem. Plants," 1909. *Contrib.*—"Securing in the Dark" (*Psychol. Rev.*, 1908); "Evolution and Energy" (*Annalen d. Naturphil.*, 1908); "Business as a Science" (*Ib.*, 1909).

Process for spelter in blast furnace; manuf. of sulphuric acid.

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Books.—"Across Greenland"; "Eskimo Life"; "Farthest North"; "Norweg. North Polar Exped. Sci. Results," etc.

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Contrib.—"Rupture of Heart in a Melancholic" (*J. Ment. Sci.*, 1892).

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Books on Gen., Phys., and Anal. Chem. *Contrib. to Acad. Lincei*, and *Gaz. Chim. Ital.*

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Books.—"Intro. to Nat. Phil.," "Primer of Phys.," "Theory of Radiation," 1912. *Contrib.*—About 160 to Eng., Ger., Fr., and Polish *J.* and *Trans.*

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Books.—"Hist. of Earth": "Geol. of Sweden"; "Two Summers in Arctic Regions"; "Geol. of Bear Island, Spitzbergen and King Charles Land"; "Swedenborg as Geologist"; "Linnaeus as Geol." *Contrib.* over 300, on geol., bot., palaeobot., palaeontol., geog., etc.

Disc. arctic flora in glacial deposits of Sweden, Denmark, Germany, Russia, Switz., England; casts of Medusae in Cambrian deposits of Sweden; King Oscar Fjord in E. Greenland.

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Books.—"Le Clapotis," 1897; "La Houle," 1898; Transl. and Ed., G. Abouifarag's "Course of Astron." (Syrian, 1279) 1899, and S. Sébokt's "Treatise on Plane Astrolabe" (Syrian, VII cent.) 1899; "Cosmography amongst Syrians of 7th cent.," 1910; "Ptolemy's Astron.," 1898; and numerous on Oriental hist. and theol.

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Books.—"Outlines of Thermochem.," 1869; "Handb. of Gen. and Phys. Chem.," 1877; "Heating, with esp. ref. to Watergas Heating and Manuf.," 1887. *Contrib.*—Numerous on phys. chem., etc.

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Contrib.—"On the Common Birch and Morphol. Signif. of Chalazogamy" (*Mem. Acad. Sci., Petersb.*, 1894; "Fertilisation of Lil. martagon and Fritill. tenella" (*ib.*, 1898); "Ampulla in Elm" (*ib.*, 1898); "Lil. martagon" (*Ann. Jardin Bot. Buitenzorg*, 1910).

Double fertilisation in Angiosperms.

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Books.—"Elem. Zool.," "Outdoor Studies"; "Gen. Biol.," *Bulls.* 47, 68 86, 124, N. Y. State Mus.

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Books.—“Maxwell's Theory”; Rayleigh's “Theory of Sound”; “Physics”; “Kathode and Rönt. Rays”; “Herz., Elec. and Rönt. Rays”; “Intro. to Phys.”

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Arts in Liebigs' "Annal d. Chem.," 1886—1910; J. Prakt. Chem., Amer. Chem. J. on Org. Chem., Bivalent Carbon, etc.

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Books.—Lab. Manuals of Qual. and Quant. Anal. *Contrib.*—“Determ. of Arsenic (New Method)” (*Z. Anal. Chem.*, 1892); “Tetrachlor Ether” (*J. Amer. Chem. Soc.*, 1909); “Dichlorvinyl Ether” (*ib.*).

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Books.—Revised Coulter's “Man. of Rocky Mtn. Bot.”; “Spring Flora of Inter-Mountain States.” *Contrib.*—“Rocky Mtn. Herbarium” (*Bot. Gaz.*); “New Plants from Wyoming” (*Bull. Torrey Bot. Club.*).

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Book.—“Studies of Meal and Bread.” Ed. *Zeitschr. f. d. Gesamte Getreidewesen.*

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Arts.—“Morph. and Histogen. of Periph. Nerv. Syst. and Sympath.” in Hertwig's “Evol. Hist. of Vertebrates”; “Paraffin” etc., in “Encey. of Micros. Technics of Anat.”

Contrib.—“Liver and Pancreas of *Ceratodus*” (*Forschungsreis. Senon., Jenu*); “Comp. Anat. of Eocene and Recent Siluridae” (*Palaeo. graphica*); “Struct. of Selachier Retina” (*Arch. Mikr. Anat.*); and on developm. of brain of mammals, of crocodile and chelorien; on histol. of spinal cord and of Tectum opticum *Esch. lue.*

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Book.—"Spectrosc. and its Work." *Contrib.*—Various on Phys. and Astron.

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Books.—"Life of Sea-Shore"; "Modern Geog."; "Animal Geog."; "Intro. to Phys. Geog."; etc.

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Contrib.—"Cause and Conditions of Lysigenous Cavity Formation" (*Annals Bot.*, 1894); "Cellulose Enzymes" (*ib.*, 1899); "Thigmotropism of Terrest. Roots" (*Beihft. Bot. Centr.*, 1904); "Gravitation Sensitiveness not Confined to Apex of Root" (*ib.*, 1908).

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Contrib.—"Process of heredity as exhib. by develop. of Fundulus hybrids" (*J. Exper. Zool.*, Vol. V.); "Develop. of 9-banded Armadillo from primitive streak stage to birth," jtly., (*J. Morph.*, Vol. 21); "Signif. of Scute and Plate Abnormalities in Chelonia" (*Biol. Bull.*, Vol. X.).

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Publ. "Laws of Health in Relation to Sch. Life," 1887 and 1902; "Elements of Vital Statistics," 1889, 1899; "Nat. Hist. and Affinities of Rheumatic Fever," 1895; "Epidem. Diphtheria," 1898; "Prev. Tuberculosis," 1908.

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Soc.—A.L.S.; F.E.S.; Hon. F.R.H.S.; Chester Nat. Sci. (Pres.); Chester and N. Wales Archaeol. (Hon. Curator). *Late* in Roy. Soc. Comm. on Sleeping Sickness (Nyasaland) 1911.

Book.—"Coccidia of Brit. Isles," 1901—03. *Contrib.*—105, chiefly on entom.

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Books.—"Papers on Road-making Maintenance"; "Drain Intercept. Traps"; "Design of Sewage Schemes," etc. *Contrib.*—"Design of Temporary Bath Floors" (*Builders' J.*, 1898).

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Contrib.—Numerous on Zool. and Paleont. in Geol. Surv. Public. and Trans. of Various Soc.

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Book.—"Syst. List of the Fred. E. Edwards Collection of Brit. Oligocene and Eocene Mollusca in Brit. Mus. (Nat. Hist.)" 1891.

Contrib.—Numerous, on palaeont. (chiefly Mollusca) of Africa, Madagascar, Malay Penins., Borneo, Formosa, etc.

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Books.—"Amer. Textb. of Path" jtly.; "Amer. Pract. of Surg." jtly.; "Princ. of Path." jtly. *Arts.*—"Multiple Progression

Hyaloserositis," "Thrombosis" in Ref. Handb. Med. Sci.; "Org. Heart Dis.," in Cyc. Med. and Surg. *Contrib.*—"Study of Bright's Dis.," (*Montreal Med. J.*, 1899); "Chronic inflammation of Serous Membranes" (*Studies Roy. Vict. Hosp. Montreal*, 1902); "Effect of blood sera of norm. to minimized goats in modifying the progress of tuberc. infection" (*Trans. Roy. Soc. Can.*, 1903-4).

Dust-bodies of Blood.

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Contrib. on Reissner's Fibre in verteb.

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Books.—"Histology"; "Clin. Lab. Methods"; "Dis. of Hands and Fingers"; "Diet in Typhoid Fever"; "Num. propn. of sexes at birth." *Contrib.*—About 40, on Diet in Fever, Partial Myxedema, Dupuytren's contrac., Acute leucæmia, etc.

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Books.—"Antiquities of Slavs," 1891-1912; "Race of the Slavs," 1910, trans. in Fr., Polish, Russ., etc.

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Books.—"Rep. on Salt Deposits of Wieliczka," 1883-91; "Salt Deposits of Kalusz in E. Galicia," 1912; "Petrography," 3rd edn. 1909.

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Books.—"Solcnogastræ, Polyplacophora, Nematomorpha and Prosobranchia parasitica of Siboga Exped.," "Solcnogast." of *Discovery Exped. Art.*—"Amplineura" in "Ergebn. u. Fortschr. Zool.," 1909, 1911.

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Books.—"On Special Whole Functions"; "Star-cluster G.C. 4410"; "Observ. of Jupiter," 1895-1906. *Contrib.*—Numerous on Solar Eclipses, Variable Stars, etc.

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Book.—"Text-bk. of Physiol.," 3 vols. *Contrib.*—"Survival of Dog after Piercing of Jugular" (*Internat. Cong., Turin*, 1901); "Survival of Dogs after Excision of both Lungs" (*Zentralbl. f. physiol.*, 1906); "Respiratory Motions" (*Arch. f. physiol.*, 1907); "Heat-centres" (*Internat. Cong., Vienna*, 1910).

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Books.—"Theory of Magnetic Measurements," 1886; "Elec. and Magnetism," 1895. *Contrib.*—"Isodynamic Surfaces of Compound Pendulum" (*Trans. Acad. Sci., St. Louis*, 1885); "Relation of Direct to Reversed Phot. Pictures" (1903); "Law of Contraction of Gaseous Nebulae" (*ib.*, 1903); "Nature of Elec. Discharge" (*ib.*, 1910—11).

Pos. discharge a neg. inflow to exhaust or pos. terminal.

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Book.—"Artillery and Explosives." *Contrib. to Trans. Roy. Soc.*

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Books.—"Lectures for Ships' Doctors," 1906; "Tropical Hyg.," 1908. *Contrib.*—Numerous on ship- and trop. hyg.

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Books.—On Path. of Metabolism, Diabetes Mell., Obesity, Chlorosis. *Contrib.* on Dis. of Stomach, Kidney, Nutrition, Gout.

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Contrib. on Load, and Econ. of Elec. Works, to *Elek. Zeitschr.*

NORBURY, Sir HENRY FREDERICK, K.C.B. Direc.-Gen. R.N. (ret.); Hon. Surg. to H.M. the King.

M.D. (Malta) 1870; Hon. M.D. (Cape of Good Hope) 1832; Hon. F.R.C.S. (Eng.) 1900; Sir Gilbert Blane Gold Medal, 1879.

Book.—"Nav. Brigade in S. Africa." *Contrib.*—Numerous, to *Health of Navy, Lancet*, etc.

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Books.—"Terra del Fuego"; "Antarctica"; "Polar World"; etc. *Late Lect.* Geol., Upsala.

Books.—"Terra del Fuego"; "Antarctica." Expeds. to Terra del Fuego, Chili, Greenland, Antarctic, Bolivia, Spitzbergen.

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Books.—"Hydrog. and Biol. Investig. in Norweg. Fjords," with E. Jørgensen, 1905. *Arts.*—"Polyzoa" in Norweg. N. Atlant. Exped., 1900; "Bryozoa of W. Nor." in Marine Fauna of Bergen, 1903; "Bryozoa of 2nd Fram Exped., 1898—1902" in Rept. of that Exped., 1906.

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Books.—"Australasian Characeae," 1891; "Index Desmidicaearum," 1896, Supp., 1908. *Contrib.*—"Fresh-water Algae collected by Berggren in N.Z." (*K. Sv. Vet. Akad. Handl.* 1888) etc.

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Books.—"Intro. to Study of Elec. Engrng.," "Text-bk. Elec. Machinery" (jt.); Jt. Ed., "Elec. Rail. Test Comm.," "Characteristics of Elec. Machines" (jt.). *Contrib.*—Numerous.

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Book.—"Elem. of Org. Chem. *Contrib.*—30 to *Amer. Chem. J.*, *J. Amer. Chem. Soc.*, *Ber.*, etc.

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Soc.—Corresp. Mem. Zool., Lond.; Corresp. Fell. Amer. Ornith. Union; Colonial Mem. Brit. Ornith. Union; Linn. N.S.W.

Books.—"Nests and Eggs of Birds found Breeding in Austral. and Tasmania," 1890 (2nd edn. in press). *Contrib.*—"Horn Sci. Exped. to Central Austral.," 1896; "List of Birds collected by Calvert Exploring Exped. in W. Austral., 1898"; Papers to *Victorian Nat.* and *Records of Austral. Mus.*

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Books.—"Elem. of Geol.," etc.

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Books.—"Lab. Work in Bact.," "Lab. Work in Physiol. Chem.," "Cellular Toxins" (with V. C. Vaughan). *Contrib.*—Numerous on Bacteria, Protozoa, and Chem. Products of Organisms.

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Books.—"Elements of Qual. Anal." (with G. McP. Smith), 6th edn.; "Org. Chem. for Lab.," 2nd edn., 1910; "Org. Chem.," 2nd edn., 1910; Ger. transl., 1907; Definitions in Org. Chem. in Supplement to "Century Dict." *Contrib.*—"Oxidation of Benzene Derivatives by Pot. Ferricyanide" (*Amer. Chem. J.*, 1883—90); "Camphoric Acid" (*Ib.*, 1894—1904); "Atomic Weights of Oxygen, Hydrogen, Chlorine" (*Ib.* and *J. Amer. Chem. Soc.*, 1889—1908); "Molcc. Rearrangements" (*J. Amer. Chem. Soc.*, 1909—11). Ed. *J. Amer. Chem. Soc.*

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Book.—"Plane Surveying."

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Books.—Handbk. Comp. Anat., 2 vols., of Pract. Biol., of Zool. *Contrib.*—250, on Embryol., Comp. Anat. of Vertebrata and Invertebrata, Histol., Classifications, Gen. Biol., to Polish and Ger. Js.

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Books.—"Hyg. Measures in Relation to Infect. Dis.," 1893, and in Ger.; "Blood Immunity, Blood Relationship," 1904; "Bact. of Diphtheria," ed. (with Graham-Smith, 1908); "Ticks, a Monograph of the Ixodoidea" (with Warburton, Cooper, and Robinson, Part 1, 1908, Part 2, 1911), and Bibliog. *Contrib.*—About 130, since 1885 in Brit., Ger., and Amer. Js., on Bactericidal Properties of Blood, of Blood Relationship in the Animal Kingdom; Disc. of a Cure for Red Water in Cattle and Dogs; Of Important Part Played by Insects, etc., in Transmis. of Dis.; Ed. and Founder of *J. of Hygiene and of Parasitol.*

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Book.—"Outlines of App. Optics," 1912. *Contrib.*—"Ether" (*J. Wash. Acad.*, 1912); "New Theorems Analogous to Green's" (*Phys. Rev.*, 1904); "Luminous equivalent of radiation" (*Bur. of Standards, Bull.* 5, 1908); "Emission laws of gases" (*ib.*, Bull. 7, 1910).

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Books.—"Theory of Errors," 1906; "Geodesy," 1907—9; "Theory of Instruments," 1910, etc.

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Books.—"Acharnia in Olden Times," 1887; "Constantinople under Solomon," 1902; "Island of Cyprus," 1903 (Bavarian Acad. Prize); "Lazius," 1906 (maps of Aust.-Hung.; Jubilee publ. of Vienna Geog. Soc.). *Contrib.*—Numerous on Human, Eastern and Hist. Geog.

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Books.—"Instruct. in Phys. at the Mil. Acad.," "Hist. of Technical Mil. Acad.," (with 2 vols. *Contrib.*—"Diffus. of Gases" (*Sitz. Vienna Acad.*, 1882—87); "Expts. on St. Elmo's Fire" (*ib.*, 1888); "Expts. to Explain Rotat. Movement of Projectiles" (*Mitt. über Artillerie u. Genuwesen*, 1899).

Dirac. meteorol. observ. on Hohen Sonnblick (3,105 m.).

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Books.—"Guide to Study of Construc. of Central Nerv. Syst.," 5th edn., and in Eng., Fr., Ital., Russ.; "Researches at Vienna Neurol. Inst.," 20 vols.

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Books.—"Nomography," 1891; "Treatise on Nomog.," 1899; "Graph. and Nomog. Calculus," 1908. *Contrib.*—Numerous to *Comptes-Rendus, Bull. Soc. math. Fr., J. Ec. Polytech.*

Nomography, i.e., plane represent. of eqns. of any number of variables, 1884.

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Books.—"Theory of Form," 1889; "Treatise on Algebra," 1909; "Rect. and Spherical Trigonom.," 1908; "Math. Anal.," "Variable Complex Functions," 1907. *Contrib. to Progreso mat., Gaz. de Mat., Rev. de Soc. Mat.*

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Contrib. on Const. of Camphor (Oddo-Bredt Formula) and Di-camphor, Stereo-Isomerism of Isonitroso-camphors, etc.; Chem. and Physiol. Relations of Aromatic Series; Cements and their Constit.; Catalytic Action of Salts of heavy Metals on Esterific.; Chlorination by S_2Cl_2 ; Use of Phosphorous Oxychloride in Cryosecopy, etc.

Di-camphor; Sulphuric and di-sulphuric Anhydrides; Molec. wt. of Sulphuric acids; Rock Sulphur in manuf. of H_2SO_4 .

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Contrib.—"Earthquakes of 1901" (*Publ. Assoc. Internat. Seismol.*, 1907); "Dynam. Determ. of Young's Modulus of Elast. of Rocks" (4th *Seismol. Conf. Manchester*, 1911). Lab. reproduc. of velocity of earthquake waves.

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Books.—"Agric.," "Precautions Against Drought" etc.; Ed. "Handb. of Agric.," in press. *Arts. in Norweg. Conversat. Lex. Contrib.*—Numerous.

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Book.—"Climatol. of Teneriffe," 1886. *Contrib.*—"Expts. on Sense of Taste" (*Skand. Arch. f. Physiol.*, 1891); "Periodic Function of Heart" (*Id.*, 1898); and on Classification of Senses, Fatigue, etc., in same J.

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Books.—"Harmonic Systems in Dual Evolution," 1866; "Correction of Bessel Method," 1865; "Poggendorff's Biog.-Lit., Dic." III. and IV., 1904; "School of Phys.," 1910; "Elem. of Geom. Perspect. Drawing," 1901; "Perspect. Circle Figures of Conic Sections," 1906; etc. *Contrib.* on Phys., *Poggendorff*, and on Thermodynamics to *Mem. Petersb. Acad.*, 1886; "Law of Causality" (*Ostwald's Ann. d. Naturphil.*).

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Contrib. to Comptes Rendus; Bull. Soc. Miner.; Revue Gén. S. Sci.

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- Books.*—"Sewer Design"; "Sewer Construc.," "Rural Hyg.," "Pract. Meth. of Sewage Disposal." *Art.*—"Water Supply," in "Amer. Encyc. Agric." *Contrib.*—Various.
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- Books.*—"Course of Histol.," 2nd edn. *Contrib.* on influence of light and darkness on tissues, etc.
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- Books.*—"Insulation of Elec. Cables," 1901; "O'Gorman's Motor Pocketbk." *Contrib.*—"Motor Engrng.," *Times Engrng. Supp.*, 1908, 1909, 1910, and 1911.
- Explosion engine valves. Insulation on cables. Flying machines.
- OGSTON, Sir ALEXANDER**, K.C.V.O.; Emer. Prof. of Surg., Univ. Aberdeen; Surg. in Ord. to H.M. the King in Scot.; Cons. Surg., Aberdeen Roy. Infirm.
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- Books.*—"Diagn. of Poisoning and Infec. Dis.," "Med. Inspec. of Schs.: Hints to Teachers"; Ed. of Ogston's "Lects. on Med. Jurisp."
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- Books.*—"New Fossils from Paleo-Devonian of Maryland," 1907; "Proposed Groups of Pennsylv. Rocks of Okla.," "Stratig. of Older Pennsylv. Rocks of N.E. Okla."
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- Contrib.* on blue-green algae, entomophthorae, rusts, etc.
- OLIVER, DANIEL**, F.R.S.; Emer. Prof. of Bot., Univ. Coll., London.
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- Book.*—"Lead-Poisoning" (Goulst. Lects.). *Arts*—"Lead-Poisoning" in "Allbutt's Syst. Med.," Vol. 2; "Metallic, Alkaloidal and Alcoholic Poisoning," in Gibson's "Text-bk. Med.," Vol. 1; "Dis. of Occupation," 1908.

- Ed. and Transl. Bouchard's "Auto-Intoxication"; Ed., "Dangerous Trades," 1902. *Contrib.*—"Cause of Speedy Death in Heart Disease" (*Clin. Soc. Trans.*, Vol. 22); "Therap. of Heart Dis." (*Lancet*, 1887); "Pneumonia in Pregnancy," (*Ib.*, 1899); "Plastic Bronchitis" (*Brit. Med. J.*, 1899).
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- Books.*—"Quant. Chem. Anal.," "Pure Foods"; Ed., Van Nosstrand's "Chem. Annual," and *Trans. Amer. Inst. Chem. Engrs.*, Vols. I.—IV.
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- Books.*—"Morph. and Biol. of Algae," 2 vols.; "Textb. of Pharmacog.," with Karsten; Co-Ed. "Dic. of Nat. Sci." *Contrib.*—Numerous.
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- Book.*—"Proposals for Re-organis. of Jo'burg Municipality." *Contrib.*—"Principal submarine telegraph network of G. B." (*Comptes Rendus*, 1^{ere} Conf. Internat. Télég. and Teleph., Budapest, 1908); "Trip to N. Amer." (*P.O.E.E. J.*, 1910); "Submar. Cables for Long-Dist. Teleph. Circuits" (*J. Inst. E.E.*, 1911); "Recent Develops. in Teleg. and Teleph." (*Roy. Engrs. J.*, 1911).
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- Contrib.*—"Mixed Infect. in Pulm. Tuberc." (*Trans. Brit. Cong. on Tuberc.*, 1901); "Cocci-dioidal Granuloma" (*J. Amer. Med. Assoc.*, 1905); "Arteriosclerosis of Aorta" (*Amer. J. Med. Soc.*, 1906); "Subacute and Chronic Nephritis" (*Arch. Int. Med.*, 1912).
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- Books.*—"Dis. of Pancreas." 2nd edn., 1911; Co-ed. *J. of Exper. Med.*, 1904—10.
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- Books.*—"Handb. of Wom. Dis.," 1913, jtlly. *Contrib.*—"Comparis. of Animal and Human Placenta" (*Z. f. Geb. u. Gyn.*, 1899); "Transform. of face into occip.-presentation" (*Ib.*, 1903); "Pyelitis gravid. and puerp." (*Ib.*, 1913); etc.
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- Books.*—"Ferments and their Actions," 3rd edn., 1910; "Toxins and Antitoxins," 1904; "Handbk. of Biochem.," 1908—11. *Contrib.*—Numerous.
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Books.—"Hist. of Danish Forestry, 1786—1886"; "Wood and Wood Production"; "Trees and other Wood Products" (in press); "Handbk. of Forestry" (with L. A. Häüch). *Arts.* in Danish "Biog. Lexicon"; Chaps. in "Jubilee Book of Vet. and Agric. Sch." *Contrib.*—Numerous to *Tidsskr. f. Skovvaesen, Frem. Danmark's Natur, Forstlige Forskvaesen, and Centrabl. f. ges. Forstw.*, since 1889.

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Books.—"Anal. of Alternating Current Curves," 1906; "Capacity and Inductivity," 1909; "Theory of Alternating Currents," 1912.

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Books.—"Deformities of Human Body"; "Surg. Operations Chart," 2nd edn., 1886; "Med. Hist. Meath Hosp.," 1892; "Cure of Piles" (Lects.), 1898. *Contrib.*—"Lects. on Surg. Emergencies" (*Med. Press Circ.*, 1879); "Lects. on Dis. of Rectum" (*ib.*); "Lects. on Dis. of Children" (*ib.*, 1907).

Inv. of pocket ether inhaler; New form of pile clamp; Aseptic glass drainage tube; New form of rectal speculum.

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Book.—"Ont. Archæol. Report," 1911.

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Contrib.—"On Divergent Hypergeomet. Series" (*Camb. Phil. Trans.*, 1898—1900); "Clausius' Theorem for Irreversible Cycles" (*Phil. Mag.*, 1904—05); "Stability or Justability of Steady Motions of a Liquid" (*Proc.*

Roy. Irish Acad., 1907); "Extens. of Fourier's and the Bessel-Fourier Theorems" (*ib.*, 1909, 1911).

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Books on zool. and paleont. *Contrib.*—Over 100 in U.S., Ger., Fr., Brazil.

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Contrib. to Repts. Geol. Surv. of Ohio, and *Trans. Amer. Ceram. Soc.*

First to organize tech. sch. for clay, glass, and cement engrs. in Amer., 1894.

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Contrib.—"Mountain Birds" and numerous on Chem.

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Books.—"Textb. of Mod. Chem.," "10 Lects. on Theor. Chem.," "Phys. Chem.," etc. *Contrib.*—"Biotation of Glucose" (*Zsch. f. phys. chem.*, 1900); "Anodic Oxidn. of Metals and Electrol. Formn. of Oxygen" (*Zsch. f. anorg. Chem.*, 1903); "Determin. of Solub. by Pulfrich's Refractometer" (*Mem. Kyoto*, 1908); "Inversion of Cnae Sugar" (*J. Tokyo Univ.*, 1908).

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Book.—"Chem. Petrography," 2 vols. *Contrib.*—"Labrador Porphyry"; "Geol. and Petrog. of Cabo de Gata, Spain"; "Classific. of Eruptive Rocks"; "Alkali Rocks of Spain."

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Books.—"Improvem. of Bodily Condition"; "Women from Biol. Standpoint"; "Advice for Candidates"; "Puncturing of Spinal Cord"; "Nerve-tracts of Spinal Cord of Dog"; "Japanese Food"; "Expts. on Hunger."

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Contrib. on indices of refraction, etc.

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Books.—"From the Greeks to Darwin," 2nd edns., 1894—7; "Evolution of Mammalian Molar Teeth," 1907; "Age of Mammals," 1910; "Huxley and Educ.," 1910. *Contrib.*—Over 300 on zool., paleont., comp. anat., and psychol.

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Books.—"Insects affecting Domestic Animals," 1896; "Hessian Fly in the U.S.," 1898; "Insects Parasitic and Poisonous" in Wood's "Handbk. Med. Sci.," 1899; "Econ. Zool.," 1908. *Contrib.*—"Pemphigus Tesselatus" (*Can. Entom.*, 1882); "Food Habits of Thripidae" (*Insect Life*, 1890); "Genus Scaphoides" (*J. Cinn. Soc. Nat. Hist.*, 1899); "Jassidae of N.Y. State" (*Rept. State Entom.* N.Y., 1905).

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Contrib.—Chiefly on Mycol. to *Annals of Bot., Manc. Mem.*, etc.

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Books.—"Intro. to Mat. Med. and Prescrip. Writing"; "Therapeutics," 3rd edn., 1912; "Disturbances of Heart," 1913. *Arts.*—"Acromegaly," in "Buck's Ref. Handb. of Med. Sci.," "Organotherapy," in "Cohen's Syst. Physiol. Therap."

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Books.—"Ger. Gram. for Sci. Students" [jtly. with wife, 2nd edn.; "Elem. of Animal Physiol.," 1909.

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Contrib.—Numerous, on Fishes, Insects, Bryozoa, etc.

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Books.—"Principles and Pract. of Medicine," 7th edn.; Ed. several Monographs; "Aequanimitas and other Addresses," 1910; "An Ala. Student and other Biog. Essays," 1908; "Sci. and Immort." (*Ingersoll Lect.*, 1905); "A Syst. of Med.," 7 vols., 1905—10. *Contrib.*—300.

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Book.—"Textb. of Chem. Technol." 7th edn. 1911. *Contrib.* on Hydrolysis of Starch, Cellulose acetate, hydrol. and acetolysis of cellulose, to *Zschr. f. angew. Chem., Liebig's Ann., and Chem. Z.*

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Books.—"Lect. on Strength and Elasticity," 2nd edn. 1905; "Lect. on Theory of Structures," Pt. I., 2nd edn. 1908, Ger. edn. 1904, Pt. II. 1903, 2nd edn. 1913; "Lect. on Steel Constructions," Pts. I.—III., 1906—12. *Contrib.*—"Strength of excentrically and centrally loaded columns" (*Zeits. d. Ver. deutsch. Ing.*, 1898); "Graph. calculation of continuous girders with fixed or elastic yielding supports" (*Zeits. f. Arch.-u. Ing.-wesen*, 1905); "Continuous girders with elastic yielding supports" (*Ib.*, 1908); "Computation of Vierendeel Girders" (*Eisenbau*, 1912).

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Books.—"Flora Arctica"; "Land Vegetation of the Farøes." *Contrib.* on Arctic and Danish Plants; numerous on Marine and Freshwater Phytoplankton since 1896; Apogamy and Hybridiz. in Hieracium, 1903—10.

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Books.—"Expts. with Plants"; "Agric. for Schools of Pacific Slope," with Hilgard. *Contrib.* on Cytol.; effects of salts on plants; permeability of protoplasm.

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Books.—"Handbk. of Meat Inspect.," "Vet. Methods in U.S.A.," "Handbk. of Pathogenic Micro-organisms" (with Kollo-Wassermann). Ed. of *Zeitschr. f. Fleisch u. Milch-hygiene*; Co-ed. of *Zeitschr. f. Infec.-krankh. d. Haustiere.*"

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Contrib.—"Bryozoa of Sebastopol Bay" (*Arch. de Biol., Paris*, 1885); "Embryol. of Lizards" (*Kazan*, 1888); "Import. of Osmot. Press. in Hatching of Egg of *Artemia salina*" (*Kazan*, 1901); "Growth of Sturgeon," 1910—12; and others on marine biol. investig. in Black Sea, Marmora, Bosphorus, and Caspian Sea.

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Books.—"Textb. of Gen. Chem.," "Outlines of Gen. Chem.," "Inorg. Chem.," "Anal. Chem.," "Lectures on Nat. Phil.," "Monist Sunday Sermons"; etc., mostly trans. in Eng., etc. *Contrib.*—Very numerous.

Law of Dilution; Theory of Catalysis; Manuf. of nitric acid by catal. oxid. of ammonia; Catatypy. Founder of *Zeitschr. f. phys. Chem., Ann. d. Naturphil., Monist Jahrbuchert.*

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Book.—"Great White Plague." *Art*—"Tuberc.," in Musser and Kelly's "Pract. Treatment"; "Health Resorts," in Woz2's "Handbk. of Med. Sci." *Contrib.*—"Causes and Conditions of Pulmon. Tubere." (*Amer. J. Med. Sci.*); "Tuberc. Dispensary" (*J. Amer. Med. Assoc.*, 1906); "Munic. Control of Tuberc." (*Boston Med. and Surg. J.*, 1905); "Significance of Tuberc. Crusade and its Future" (*Ib.*, 1907).

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Books.—"Modern Antipyretics," 1892; "Internal Secretions," 1910; "Textb. of Physiol.," 4th edn., 1912.

Disc. Thermogenic centres and hormones of milk secretion.

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Books.—"Suggestion and the Occult Faculty, 1890; "Synopsis of Sci. Policing"; "Treatise on Sci. Policing," 1910; "Delinquents," 1894; and 87 Monographs. *Contrib.*—Numerous since 1883 on Criminal Anthrop., Poisoning etc.

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Book.—"Studies on Narcosis," 1901. *Art.*—"Mechanism of Resorption and Secretion," Nagel's "Handbk. d. Physiol.," 1906—07. *Contrib.*—"Osmotic Properties of Living Cell" (*Vierteljahrshchr. d. Naturforsch.*, 1895—99); "Muscle and Nerve" (*Pflüger's Archiv.*, 1902 and 1904); "Cobra and Rattlesnake Poison" (*Biochem. Zeitschr.*, 1911).

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Contrib.—"Parthenogen. in *Thalictrum purpurascens*" (*Bot. Gaz.*, 1902, *Ber. deutsch. Bot. Ges.*, 1904); "Organiz. of nuclei in pollen mother cells" (*Ann. Bot.*, 1909); "Artific. parthenogen. in *Fucus*" (*Sci. N.S.*, 1913).

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Contrib.—"Discharge of Elec. from Nernst Filament" (*Phil. Mag.*, 1904); "Condensation Nuclei" (*Ib.*, 1903—08, 1910—11).

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Books.—"Treatment of Acute Rheumatism"; "Man. of Mat. Med.," "Supp. Cat. of Mus. of St. George's Hosp.," *Arts.*—"Alcohol," "Alcoholic Liquors," "Alcoholism," "Dyspepsia," "Morphinomania," "Oesophagus," "Old Age," "Pylorus," "Stomach," in Fowler's "Dict. Pract. Med.," 1890. *Contrib.*—"Connection of Dis. with Habits of Intemp." (*Statist. Rept.*, Collec. Invest. Record IV.); "Geog. Distrib. of Rickets, Acute Rheumatism, Chorea, Cancer, and Urinary Calculus" (*Ib.*, 1889); "Horizontal Dilatation of Heart" (*Clin. Soc. Trans.*, Vol. 35); "Immediate Auscultation" (*Lancet*, 1903).

Estab. Univ. of Wales, 1893; Reconstruc. Univ. of Durham, 1908.

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Contrib.—"Study of Closed Coil Arc

Dynamo" (*Amer. Inst. E.E.*); "Armature Reactions in Synchronous Converter" (*ib.*); "A New Form of Wave Meter" (*ib.*); "Elec. Accelerameter" (*Can. Soc. C.E.*); "Thorium Radiation" (*Phil. Mag.*).

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Chap. on Filling Materials in "Text-bk. of Oper. Dent.," 1908.

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Contrib. on colloids, food chem., catalysis, and gen. inorg. and org. chem. to *Ber. Chem. Ges.*, *J. f. Pract. Chem.*, *Arch. d. Pharmacie*.

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Books.—"Terrestr. Phys.;" "Radio-activ.;" "Atmosph. Elec."

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Contrib.—Numerous on Terrestr. Magnetism, Met., Aerol., Limnol., Geodyn., Phys.

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Books.—"Local Taxation of G.B. and I.," 1871; "Notes on Banking in G.B. and I.," Sweden, Denmark, and Hamburg," 1873; "Analy. of Trans. of Bank of Eng. for Years 1844—72," 1874; "Bank Rate and Money Market in Eng., Fr., Ger., Holland and Belgium, 1844—1900," 1903; "Enquiry into Economic Condition of Country," 1904. *Arts.* on "Banking," in *Encyc. Brit.*, 11th edn.; in *Chambers' Encyc.*, 1912; Ed. "Dict. of Polit. Economy," 3 vols., 1894—1912. Appendix, 1908. *Contrib.*—Various, to *Q. Rev.*; *Banker's Mag.*; *Nat. Rev.*; *Athenæum*, etc.

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Book.—Ed., with Wolf, "Photog. Star Charts."

Disc. 102 asteroids; 5 variable stars.

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Books.—"Plant Physiol.," 6th edn., 1911; "Plant Anat.," 4th edn., 1908; "Morphol. and System. of Plants," 1905; "Microbiol." 1900; "Variation in Plants," 1900. *Contrib.*—"Importance of Acids for Plants" (*Bull. Nat., Moscow*, 1886); "Plant Albumen" (*Z. f. Biol.*, 1894); "Respiratory Pigments" (*Z. f. Physiol. Chem.*, 1908); and *Reh. gen. de Bot.*, 1911.

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Contrib.—"Alteration of Concentration by Drop Electrodes" (*Zeitschr. f. phys. Chem.* 1898); "Sol. of Metals" (*ib.*, 1901, 1902, 1906); "Absolute Potential of Calomel Electrodes" (*ib.*, 1907); "Electrolyt. Potential and Periodic Syst." (*ib.*, 1907).

Manuf., at Trollhättan, of bicalcic phosphate by electrolytically produced acid and alkali.

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Contrib.—"Pressure coefficient of mercury resistance" (*Amer. J. Sci.*, 1897); "Meas. of very high pressures" (*Ib.*, 1898); "Dielectric constant of dilute electrolytic solution" (*Phys. Rev.*, 1902); "Thermo-elec. determ. of temp. between 0° and 2000 C." (*Ib.*, 1905).

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Contrib.—"Allyl cyanide constit." (*Amer. Chem. J.*, 1889); "Classif. and Miner. of Nat. Waters" (*U.S. Geol. Surv. Bull.* 479, 1911); "Thorium basic bi-chromate synth." (*Amer. Chem. J.*, 1895); "Arizonite, ferric metatitanate" (*Amer. J. Sci.*, 1909).

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Contrib.—"Lamé's Eqn." (*Vidensk. Selsk. Skr.*, 1894); "Indeterm. Eqs. of Second Degree" (*Bergens Mus. Aarbog*, 1896); "Generalization of some Eqs. presented in theory of Ellipt. Functions" (*Ib.*, 1897); "On a Class of Undeterm. Eqn." (*Vid. Selsk. Skr.*, 1900).

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Books.—"Handb. of Dermatol.," 1908; "Lymph. Dis. of Skin," 1892. *Arts.*—"Tumours" in Ziegler's Beitr.; "Aetiolog. of Scleroma laryngis," "Lymphosarcoma," "Pseudo-leukaemia," "Rabies," "Path. of Blood" in Marchand-Krchl's Handb., 1912.

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Book.—"Descrip. Geom.," 3rd edn., 2 vols., 1911. *Contrib.*—"App. Chem. in Univs." (*Bull. Soc. Sci. Buch.*, 1903); "Archit. Teaching in Roumania" (*Rev. gen. Inv. Buch.*, 1906); "Univs. and Polytechs." (*Ib.*, 1905); "Our Univs." (*Conv. ill.* 1905); etc.

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Contrib. to Real. Soc. Esp. de Hist. Nat.

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Books.—"Geol. of N. Z.," 1910; "Textb. of Min. Geol.," 3rd edn. 1911; "Textb. of Theodolite Surveying," 2nd edn. 1911; "Textb. of Geol.," 1913; "Cyanide Process of Gold Extraction," 10th edn. 1913; "Pract. Assaying," 4th edn. 1913. *Contrib.*—"Geol. of Alexandria, Cromwell and Queenstown Districts" (*Bulls.* 3, 5 and 7, *N.Z. Geol. Surv.*); "Geol. of Hauraki Goldfields" (*Trans. N.Z. Min. E.*, Vol. II.); and about 100 others.

Glacial phenomena in Austral. and Europe.

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Books.—"Lects. on Surg. Path.," 1892; "Epitome of Hist. of Med.," 1897; "Modern Surg.," 1907; "Essays and Addresses," 1912. *Contrib.*—150.

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Book.—"Pathogenic Bact. and Protozoa," 4th edn.

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Contrib. on Nerv. Syst., Sense Organs, Animal Reactions.

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Arts.—"Dis. of Special Joints," "Internat. Handbk. of Surg.," "Peritonitis" and "Dis. of Nose," Heath's "Dict. of Pract. Surg." *Contrib.*—"Extirp. of Tuberc. Lymph Glands" (*Brit. Med. J.*, 1902, 1908); "Radical Cure of Hernia" (*Provinc. Med. J.*, 1893); "Treatment of Fractured Femur by Thomas' Splints" (Repts. of Internat. Med. Cong., Lond., 1881); "Ununited Fractures healed by Planting Bone Particles" (*Proc. Roy. Soc. Med.*, 1908).

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Books.—"Elem. Course of Pract. Zool. (with late T. J. Parker); Transl. of Wiedersheim's "Comp. Anat.," and Weismann's "Germ-plasm." *Contrib.*—Various on comp. anat.

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Contrib. on Paleont.; "Stromatoporoids and Echinoderms"; "Building and ornamental stones of Canada"; Numerous rept. to Geol. Survey, Can., and Ont. Bureau of Mines.

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Contrib.—"New methods for exclusion of Pylorus" (*Atti Acad. Med. Palermo*, 1912); "Hypodermic-Peritoneal Injection" (*Ib.*, 1912); "New meth. for suture of tendons and nerves" (*Ib.*, 1912).

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Contrib.—"Eriophyidae" (*Bull.* 283, N.Y. Expt. Station, 1906); "Apple and Cherry Ermine Moths" (*Tech. Bull.* 24, 1912); and on Coccidae, Econ. Entom., etc.

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Contrib.—Numerous on Turbines.

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Books.—"Beryllium: Its Chem. and Lit.," 1909; "Crystallography, Miner. and Blowpipe Anal." (with A. J. Moses), 1895. *Contrib.*—"Soluble Basic Sulphates of Beryllium" (with W. O. Robinson and C. T. Fuller) (*J. Phys. Chem.*, Vol. 11); "Solution in a Dissolved Solid" (*Ib.*); "Some Org. Comps. of Beryllium" (with G. J. Sargent), *J. Amer. Chem. Soc.*, 1909); "Atomic Weights of Carbon and Beryllium" (*Ib.*, Vol. 27).

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Books.—"Outline: for Dissectors," 1900; "Pract. Anat.," 1912. *Arts.*—30 on Anat. in *Encyc. Brit.* *Contrib.*—Sixth, Seventh, Eighth and Ninth Secs. of Collective Investig. Comm. of Anat. Soc. (*J. Anat.*, Vols. 31—33); "Museums of Mammals" (Hunt. Lects. 1898, *ib.*, Vol. XXXIV.); "Myology of Various Orders of Mammals" (*Proc. Zool. Soc.*); "Epiphyses" (*J. Anat. and Physiol.*, Vols. XXXVII.—XLI.); "Rep. on Hythe Crania" (*J. Anthropol. Inst.*, 1909).

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Books.—"Turnouts"; "Track"; "Amer. Engrn. in China." *Contrib.*—Numerous. Engrn. N.Y. Subway; Advising Engrn. London Traffic, Panama Canal, etc.

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Books.—"Repert. of Higher Maths.," and in Ger. and Pol.; "Determinants"; "Infinites. Calc.," etc. *Contrib.* on Theory of algeb. and diff. forms. of higher orders, Abelian functions, etc., to *Accad. Lincei, Ist. Lombard., Accad. Napoli, Comptes Rendus, Circ. Mat. Palermo, Math. Annalen, Ann. di Mat.*

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Books.—"Lects. on Mod. Geom.," 1882, 2nd edn. 1912, and in Span. 1913; "Diff. and Integ. Calc.," 1882; "Analysis," 1909. *Contrib.* to *J. f. d. reine u. angew. Math., Math. Annalen*, etc.

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Books.—"Adamaua," 1895; "Kalahari," 1904; "S. Africa," 1907; "Physiol. Morphol.," 1912; "Togo and the Cameroons," 1909. *Contrib.*—Numerous.

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Books.—"Injuries to Organs of Hearing," 1905; "Tympanic Membrane Atlas," 1912; Co-Ed. "Essays on Anat., etc., of Ear, Nose and Throat. *Arts.* on Ear in "Theory of Operations" and "Hdb. of Wounds." *Contrib.*—Numerous.

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Arts. on crafts, dyeing, pottery, etc., in *Internat. Stand. Bible Encyc.*

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Contrib.—"Steam Superheating" (*Proc. Inst. Mech. E.*, 1896); "Charing Cross Co. City of Lond. Works" (*Proc. Inst. E.E.*, 1906); "Electrific. of Ferndale Collieries" (*Proc. S. Wales Inst. Engrs.*, 1910).

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Book.—"The Sternum." *Arts.* in Cunningham's "Text-bk. of Anat.," Duval's "Anat." *Contrib.*—Numerous on Anat. and Developmt. Nerv. Syst., Osteol., etc.

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Books.—"Essentials of Human Physiol."

"Essentials of Physiol. for Vet. Students." *Art.*—"Nutrition" (with E. Cathcart), *Encyc. Brit.*, 11th edn., 1911. *Contrib.*—Numerous, in *J. Physiol.*, etc.

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Book.—"Evol. of Verteb. and their Kin," 1912.

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Contrib.—"Solubilities of Permanganates of Alkali Metals" (*J. Amer. Chem. Soc.*, 1906); and (with W. A. Noyes), on Camphoric Acid and Trimethylparaconic Acid (*ib.*, 1902).

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Contrib.—Numerous on Bot. and Hortic.

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Contrib.—"Elec. resistance of thin metal films" (*Phil. Mag.*); "Change in resistance of metals in magnetic field" (*ib.*); "Earthquakes recorded at Simla from 1905—1909" (*Indian Met. Memoirs*); "Comparison of Angström Pyrheliometer and Callender Sunshine Receiver" (*Can. Met. Off. Publ.*).

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Book.—"Domest. Econ.," 1893. *Contrib.*—"Colectomy" (*Liverpool Med.-Chir. J.*, 1895); "Surg. of Thyroid Gland" (*Brit. Med. J.*, 1897); "Chronic Mastitis and its relat. to tumour formation" (*Trans. Path. Soc. Lond.*, 1901); "Path. of prostatic hypertrophy" (*Lancet*, 1910).

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Books.—"Expt. in Geol.," 1912; "Perils of Alps," 1911. *Contrib.* on geol. of Alps, etc.

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Books.—"Aphorisms," 1905; "Darwinism and Lamarckism," 1905; "Life of A. Bazersdorfer," 1902; "Swimming Bladder of Eel," 1882. *Contrib.*—Numerous on Biol. of Scolytidae and other forest insects; on Darwinism to *Zsch. f. d. Ausbau d. Entwick.*

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Books.—"Open-Hearth Furnaces," "Blast-furnaces," in 4 languages.

Contrib. on theory of blast-furnace process, manuf. of producer gas, design of open-hearth furnaces.

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Publ. on tuberc., immunity, etc. in *Ann. Inst. Pasteur, Zsch. f. Hyg. u. Infekt.*; "Princ. of Mod. Surg." in Russ.; "Gravel wounds in Russ.-Jap. War."

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Books.—"Gen. Plant Morphol.," 1890; "Text-bk. Bot.," 13th edn., 1909; "Distrib. Plants Karpath.," 1898, 1908. *Arts.*; *Aceraceae*, *Primulaceae*, etc., in "Pflanzenreich." *Contrib.*—Numerous to *Engler, Bot. Jahrb.*, etc.

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Contrib. on engrng., to *Proc. S. Afr. Soc. C.E., Victorian Inst. Surveyors.*

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Contrib. to *Z. f. Chirurg., Beitr. z. Klin. Chirurg.*, etc., on Transplantation, Appendicitis Hydrocephalus, Gall-Stones, Gastric Ulcer, Ankylosis Operns. esp. on Knee-Joint, etc.

Magnesium prothesis and use in surgery.

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Books.—"Nav. Architecture"; "Propellers"; "Computns. for Marine Engines"; "Thermodynam. of Steam-Engine"; "Thermodynam. of Steam Turbine"; "Tables of Properties of Steam, etc., and Temp. Entropy Table"; "Value Gears for Steam Engines"; "Steam Boilers," jtly.; "Steam Engine Indicator."

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Book.—"Math. Formulæ."

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Contrib.—Various on Exper. Path.

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Contrib.—Several to *Trans. I.M.E.A., Inst. E.E.*, and Technical Press.

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Books.—"Variation and Differentn. in *Ceratophyllum*"; "Variation and Correlation in Crayfish" (jtly.); "Poultry Dis. and their Treatm." (jtly.). *Contrib.*—Numerous on biol.

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Arts.—3 chapters in *Hegner's Introd. to Zool.*, 1910; "Biol." in *Johnston's High Sch. Course*, 1912; on Zool., in *Ref. Handb. of Med. Sci.*, 1912. *Contrib.* on Crustacea, behaviour and ecology.

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Book.—"Mod. Surg. Technique in relat. to Operation and Wound Treatm."

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Contrib.—Numerous to *Flora of Trop. Africa*, *Flora Capensis*, *Phil. Trans.*, *Annals of Bot.*, *Geog. J.*, etc.

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Book.—"Cancer, the Edible Crab," "L.M.B.C. Memoirs," 1908. *Contrib.*—Various. Ed. "Spolia zeytanica," and *Bull.* of Colombo Mus.

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Books.—"Chances of Death"; "Grammar of Science"; "National Life from Standpoint of Science"; Ed. *Biometrika*, 9 vols.; Ed. "Drapers' Co. Research Memoirs" and "Eugenics Lab. Publ."

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Books.—"Descrip. Cat. Forest Research Eeon. Inst. Mus."; "Antiseptic Treatment of Timbers in India"; "Commerc. Guide to Indian Forest Products"; "Treatise on Bamboo Paper Pulp"; "Relative Strength of Plantations of Teak in Burma." *Contrib.*—Several, to *Indian Forester*.

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Books.—"Northward Over the Great Ice," 1898; "Nearest the Pole," 1907; "North Pole," 1910. *Contrib.*—Numerous on Geog.

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Contrib.—"Mushrooms and their Uses" (*Country Gentleman*, 1894); "New Species of Fungi" (*Bull. Torr. Bot. Club*, 1876—1909); Various to *Trans. Albany Inst.*, 1872—1909; *Annual Repts.* and *Bull.* of N.Y. State Mus., 1867—1910.

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Art.—"Rocks" in *Encyc. Amer.*, 1908. *Contrib.*—"Geol. of cement belt in Lehigh and Northampton Cos., Penna.," 1911; "Talc and serpentine deposits of E. Penna.," 1911.

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Books.—"Handbk. of Astron.," "Constellations and How to Find Them," 2 vols.; "Observers' Atlas of the Heavens."

Inv. Internal combust. engines, propellers, pumps, etc.

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Books.—"Elem. Chem.," 1873; "Rept. on Petroleum" (Census, 1885); "Asphalt Paving," 1900; "Solid Bitumens," 1909.

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Books.—"Manual of Phys.," "Elementary Dynamics of Solids and Fluids"; Annot., 5th edn., Tait's "Properties of Matter"; *Arts.* in "Chambers' Encyc.," "Harmsworth's Encyc.," &c. *Contrib.* to *Trans.* and *Proc. Roy. Soc. Edin.*, *Phil. Mag.*, &c.

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Contrib.—"Surface-tension of liquids, etc." (*Phil. Trans.*, 1907); "Theory of Wireless Telephony" (*Jahrb. d. drahtl. Teleg.*, 1912); and on wireless telegraph. 1909.

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Contrib.—"Isomeric Forms of Valeric Acid" (*J. Chem. Soc.*, 1868); "Cobra Poison" (*Proc. Roy. Soc.*, 1878); "Action of Light on Phosphorus, etc." (*J. Chem. Soc.*, 1890); "Action of Chlorine on Water in Light, etc." (*ib.*, 1890).

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B. New York City. E.M. (Colum.) 1883. *Soc.—M.I.M.M., Lond.*; Min. and Metallur. Amer.; Amer. Inst. Min. E.; Amer. Geog.

Books.—"Compressed Air Plant," 2nd edn., 1910; Collab. Transl. "Shaft-Sinking under Difficult Conditions" by Riemer. *Arts.*—"Mining Engrng." in "Cyc. Amer."; "Blasting," "Boring," "Shaft Sinking" in *Encyc. Brit.* (last edn.). *Contrib.*—"Many in Engrng. and Mining J., Mines and Minerals, and Sch. of Mines Q."

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Book.—"Textb. of Plant Physiol." *Contrib.*—"Phanerogamic parasites" (*Ann. of Bot.*, 1893, 1894, 1905); "Effects of extern. influences on plants" (*ib.*, 1906, *Bot. Gaz.*, 1905); "Respiration" (*Bot. Gaz.*, 1908—1912).

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Contrib.—Numerous to *Bull. de l'École fr. d'Extreme Orient, J. Asiat.*, etc.

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Contrib. on Path. Anat., secondary degenerat. of central nerv. syst., etc.

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Contrib. to *Gazz. Chimica Ital.* on guanidine allophane, triazo compds., etc.

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Book.—"Limits of Psychiatry," 3rd edn. *Contrib.*—Numerous to *Psych. Z.*, etc.

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Books.—"Glaciation of Alps," 1882; "Morphol. of Earth's Surface," 1904; "Alps in Glacial Epoch" with Ed. Brückner, 1909. *Contrib.*—200, on Glac. Epoch, Antiq. of Man, etc.

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Books.—"Principles of Elec. Engrng.," Ed. "Amer. Elec. Engrs. Handbk." *Contrib.*—"Magnetic Effect of Elec. Convection" (*Phil. Mag.*, 1901, 1903); "Mech. and Elec. Character. of Transmiss. Lines" (*Trans. A.I.E.E.*, 1911); "Trig. Method for Solution of Alternat. Current Problems" (*ib.*, 1908).

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Contrib.—"Accessory Ligament of Knee-joint" (*J. Anat. and Physiol.*, 1894); "Unusual Case of Intussusception" (*jtly.*) (*Lancet*, 1902); "Dis. of Appendix Caeci" (*ib.*, 1905); "Inj. and Dis. of Chest" in Latham and English's Syst. of Treatm., 1912.

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Contrib.—"Common Integ. and Dynam. Problems" (*Sez. d. Sci. Fis.-Mat. d. Sc. Norm. Sup. Pisa*, 1877); "Integ. of Problems of Flexible and Non-extens. Thread" (*Rendic. Circ. Mat. Palermo*, 1902); "Simple Integ. of Diff. Eqns. of Motion" (*Atti Ist. Veneto*, 1909—10); etc.

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Contrib.—"Bact. growth and chem. changes in milk kept at low temperatures" (*J. Biol. Chem.*, 1908); "Deriv. of columbium and tantalum" (*J. Amer. Chem. Soc.*, 1895); "Virulence of diphtheria organisms, etc." (*J. Infect. Dis.*, 1907); "Chem. and bact. study of fresh eggs" (*J. Biol. Chem.*, 1910).

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Contrib.—Numerous, chiefly on Struct. of Natural Dyestuffs, Tannin Matters, etc., in *J. Chem. Soc.*, etc., since 1880.

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Books.—"Qual. Anal. (Inorg. and Org.)"; "Metric Syst."; "Pract. Methods of Inorg. Chem."; Pract. Methods of Electro-Chem."

Contrib.—"Electrolytic Oxidation of Hydrocarbons of Benzene Series" (*Trans. Faraday Soc.*, 1904); "Reducing Action of Calcium on Oxides and Sulphides" (*ib.*, 1907); "Electrolytic Oxidation of Hydroxybenzoic Acids" (*J. Chem. Soc.*, 1908).

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B. 1860, Sudbury. *Educ.* City of Lond. Sch.; Roy. Coll. Sci.; Univs. Würzburg, Munich. Ph.D. (Würz.); Hon. M.Sc. (Vict.); Hon. Sc.D. (Cantab.); Hon. LL.D. (Edin. and St. And.); For. Mem. Roy. Soc. Göttingen. *Late* Prof. Chem., Heriot-Watt Coll., Edinburgh, 1887, Manchester, 1892.

Books.—"Org. and Inorg. Chem." (with Kipping); "Intro. to Study of Chem. and Phys." (with Bevan Lean). *Contrib.*—Numerous researches in Org. Chem., pub. during last 30 years, in *Trans. Chem. Soc.*, etc.

"Non-Flam" process for permanently fire-proofing cotton goods.

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B. 1858, Ware, Mass. A.B. (Williams) 1879; Ph.D. (Hopkins) 1884. *Soc.*—Amer. Phys.; Amer. Inst. E.E.; Amer. Assoc. *Late* Prof. Maths., Lawrence Univ., 1880—81; Prof. Phys., Bryn Mawr Univ., 1887—91.

PERKINS, GEORGE HENRY, Prof. of Geol. and Dean, Vermont Univ.; State Geol., Vermont.

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B. 1844, Cambridge, Mass. B.A., 1867, Ph.D., 1869 (Yale); LL.D. (Vermont) 1911. *Soc.*—Amer. Geol.; Amer. Assoc. Adv. Sci.; Amer. Anthrop.; Amer. Ethnol. Assoc.

Books.—"Geol. Rept." 8 vols. *Arts.* in *Encyc. Brit.*, *Johnson's Encyc. Contrib.*—"Archeol. of Champlain Valley" (*Amer. Natural.*, *Amer. Anthrop.*); "Calumet in Champlain Valley" (*Pop. Sci. Monthly*).

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bia Univs. E.E.; M.A. (Colum.) 1899. *Soc.*—Amer. Phys.; French Phys.

Contrib.—"Velocity of Propagation of Magnetism" (*Amer. J. Sci.*, 1904); "Rectifying Effect in Vacuum Tube" (*ib.*, 1908); "Selective Effect in Ionisation of a Gas by an Alternat. Field" (*Comptes Rendus*, 1909); "Discontinuity of Discharge in Geissler Tube" (*Le Radium*, 1909).

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B. 1877, Burlington. A.B. (Vt.) 1898; Ph.D. (Hopkins) 1902. *Soc.*—F.A.A.; Boston Nat. Hist. *Late Res. Assist.*, Carnegie Inst. Washington; Temp. Assist., Lake Champlain Enquiry, U.S. Bur. Fisheries.

Contrib.—"Develop. of Gonionemus Murabachi" (*Proc. Nat. Acad. Sci.*, 1913); "Tortugas Medusae" (*Rept. Tortugas Lab. Carnegie Inst. Wash.*, 1906).

PERKINS, HIRAM MILLS, Prof. Emerit. of Maths. and Astron., Wesleyan Univ., Delaware, Ohio.

B. 1833, Plain City, Madison. *Educ.* Ohio Wesleyan Univ., Delaware. M.A., 1860, LL.D., 1905 (O. Wesl.).

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Contrib.—"Partial Vapour Pressures of an Aqueous Ammonia Solution" (*J. Chem. Soc.*, 1903); "Direct Synthesis of Ammonia" (*Proc. Roy. Soc.*, 1905); "Some Phys. Constants of Ammonia" (*ib.*, 1906); "Chem. Reaction between Salts in Solid State" (*ib.*, 1907).

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B. 1868, Cosne, Fr. *Educ.* Coll. Nevers; Coll. Janson de Sailly, Ec. Norm. Sup., Paris. D.Sc. (Paris) 1895. *Soc.*—Fr. Phys. (Mem. Counc.). *Late Prep. Teacher* of Phys., Coll. de France, Paris, 1891—94; Lect. on Phys., Fac. Sci. Nancy, 1894—1902.

Books.—"High Frequency Currents," 1896; "Science, its Methods and Results," 1902; "Dirigibles and Aeroplanes," 1912. *Contrib.*—"Refraction and dispersion of gas" (*Ann. Chim. et Phys.*, 1896); "Method of coincidences" (*J. de Phys.*, 1899); "Influence of X-rays on Elec. Resist. of Se" (*Comptes rend.* 1899).

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B. 1844, Tulle, Corrèze. *Educ.* Tulle; Lyc. Bonaparte and Ec. Norm.-Sup., Paris. D.Sc. (Paris) 1867, and (Cantab.) 1908; Comdr. Leg. Hon. Fr., 1908. *Soc.*—Fr. Acad. Med.; Biol., Acclim. (Pres.), etc. *Late Assist.* Zool. at Nat. Hist. Mus.

Books.—"Animal Colonies and Formation of Organisms," 1881; "Variation"; "Zool. before Darwin," 1888; "Woman in Nature"; "Submarine Exploration"; "Treatise of Zool.," 1890—1900, etc. *Contrib.*—"Instinct," 1904; "Marriage amongst Animals" (*Rev.*

hebdom., 1912); "Life in the Planets" (*La Revue*, 1909); and to *Rev. sci., La Nature, Bull. du Mus.*, etc., on Anat. of Mollusc, Echinoderm, Tachygenesis, Adaptation, etc.

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PERRINE, CHARLES DILLON, Direc. of Nat. Observ., Cordoba, Argentine Republic; For. Assoc. R.A.S., Lond.

B. 1867, Strubenville, O., U.S.A. *Educ.* privately; Lick Observ. D.Sc. (S. Clara Coll.) 1905. *Soc.*—Astron. and Astrophys.; Ger. Astron.; Astron. Pacific.

Contrib. numerous, on nebulae, solar eclipse, etc.

Disc. 6th and 7th satell. of Jupiter: 13 comets; motion in Nova Persei nebula.

PERRONCITO, EDOUARD, Prof. of Parasitol. at Univ., and Prof. of Gen. Path., and late Direc., Roy. Sch. Vet. Med., Turin.

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B. 1847, Viale d'Asti. *Educ.* Asti; Turin. Laureate, (Turin) 1867; Hon. D.Sc. (Modena); Hon. Acad. Counc., Univ. La Plata; Hon. M.D. (Manchester and Vienna); Leg. Hon. Fr.; Crown of Italy; etc. *Soc.*—Dante Alighieri (Pres.); Acad. Med. Italy (P.P.); Roy. Acad. Agric. Italy; Corresp. Inst. Fr.; Hon. Mem. Egypt. Inst.; Biol. Paris; Acad. Med. Fr.; Nat. Agric. Fr.; Roy. Inst. G.B. and I.; Imper. Insts., Dorpat, Kazan, Kharkow; Helminthol. Washington; Zool. Fr. (Hon. Pres.).

Books.—"Human and Animal Parasites," 1882, 1904; "Maladies common to Higher Animal Species," 1886, 1906; "Notes on Insecticides," 1904; "Miner's Dis. at St. Gothard, 1880, and at Simplan, 1907—8," 1909 (Acad. Sci. Fr. Prize); etc.

Identified bovine with human tuberc., 1868, jtlly. with Rivolta; *disc.* cholera microbe, 1878; mortal action of carbon disulphide on human and animal parasites, 1895; Miner's dis.

PERROTT, SAMUEL WRIGHT, Prof. of Civ. Engrng., Univ. Liverpool; Examr. in Civ. Engrng., Univ. Birmingham, Eng.; B.A., M.A.I. (T.C.D.).

PERRY, Sir ALLAN, Princ. Civil Med. Off. and Insp.-Gen. of Hosps., Ceylon; Princ., Ceylon Med. Coll.; Maj. A.M.S. (ret.). Colombo, Ceylon.

M.D. (Dun.) 1902; M.R.C.S. (Eng.) 1884; L.S.A. 1882; D.P.H., R.C.P.S. (Lond.) 1892; Kt. of Grace St. John Jerus. *Soc.*—Fell. Roy. Med.; Ophthalm.; Amer. Trop. Med.

Book.—"Med. Hist. of Boer Prisoners of War in Ceylon."

PERRY, Sir EDWIN COOPER, Supt. and Physician, to Skin Dept., Guy's Hosp.; Lect. on Med. and Dermat., Guy's Hosp. Med. Sch.

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M.A. 1883, M.D. 1888 (Cantab.); F.R.C.P. (Lond.) 1894; M.R.C.S. (Eng.) 1885. *Late Mem. Sen. Univ. Lond.*, 1900—05; Lect. Mat. Med. and Demonstr. Morb. Anat., Guy's Hosp. Med. Sch.; Examr. Mat. Med. and Pharmacol., Lond. Univ.; Examr. in Mcd. and Mat. Med., Conj. Bd.; Mem. Army Qual. Bd.;

Mem. Advis. Bd. for A.M.S. and Chairman Army Hosps. Comm.; Fell. King's Coll., Cambridge, 1880—87; Assist. Demonstr. of Anat., Cam. Med. Sch., 1884—85; Addit. Examr. in Med., Cam. Univ.; House Surg. and H.P., Lond. Hosp., 1886—87.

Publics.—"Malignant Dis. of Stomach" (with Shaw) (*Guy's Hosp. Repts.*, 1891); "Dis. of Duodenum" (*ib.*, 1893); "Malignant Dis. of Stomach" (*ib.*, 1904).

PERRY, JOHN, F.R.S.; Prof. of Mechs. and Maths., Imper. Coll. of Sci. and Technol., S. Kensington, London, S.W.

B. 1851. *Educ.* Belfast. D.Sc.; LL.D. Soc.—M.I.E.E. (P.P.); Phys. Lond. (P.P.). *Late* Prof. of Engrng., Tokyo.

Books.—"Steam Engine"; "Spinning Tops"; "App. Mechs."; "Pract. Maths."

PERTHES, G., Prof. of Surg., Tübingen Univ., Ger.

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Books.—Treatise on Obstet.; Treatise on Obstet. and Gynaec.; *late* Ed. for 7 years of "Ginecologia." *Contrib.*—"Anat. of Gravid and Parturient Uterus," 1890; "Sarcoma of Uterus," 1895; "Etiol. of Eclampsia," 1896; First Descrip. of Pulmonary Metastasis following Mola Hydatigena, 1891.

PETAVAL, JOSEPH ERNEST, F.R.S.; Prof. of Engrng. and Direc. of Whitworth Labs., Manchester Univ.; Mem. of Advis. Comm. for Aeronautics.

B. 1873, London. *Educ.* Univ. Coll., London; Research in Roy. Inst. and Davy-Faraday Lab., 1896—98; Harling Fell. Owens Coll., Manchester, 1900—03. D.Sc.; A.M. Inst. C.E.; A.M. Inst. E.E. *Late* Sci. Manager, Low Temperature Exhibit of Brit. Roy. Comm., St. Louis Exhib., 1904.

Contrib.—Various, to *Phil. Trans.*, *Phil. Mag.*, *Engrng.*, etc.

PETER, ALBERT, Geh. Reg. Rat; Prof. of Bot., and Direc. of Gardens and Herbarium, Göttingen Univ., Ger.; Mem. Leop. Carol. Acad. Untere Karspüle 2, Göttingen, Ger.

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38, Percival St., Dorchester, Mass., U.S.A. B. 1849, Dorchester. *Educ.* Freiburg Mining Sch.; Harvard Univ. M.D. (Harv.).

Books.—"Modern Copper Smelting"; "Principles of Copper Smelting"; "Pract. of Copper Smelting"; "Pyrite Smelting." *Contrib.*—Numerous.

PETERS, KARL, Geog.; 1884 Imper. High Ger. Comm.

47, Castelnau, Barnes, London, S.W.

B. 1856, Neuhaus a. Elbe, Ger. *Educ.* Ifeld; Univs. Göttingen, Tübingen, Berlin, London. Ph.D. (Leip.) Gold Medal (Ber.). Soc.—Hon. Mem. Roy. Geog. Manchester,

Leipzig, Rome; Hon. Mem. Africand Itay, Naples; etc.

Books.—"England and the English" (Eng. and Ger.); "The Eldorado of the Ancients" (Eng. and Ger.); "New Light on Dark Africa" (pub. in 9 languages); "King Solomon's Golden Ophir" (Ger. and Eng.); "World of the Will and Will of the World"; "Ger. E. African Protectorate"; "Peace of Venice, 1178"; "The Making of Ger. E. Africa"; "Sun and Soul"; "Ophir according to Latest Researches"; "World Politics"; "How Ger. E. Africa was Made"; "Misuse of Offic. Power." *Contrib.*—Numerous.

Founder of Ger. E. Africa; Explor. at Tana River from mouth to source, 1889—90; Explor. of biblical Ophir, 1899—1901, 1905—06, 1909—11; First geol. map of Ger. E. Africa.

PETERS, T., Ord. Prof. of Ophthalm., Rostock Univ., Ger.

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B. 1860, Fyn, Denmark. Ph.D. (Copenhagen) 1888. *Late* Assist. Sci., Zool. Museum. Copenhagen, 1885—89.

Public.—Reports of Biol. Station, 1891—1912.

Age of fishes by measurement; Classif. and protec. of fishes; Breeding of common eel; Quant. valuation of animals in sea.

PETERSEN, JULIUS, Prof. of Chem., Copenhagen Univ., Denmark.

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B. 1865, Odense. Ph.D.

Books.—"Electrol. of Org. Acids and Alkali Salts," 2nd edn.; "Methods of Quant. Anal.," "School Chem.," "Electrol. and Anal. Methods."

PETERSEN, O. G., Fell. Danish Acad. Sci.; Prof. of Bot., Vet. High Sch., Copenhagen, Denmark; Hon. LL.D. (St. And.) 1912.

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Books.—"Amer. Textb. of Nervous and Mental Dis." jtly., 7th edn., 1911; "Amer. Textb. of Legal Med. and Toxicol.," jtly., 2 vols., 1904; Ed. "Hoffman's Hand Atlas of Legal Med."

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Book.—Ed. "Peterson's Obstet." 1907. *Contrib.*—"Anastomosis of ureters with intestine" (*Trans. Amer. Gynaec. Soc.*, 1900); "Peripheral nerve transplant." (*Amer. J. Med. Sci.*, 1899); "Cancer of uterus and its cure by radical abdominal operation" (*Surg. Gynaec. and Obstet.*, 1911); "Vaginal cesarean sections

in treatm. of Eclampsia" (*Amer. J. Obstet.*, 1911).

PETHYBRIDGE, GEORGE HERBERT, Econ. Botanist, Dept. of Agric. and Tech. Instruction, Dublin

B. 1871, Cornwall, Eng. *Educ. Univ. Coll.* of Wales, Aberystwyth; Göttingen Univ. *B.Sc.* (Lond.); *M.A.*, *Ph.D.* (Gött.). *Soc.*—Roy. Irish Acad.; Roy. Dub.

Contrib.—Various on Phytopath., etc.

PETIT, H., Prof. of Histol., Poitiers Univ., Fr.

PETKOV, ST., Prof. of Bot., Sofia Univ., Bulgaria.

PETOT, ALBERT, Prof. of Gen. Mech., Univ. Lille, Fr.

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B. 1868, Halmstad, Sweden. *Educ. Lund Univ.*; Paris; Strassburg. *M.D.* (Lund) 1897. *Soc.*—Corresp. Mem., Internal Med., Vienna; Roy. Acad. Med. Budapest; Med., Paris and Finland. *Late Prof. Pract. Med.*, Upsala, 1902—10.

Contrib.—About 60 on Neurol. and Path. and Normal Anat. of Central Nerv. Syst., and Physiol. Chem. in Swed., Eng., Ger., and French J.

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B. 1853, Charlton, S.E. *Educ. Privately.* Hon. D.C.L. (Oxon.) 1892; Hon. LL.D. (Edin.) 1896, (Aber.) 1906; Hon. Litt.D. (Cantab.) 1901; Hon. Ph.D. (Strass.) 1897; Medals:—Drexel, Philadelphia; Huxley, Roy. Soc. Anthropol. Lond. *Soc.*—*F.B.A.*; Hon. *F.S.A.* (Scot.); *A.R.I.B.A.*; *M.R.I.A.*; Mem. Ger. Archaeol. Inst.; Corresp. Mem. Anthropol. Berlin; Ital. Anthropol.; Rom. Anthropol.; Northern Antiq.; *Amer. Phil.*; Fell. Roy. Anthropol. Inst.

Books.—"Hist. of Egypt"; "Methods and Aims in Archaeol."; "Researches in Sinai," etc. *Arts.* in *Encyc. Brit.*, "Hastings Dict. of Bible," and "Dict. of Religion."

Classific. of pre-hist. ages of Egypt; Connection of all ages of pre-hist. Greece with Egypt; Systematic order of civilisations.

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B. 1868, Belgrade. *Educ. Normal Sch.* and Univ. Paris. *D.Sc.* (Paris) 1894. *Soc.*—Roy. Acad. Belgrade; *S. Slav. Acad.*, Agram.; *Fr. Math.*; *Fr. Phys.*; *Math. Palermo*; *Ger. Math.*; *Roy. Bohem. Sci.*, Prague; *Rouman. Sci.*, Bucharest.

Books.—"Math. Phenomenology," 1911; "Mech. of Phenomena founded on Analogy." *Contrib.*—70 on Theory of Functions, Differential Eq., etc.; "Hydraulic Apparatus for Integration of Differential Eq." to *Amer. J. Math.*, 1900; Telemeter Brevet, France, 1910.

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Peabody Museum, Yale Univ., New Haven, Conn., U.S.A.

B. 1875, Pliskii, Russia. *Educ. Univs.* of Moscow and Freiburg. Diploma (Mos.) 1898;

Ph.D. (Freib.) 1901. *Soc.*—*Ger. Zool.* (Life Mem.); *Amer. Assoc. Adv. Sci.*; *N.Y. Acad. Sci.*; *Amer. Zool.*; *Amer. Nat.*; *Entom.*; *Nat. Geog.*; *Late Priv.-doz.*, Freiburg Univ., 1902—04; *Authorised Lect.*, Harv. Univ., 1904—05; *Acting Prof. Indiana Univ.*, 1906.

Books.—"Reflections on Heredity," 1903; "Free Will, a Study in Materialism," 1905. *Contrib.*—"Studies in Adaptation, I. Sense of Sight in Spiders" (*J. Exper. Zool.*, 1907); "Synonymic Index Cat. of N.C. and S. Amer. Spiders" (*Bull. Amer. Mus. Nat. Hist.*, 1911).

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B. 1848, Gothenburg. *Late Prof. of Chem.*, Univ. Stockholm.

Book.—"Relat. of Atlantic Currents to Met. and Biol. Phenomena." *Contrib.*—"Relat. betw. hydrog. and biol." (*Met. Zsch. Wien*, 1896).

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Books.—"Diagnostic of Uterine Dis.," "Researches (secretory function) on Surrenal Capsules"; "Researches (secretory rôle) on plexus choroides."

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B. 1854, Berlin. *Educ. Friedrichs Gymn.* and Univ. Berlin. *Ph.D.* (Halle) 1877; Prof. (Hamburg) 1900.

Books.—"Mexican Land- and Freshwater Molluscs," 1873—81, jty. with Hrebil; "Cephalopoda of Plankton Exped.: a monogr. of Oegopsid Ceph.," 1912. *Arts.* in Repts. of several Expedns. *Contrib.*—Numerous.

PFFEFFER, WILHELM, Geh.-Rat; *F.M.R.S.*; Ord. Prof. of Botany, Leipzig Univ., Ger.

B. 1845, Grebenstein. *Ph.D.*; *Dr. rer. nat.* (Tüb.); *M.D.* (Halle and Königsberg); *D.Sc.* (Cantab.); *Kt. Prussian O.M.*; Mem. of Acad. Sci. of Berlin, Munich, Paris, Vienna, London, Petersburg, Rome, Stockholm, Copenh., Brussels, N.Y., etc.

Books.—"Bryogeo. Studies of Rhatian

- Alps," 1869; "Origin of Selaginella," 1871; "Periodic Stimulus of Leaf Organs," 1875; "Osmotic Exper.," 1877; "Plant Physiol.," 2 vols., 1881, 1897—1904; "Bot. Expts. at Tübingen," 1881—88; "Oxidation Processes in Living Cells," 1889; "Plasma and Vacuoli," 1890; "Energy of Plants," 1892; "Modes of Work and Growth in Plants," 1893; "Movements in Sleep of Plants," 1911. *Contrib.*—Numerous; Ed. *Jahrb. f. Wiss. Bot.*
- PFEIFFER, HERMANN**, Extraord. Prof., since 1910, of Forensic Med., Univ. Graz. Hilingasse 6, Graz, Austria.
B. 1877, Vienna. M.D. (Vienna) 1902.
Books.—"Intro. to Forensic Med.," 1907; "Problem of Albumen Anaphylaxy," 1910. *Contrib.*—Numerous on Burns, Uraemia, Tetanus, Photodynamics, and applic. of serum methods in forensic med.
- PFEIFFER, LUDWIG**, Ord. Prof. of Hyg., Direc. of Hyg. Inst., Univ. Rostock, Ger.
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B. 1881, Waiblingen. *Educ.* Sch. Cannstadt; Tech. Hochsch. Stuttgart. Dr. Ing. 1906.
Books.—"Dynamics of Machine Escapes," 1906; "Calc. of Curved Girders," 1907.
Pats. for airpumps and compressors.
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Books.—"South Sea Is.," 1901; "Dispersion" in Kayser's "Handbk. d. Spectros." *Contrib.* to *Ann. d. Phys., Phys. Z.*, etc.
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Books.—"Instruc. in Bot. through Life Habits of Plants"; "Plant Garden"; etc.
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B. 1876, Galesburg, Ill. B.S. (M.I.T.). *Soc.*—Amer. C.E.; Amer. Chem.; Amer. Pub. Health Assoc.; Amer. Bact.; Amer. Assoc.; Amer. Munic. Improvem.; Boston C.E.; etc.
Contrib.—Numerous, on water and sewage. Develop. hypochlorite treatm. for sewage.
- PHEPPEPLACE, THURSTON MASON**, Assist. Prof. of Mech. Engrng., Brown Univ., Providence, R.I., U.S.A.
B. 1877, Providence, R.I. *Educ.* Pub. Schs., English and Class. Sch., Providence; Univ. Brown, Columbia. Ph.B. 1899, M.E. 1901 (Brown); A.M. (Columbia) 1908. *Soc.*—Amer. M.E.; S.P.F.E.; Amer. Prom. Ind. Educ.; Providence Assoc. Mech. Engrns. (Pres. 1911—13).
Contrib.—"Offsetting cylinders in single acting engines" (*Trans. Amer. Soc. Mech. E.*, 1909); "Comparison of vibration in 2 and 4 cycle engines" (*Horseless Age*, 1908).
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Books.—"Romance of Modern Chem.," 1909; "Phys. Chem. and its Bearing on Biol.," 1910. *Arts.*—Various, in new edn. of Thorpe's "Dict. of App. Chem." *Contrib.*—"Dielec. Process in Fluid Mixtures" (*Z. f. Phys. Chem.*, 1897); "Freezing Point Curves for Binary Mixtures" (*J. Chem. Soc.*, 1903); "Influence of Sodium Salts on Solubility of Sparingly Soluble Acids" (*Ib.*, 1905); "Question of Hydrates in Solution" (*Ib.*, 1907).
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Books.—"Pulmon. Tuberc.," 1891; "Pub. Aspects of Prev. of Tuberc.," 3rd edn., 1910. *Art.*—"Pulmon. Tuberc." in "Encyc. Med.," 1901; "Dis. of Lungs" in "Gibson's Textb. of Med.," 1901; "Phthisis" in "Index of Treatm.," 1907.
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Books.—"Peloponnesus," 1892; "Thessaly and Epirus," 1897; "Isles of Greece," 1901; "Mediterranean Sea," 2nd edn., 1907; "Europe," 2nd edn., 1906.
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Books.—"Path. Relations of Absorbent

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Contrib.—"Action of a magnetic field on elec. discharge in gases" (*Phil. Trans.*); etc.

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Contrib.—"Review of Parthenogen" (*Proc. Amer. Phil. Soc.*, 1903); "Struct. of Compound Eye of Honey-Bee" (*Proc. Acad. Nat. Sci.*, 1904); Numerous *Bulls.*, U.S. Dept. of Agric.

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Books.—"Outlines of Dis. of Women," 4th edn. *Arts.*—"Dis. of Pregnancy," "Encyc. Med.," "Plastic Operations in Gynaec.," "Syst. of Gynaec." (Allbutt and Playfair); "Vaginal Operations," "Syst. of Surgery" (Burghard).

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Book.—"Dynamo Construction."

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Books, etc.—Numerous on Psych. and Neurol. since 1875.

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Book.—"Theory of Elem. Trigonom." *Contrib.* to *Proc. Edin. Math. Soc.*, *Math. Gaz.*

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Books.—"Prev. of Dent. Caries and Oral Sepsis"; "Stomatology." *Arts.* in Bennet's "System of Dental Surg." *Contrib.*—"Med. Aspects of Dentistry" (*Brit. Med. J.*, 1909); "Method of Treating Fractures of Mandible" (*ib.*, 1909); "Radicular Aberrations" (*Proc. Roy. Soc. Med.*, 1909); "Double resect. of Mandible" (*Dent. Cosmos*, 1912).

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Books.—"Elements of Phys. Manipulation"; 60 vols. "Annals of Harvard Observ.," 174 Harv. Obs. Circulars. *Contrib.*—Numerous on Photometry of Stars, Classific. of Variable Stars and Stellar Spectra, Telephone Receiver (1870), etc.

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Books.—Numerous. *Contrib.*—About 200.

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Books.—"Walking Guide Mt. Washington Range"; "The Moon"; "Hawaiian Phys. Features"; Annals Harvard Observ., vols. 32, 51, 53, 61. *Arts.*—"Comets," "Constellations," in *Encyc. Amer. Contrib.* about 200.

Explanation of different planes of rotation of planets; *disc.* 9th and 10th satellites of Saturn; *determ.* of period of rotation Jupiter's 1st satellite; *disc.* of lakes in large numbers on Mars; etc.

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Book.—"Studies in Space Perception," 1901. *Art.*—"Subconscious" in "Garman Memorial Vol.," 1906.

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Books.—"Evol. of Memory"; "Physiol. Problem of Sleep"; "Technique of Exper. Psychol.," with E. Toulouse. *Contrib.*—"Probl. of Instinct" (*Rev. phil.*, 1908); "Autotomy" (*Bull. Sci.*, 1908); "Psychophys. of Actinia equina" (*Bull. Inst. psychol.*, 1907); "Greatness and decadence of N Rays" (*Ann. Psychol.*, 1907).

Hypnotoxins; Loss of Memory in Man and Animals.

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B.S. (Worcester) 1886; Ph.D. (Vienna) 1894.

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Books.—"Descrip. Cat. of Econ. Miner. of N.S. *Contrib.*—Numerous in *Trans. N.S. Inst. Sci., J. Min. Soc. N.S.*

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Books.—"Human Monstrosities" (with Hirst); "Normal Histol.," "Human Anat." *Contrib.*—Various, on Anat., Histol., and Embryol.

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Contrib.—"Gen. Phenomena of spinal shock" (*Amer. J. Physiol.*, 1909); "Effects of stimulation and extirpation of labyrinth of ear" (*Phil. Trans.*, 1912); "Gen. conds. of spinal vasomotors in spinal shock" (*Q.J. Exper. Physiol.*, 1913); "Mech. of Nystoginus" (*XVII. Int. Cong. Med.*, 1913).

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Books.—"Attention" in Fr. 1906, Eng. 1908, Span. 1910; "Psych. of Reasoning," 1910; "Essentials of Psych.," 1911. *Arts.* on Memory, Association, etc., to *Encyc. of Educ. Contrib.*—"Apperception" (*Amer. J. Psych.*, 1887); "Attention wanes as measure of fatigue" (*ib.*, 1903); "Meth. of meas. intensity of sound" (*Psych. Rev.*, Mon. Supp., No. 53).

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Contrib.—"Evolution Technique and Value of Serum Test in Syph." (*Med. Rev.*, 1909).

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D.Sc. *Soc.*—Acad. Bologna; Lombard Inst., etc.

Books.—"Distrib. Concurrence," 1901; "Complém. Algebra," 2 vols. 1906, 1908.

Art.—"Functional Eqns." in *Encyc. d. math. Wiss.* *Contrib.*—"Functional Calculus" (*Math. Annalen*, 1897); "Determin. Functions" (*Ann. Ec. Norm. Paris*, 1905; "Inversion of def. Integ." (*Soc. XL. Rome*, 1907); etc.

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Books.—"Contemporary Problems of Chem. and Phil."; "Fundamental Conceptions of Chem."; "Treatise of Inorg., Org. and App. Chem. *Contrib.*—"Separation of Ni and Co" (*Comptes Rend. Paris*); "Sep. of Co and Al" (*ib.*); "New reaction of potassium" (*Phys. Chem. Centr.*); "Colour reactns. of org. acids" (*Chem. News*, 1899).

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Books.—"Flora of Wash."; "Flora of Palouse Region." *Contrib.*—Flora of Mt. Rainier; New and noteworthy Northwestern plants; New species of Wash. plants; Injurious insects of Wash.; etc.

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Books.—"Muscle Contraction," 1911; "Electrophysiol. of Human Muscles," 1912. *Contrib.*—"Adapt. to Dark" (*Zeit. f. Sinnes-Physiol.*, 1903); "Tetanus" (*Arch. f. ges. Physiol.*, 1907); "Retina and Acoustic Currents" (*Arch. f. Physiol.*, 1911); "Heart Blood-pressure" (*ib.*, 1912).

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Books.—"Serum Dis.," 1905; "Clin. Studies on Vaccination," 1907; "Allergie," 1910. *Contrib.*—"Theory of Incubation Time," 1903; "Cutaneous Tuberculin Reaction," 1907.

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Books.—"Rocks and Rock Minerals," 1908; "Contrib. to Miner. and Petrog." (with S. L. Penfield), 1901. *Assoc. Ed. Amer. J. of Sci.*, since 1899; Assist. Ed. "Internat. Dict." *Contrib.*—"Igneous Rocks of (1) Highwood Mountains, Mont." (*Bull.* 237, U.S. Geol. Survey); (2) "Castle Mount, Mont." (*Bull.* 139, *ib.*, 1896); (3) "Bearpaw Mountains" (*Amer. J. Sci.*, 1896); (4) "Little Belt Mountains" (*Ann. Rept. U.S. Geol. Surv.*, Part 3, 1900).

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Art. on "Cranes" in *Encyc. Brit.*

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Books.—"Paludism in Spain," 1903; "Filarias of Dog," 1903; "Rept. of Comm. to Gulf of Guinea," 1911. *Contrib.* on parthogen. of macrogametes of Laverania, 1903; Cellular struc. of embryos of Filaria, 1903; Infantile Kala-azar in Spain, 1912.

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Books.—"Mineral Resources of N.S.W.," 1901; "Coal Resources of N.S.W.," 1912. *Contrib.* on artesian water supply of Australia.

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Books.—"Math. Principles for Criticism of Exptl. Results," 1892; "Treatise on Theor. Geod.," 1905; "Higher Geod." in "Encyc. d. Math. Wiss." *Contrib.* to Acads. Lincei and Turin, Circ. Math. Palermo, on Theory of Least Squares, Differential Geom., Mechan. Theory of Figure of Planet.

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Books and *Contrib.*—Numerous on Bot., Horticult., and Mat. Med.

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Contrib.—"Star image in spectrograph work" (*Astrophys. J.*, 1907—1908); "Slit width and errors of measurement in radial velocity determ." (*J. Roy. Astron. Soc. Can.*, 1910); "Ottawa spectrograph" (*ib.*, 1909); "Probable errors of radial velocity determ." (*Astrophys. J.*, 1910).

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Book.—"Principles of Selection and Problems in Formation of Species," 3rd edn., 1908. *Contrib.*—Numerous.

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Arts. in "Encyc. d. mikros. Technik." *Contrib.* to *Procs. Roy. Soc.*, *Repts. of Sleeping Sickness Comm.*, *Procs. Zool. Soc.*, *Nature*, *Lancet*, *Centralbl. f. Bakt., J. Path. and Bact.*, etc.

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Contrib.—Numerous to Astron. J.

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Book.—"Architecture of Dublin," 1908. *Contrib.*—"Tech. Educ." (*Hibernia*, 1882); "Mus. of Sci. and Art" (*ib.*); and on Irish Forestry, Reclamation of Waste Lands, etc., 1882—83.

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Contrib.—"Equilib. of an elastic cylinder"; "Problem of freedom of will"; and to *Crelle's J.*, *Math. Ann.*, etc.

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Books.—"Partial Diff. Eqn. $\Delta u + K^2u = 0$," 1891; "Textb. of Crystal Optics," 1905. *Arts.*—"Capillarity," "Diffraction," "Piezo and Pyro-elec.," in Winkelmann's

Handb. of Phys.; "Accidental Double Refractn." in *Handwörterb. d. Naturwiss.*

Inr.—Optical Electrometer, 1897.

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Contrib.—Various to *Phil. Mag.*, *Proc. Camb. Phil. Soc.*, *Proc. Roy. Soc.*, since 1895.

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Contrib.—Cause of strangles in horses; Septic pleuro-pneumonia of calves; Dis. of Swine and Mortality amongst calves in Holland.

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Books.—"Dependence Theory"; "Ice Age"; "Persia"; "Diluv. Mammals." *Contrib.*—"Fossil Elephants," Leopoldina, 1888—93; "Fossil Cervidae," Palaeontographica, 1891; "Elephants Hole, Sicily," Acad. Munich, 1891.

Org. world the consequence of geol. development.

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Contrib.—"Treatment of Calculous Obstruc. of Common Bile Duct" (*Practitioner*, 1898); "Cyst of Pancreas treated by Incision and Drainage" (*Brit. Med. J.*, 1899); "Infective Causation and Mode of Healing of Empyema of Thoracic Cavity" (*Clin. J.*, 1901); "Carcinoma of Colon and Treatment by Colectomy" (*Brit. Med. J.*, 1904).

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Contrib.—"Mech. of root curvature" (*Bot. Gaz.*, 1900); "Variations in pollen grain of *Picea*" (*Amer. Nat.*, 1906); "Physiol. variations of plants and their gen. signif." (*Science*, 1907); "Soil biol.—an optimum culture medium for soil fungus" (in press).

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Book.—"Pract. Spectrog. Anal." (in press). *Contrib.*—"Volume of Saline Solutions" (*Proc. Roy. Soc. Edin.*, 1885); "Refractory Gold Ores" (*J. Soc. Chem. Indus.*, 1889); "A new Thermo-Chem. Notation" (*Proc. Roy. Dub. Soc.*, 1901); "Spark Spectra of Elements" (*ib.*, 1907).

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Books.—"Actinomyc. in Man," 1882; "Bright's Dis." *Contrib.*—"Recreation of Life" (*Virchow's Arch.*); "Free haemoglobin in blood" (*Berl. Klin. Woch.*); etc.

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Contrib.—"Orbit of Comet 1900 II." (*Astron. J.*, 1903); "Charles Young" (*Pop. Astron.*,

1908); "Orbit of Minor Planet 1909 H.F." (*Astron. J.*, 1910).

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Contrib. on optical activity due to asymm. atoms; relat. between cryst. form. and chem. const.; etc.

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Books.—"Galeopsis of Austria," 1903; "Slit Aperture Appar. in Phylogeny," 1905; "Phylogen. Explanat. of Embryo-sacs of Angiosperms," 1907. *Arts.* on Flower Biol. in Linsbauer's Bot. Dic. *Contrib.*—"Orchidaceae and Araceae in Wettstein's S. Brazil Exped., 1901" (*Denkschr. Wien. Akad.*, 1906, 1911); "Histol. of Flower biol." (*Ost. Bot. Zsch.*, 1905—6).

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Contrib. on Arctic Sci., princ. on Arctic Bot.

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Contrib.—"Note on Suction Producer Plants" (*J. Inst. E.E.*, 1907); "Theory and Pract. of Suction Gas Producers" (*Irish Engng. Rev.*, 1907).

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Contrib.—Numerous on Parasitic Protozoa and Morphol. of Bacteria, Bee Disease, etc.

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Expert Agent, 10th U.S. Census on Water Power Investig., 1880—83.

Rept. upon Sanit. Inspec. of certain Tenement House Districts of Boston. *Contrib.* to Repts. upon Water Power (10th. U.S. Census, vols. 16 and 17); "Water Power Streams of Maine" (19th Ann. Rept., U.S. Geol. Survey).

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Book.—"Coals of Can.;" Dept. of Min. of Can. *Contrib.*—"Iron Ores of Ala.," (*J. Amer. Inst. Min. E.*, 1884); "Educ. of Min. Engngs." (*J. Can. Min. Inst.*, 1906); "Educ. in Relation to Mining" (*Brit. Assoc.*, 1905), and numerous on Mech. Prep. of Ores and Coal.

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Books.—"Text-bk. Plant Palaeont.," 2nd edn. in press; "Flora of N. and C. Germany," 5th edn., 1910; "Morphol. of Plants," 1903, 2nd edn., 1912; "Origin of Coal," 5th edn., 1910.

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Books.—"Elem. Text-bk. of Agric. Bot.;" Trans. and Ed. of Warming's "Handbk. Syst. Bot." *Contrib.*—Numerous on Phytopathol. to Roy. Soc., *Annals of Bot., J. Bd. of Agric.*

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Book.—"Therap., Mat. Med. and Pharm.," 12th edn.; "Compend. of Anat.," 7th edn.; "Compend. of Mat. Med., Therap. and Prescription Writing," 7th edn.

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Books.—"Pocket-Book for Miners and Metall.;" "Coal Fields and Collieries of Australia." *Contrib.*—"Phosphate Deposits of Ocean and Pleasant Islands" (*Trans. Austr. Inst. Min. Engrs.*, 1904); "Mineral resources of New Caledonia" (*Trans. Austr. Inst. Min. and Metall.*, 1900); "Receptacles for valuable mineral deposits" (*Trans. Austr. Inst. Min. Engrs.*, 1897); "Terms used in Min. Geol." (*ib.*, 1895).

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Book.—"Orbit of Saturn's 7th sat. Hyperion," 1909.

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Books.—"Memoirs and Memoranda," 1894; "Bot. Notes and Papers," 1901; "Bengal Plants," 2 vols., 1903; "Noviciae Indiae," 1905; "Contrib. to Indian Bot.," 1906.

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Books.—"Invert. Zool.," 1901; "Verteb. Zool.," 1905. *Contrib.*—"Struct. and Life Hist. of Appendiculate Distomes" (*Zool. Jahrb.*, 1897); "Embryol. of Melophogus" (*J. Boston Soc. Nat. Hist.*, 1900); "Four Distomes" ("Mark Anniversary Vol.," 1903); "Monocotyle Florida" (Pub. 133, Carn. Inst., 1910).

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Book.—"Pneumonia and Pneumococcus Infections," *Contrib.*—Numerous.

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Books.—"Text-bks. on Teleg. and Teleph." *Contrib.*—145 papers, in *Proc. Roy. Soc.*; *Roy. Soc. Arts*; *Insts. C.E. and E.E.*; *Brit. Assoc.*

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Book.—"Textb. of Bact." *Contrib.*—"Anat. of dipth. paralysis" (*Deut. Zsch. f. Nervenheilk.*, VI.); "Histol. of case of pseudohypertrophy of muscle" (*Arch. f. Psychiat.*, XX.); "Expts. on virulence, etc., of anthrax B." (*Cbl. f. Bact.*, vols. 35, 49, 58).

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Books.—Transl. Effront's "Enzymes and their Appliens"; "Elem. of Water Bactg. (jty.); "Science and Expt. in the Cannn," Industry." *Arts.* on Brewing, Vinegar making, and Alcohol in *Cyc. Amer. Agric. Contrib.*—"Teaching of microbiol. in Amer." (*Science*); "Determ. of number of body cells in milk by a direct method," jty. (*J. Infect. Dis.*), etc.

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Book.—"Burial in Amer. and N. Asia,"

1895; "Nayarite Exped., Vol. I., Indian Religion in Texts," 1912. *Arts. in Hastings' "Encyc. Relig. and Ethics."* *Contrib.*—"Fire-gods in Mexican Relig." (*Mitt. d. Anthrop. Ges., Vienna*, 1904); "Phallic Demons in Old Mexican Dramas" (*Arch. f. Anthrop.*, 1904); "Origin of Relig. and Art" (*Globus*, 1904—05); "Influence of Nature on Relig. in Mexico and U.S." (*Z. f. Ges. f. Erdk.*, 1905).

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Books.—Ed. "Ann. Repts. on Animal Chem.," vols. 9—12; "Outlines of Chem.," with Graham; "Outlines of Mineral Chem.," with Doelter. *Contrib.*—Numerous to *Sitz.-ber. Akad. Wien, Ber. Deut. Chem. Ges.*, etc.

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Contrib.—"Mech. of carbon assimilation in green plants," jty. (*Proc. Roy. Soc.*); "Elec. in relation to Agric." (*J. Board of Agric.*); etc.

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Books.—"Principles of Wool Combing," 1904; "Worst Spinning," 1906; "Woollen Spinning," 1908. *Contrib.*—"Sumach Adulterants" (*Collegium Frankfurt*, 1905); "Skin Wool" (*Yorks. Observ.*, 1909); "Elec. in Wool" (*Bull.*, Boston, U.S.A., 1910); "Kemps in Wool" (*ib.*, 1911).

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Art.—"Tuberc. Dis. of Bones and Joints," in "Amer. Prac. of Surg." *Contrib.*—"Partial Resection of Bladder by Transperitoneal Route" (*Annals of Surg.*, 1909); "Choriocarcinoma" (*ib.*, 1910); "Compression of Spinal Cord causing Paraplegia" (*J. Amer. Med. Assoc.*, 1910); "Malignant Dis. of Neck" (*Can. Med. Assoc. J.*, 1911).

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Repts. on Canadian Fisheries, 1895—1911; Internat. Rept. Canadian and U.S. Boundary Fisheries, 1912. Art.—"Fisheries of Canada," Appleton's *Encyc. Amer. Contrib.*—"Life Hist. of Brit. Food Fishes" (jty.) (*Trans. Roy. Soc., Edin.*, 1886); "St. Andrews Mar. Lab." (*Eng. Illus. Mag.*); "Flat Fishes," "Neptune's Nursery," "Mussel Culture," etc. (*Nat. Observ., Lond.*, 1892—95).

Teleostean Fishes; Paired Fins of Fishes.

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Books.—"Nature of Mind and Human Automatism," 1885; "Dissociation of a Personality," 1906. *Arts.*—"Thought Transference or Telepathy" in Wood's "Ref. Handbk. of Med. Sci.," 1892; "Sexual Psychoses," "Traumatic Neuroses" in "Amer. Syst. Pract. Med.," 1898; "Dis. of Spinal Cord," "Nerv. Dis. by Amer. Authors," 1895. *Contrib.*—"Physiol. Heart Murmurs" (*Med. Record*, 1889); "Connect. between Mind and Brain" (*Brain*, 1891); "Educ. Treatment of Neurosthenia and certain Hyster. States" (*Boston Med. and Surg. J.*, 1898); "Course of Sensory Fibres in Spinal Cord" (*J. Nerv. and Mental Dis.*, 1905).

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Books.—"Some Electrochem. Centres," 1908;

"Lab. Ex. in Phys. Chem.," 1911. *Contrib.*—
"Direct union of carbon and hydrogen at high
temp." (*Trans. Chem. Soc.*, 1910); "Exam.
of atmosphere at various altitudes for oxides of
nitrogen and ozone" (*Ib.*, 1910); "Methane
equilibrium" (*Ib.*, 1912); "Ionizn. produced
by carbon at high temp." (*Phil. Mag.*, 1912).

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Contrib. on miner. and petrog., mainly to
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Book.—"Handbk. of Dis. of Ear," 3rd edn.,
1896. *Contrib.*—"Organ of Corti in Mam-
mals" (*Proc. Roy. Soc.*, 1876); "Termination
of Nerves in Vestibule and Semicircular Canals"
(*Q.J. Micros. Soc.*, 1876); "Develop. of Organ
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"Cochlea of Ornithorhynchus Platypus" (*Phil.
Trans.*, 1880).

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Books.—"Text-bk. of Tanning"; "Leather-
Indust. Lab. Book"; "Principles of Leather
Manuf." *Art.*—"Aurora," in *Encyc. Brit.*,

9th edn.; "Leather," in "Thorpe's Dict.";
Cantor Lect. on Leather Manuf., Soc. of Arts,
1899; "Rept. on Colloid Chem.," Brit. Assoc.,
1908. *Contrib.*—Many in *J. Soc. Chem. Ind.*,
on Chem. of Leather Manuf., Colloidal Chem.,
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Atlas of U.S., No. 109" (with J. W. Beede),
1904; "Revised Nomencl. of O. Geol. Forma-
tions," 1905; "Devon. and Miss. formations
of N.E. Ohio," 1912. *Contrib.*—"Revised
Classific. of Up. Paleozoic Formations of Kan."
(*J. Geol.*, 1902); "Sunbury Shales of O." (*Ib.*,
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2nd edn. 1912. *Art.*—"Investig. of Life in
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Contrib.—"Ciliary movements" (*Ergebn. d.*
Physiol., 22).

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"Flora of Surinam" (*Rec. d. trav. bot. néerland.*
1908, 1910, 1912); "Flora of Dutch New
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1873; "Geol. Survey of Mo.," jtl., 1873;
"Explor. in Turkestan," jtl., 1905; "Explor.
in Turkestan, Prehist. Civilizations of Anan,
Origins, Growth and Environment," 1908;
"Miner. Indust. of U.S.," Vol. XV., 10th
Census, 1886; "Geol. of Green Mountains,"
jtl., 1894; "Filtering Capacity of Soils,"
U.S. Bd. of Health, 1881. *Contrib.*—"Paragen.
and deriv. of copper and its associates on
Lake Superior" (*Amer. J. Sci.*, 1871); "Meta-
somatic developm. of copper-bearing rocks of
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1878); "Relation of secular rock disinteg.
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Amer., 1891).

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Book.—"Mendelism." *Contrib.*—Numerous
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Art.—"Araneae" in Schultz's *Travels in*
W. and C. S. Africa, 1908. *Contrib.*—"Struc.
of Eye of Phalangid" (*Zeit. wiss. Zool.*, 1894);
"Anat. of Opisthop. cinctipes, Parc., with
notes on other Onychophora" (*Ann. S.A. Mus.*,
1900); "Develop. and origin of respirat. organs
and phylogeny of tracheae in Araneae" (*Q.J.*
Micro. Sci., 1909—10).

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Late Demonstr. Chem., Roy. Coll. Sci., 1875—
78; Sci. Master, High Sch., Newcastle, Staffs.,
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Contrib. on Stereo-Chem. to *J. Chem. Soc.*,
1881—1910.

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Book.—"Bull. IV., Ill. Geol. Surv." *Con-
trib.*—"Pyro-Phys. and Chem. Changes in
Clays" (*A.C.S. Trans.*, 1907); "Crystalline
Glazes" (*Ib.*, 1907); "Coeff. of Expansion
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"Compos. of Chrome-Tin-Pinks" (*Ib.*, 1909).

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Contrib.—"Extra-Uterine Fætation" (*Dub.*
J. Med. Sci., 1877); "Puerperal Second.
haemorrhage" (*Trans. Acad. Med. Irel.*, 1884);
"Puerperal Aphasia" (*Med. Press Circ.*, 1902);

"Epidem. of gangrenous dermatitis" (*Q.J. Med.*, 1912).

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Contrib.—Over 400, on zool. and anthropol.; Repts. of socs. and insts.

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Books.—"Hist. of Birds"; "Story of Reptile Life"; "Story of Fish Life"; etc. *Contrib.* numerous.

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Books.—"Mus. of Comp. Anat."; "Physiol. Tables and Diagrams"; Lumleian Lectures"; "Text-bk. of Med.," 4th edn., 1902.

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Books.—"Amer. Aleyrodidae," 1900; "Classif. of Aleyrodidae," "Cotton Ball Worm," 1905; "Plum Curculio," 1912; "Coccidae Amer.," 1898—1900. *Contrib.*—on Econ. Entom.

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Books.—Bulls. 178, 214, 222, 223, Cal. Agric. Expt. Station.

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Books.—Kocher's "Surg. Clinic" (with Lanz), 1891; "Encyc. of Surg." (with Kocher), 1903; "Spec. Surg. Diagn.," 1907, 3rd edn., 1911; "Surg. of Throat" in Wilms and Wullstein's "Text-bk. of Surg.," 1909. *Contrib.*—60 in Ger. and Fr.

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Contrib. on Capillarity, Acoustics, Optics, Elec., Magnetism, in *Ann. d. Physik*, 1856—1910.

Sphere of influence of molecular strength; Vortex movements; Cell-building; Veloc. of light in metals; Interference apparatus for sound waves; Magnetic manometer; Recurrent elec. radiation.

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Books.—"Atlas of Normal Histol." 1899; "Variation and Experience," 1911; "Teratol.," 1907. *Contrib.*—Numerous on Embryol., Biol., etc., since 1884, to *J. d'Anat. et Physiol.*, *Arch. f. Entw. Mech.*, etc.

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Books.—"Theory of Universal Invariants"; "Course of Hydraulics"; "Exper. Study of Metal Bridges"; etc. *Contrib.* on Invariants of Gen. Transform. Groups; Auscultation Meth. for Meas. Deformn. of Construcns.; Exper. Laws of Deformn. of Metall., Masonry and Ferro-Concrete Construcns., etc. to *Comptes Rendus*, *Rev. gen. des Sci.*, *Ann. des P.C.*, *Cnie Civil*, etc.

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Books.—"Sketches on Hist. of Cologne." *Arts.*—"Carnival" in Hastings' Encyc. of Relig. *Contrib.*—"Kart-stone" (*Prehist. Zeitschr.*, 1911); "Burial Enclosures of Lower Rhine" (*Bonner Jahrb.*, 1900); "Chronol. of Hallstatt mounds on Lower Rhine" etc.

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Contrib.—"Ritual and signif. of Winnekogo Med. Dance" (*J. Amer. Folk-lore*, 1911); "Aspects of Winnekogo Archaeol." (*Amer. Anthropol.*, 1911); "Winnekogo Tales" (*J. Amer. Folk-lore*, 1909).

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Books.—"Fertilis. of Phanerogam.," 1856; "Processes of Fertilis.," 1857; "Parthogenesis," 1858; "Crystalline Proteids," 1859; Monogr. on Sapindac. *Serjania* (1875) and *S. Paullinia* (1895); "Anat. Method in System. Bot." *Arts.* on Sapindac. in "Martius's Flora Brasil.," and Engler and Prantl's "Plant Families."

Introduct. anat. methods into system. bot.

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Contrib.—"Theory of Congruents of Higher Degree" (*Crelle J.*, 1886); "Theory of Congruents of several Variables" (*Ann. Sci. Ec. Norm.*, 1910); etc.

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Books.—"Marine Life," 1896; "Individuals and Species." *Contrib.*—"Larvae of Teleostei" (*Mitt. Zool. Stat., Naples*, 1888); and on Embryol. of Selacians and Systematics of Scopelidae.

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Contrib. to Publ. of Imp. Office of Health, Ger. *Milit. Zeitschr.*, *Encyc. d. Hyg.*

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Books.—"Med. and Agric. Zool.," 2 edns.; "Hist. of Alford School," etc.

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 Internat. Cong. Hyg.

Book.—“Wild Flowers and Trees of Colo.”
 Contrib.—“Knowledge of seedlings” (*Minn.
 Bot. Studies*, 1899); “Studies in lake and
 streamside veg.” (*Univ. of Colo. Studies*, 1909);
 “Bot. gardens of Ceylon” (*Pop. Sci. Monthly*,
 1908); “Mendelian proportions and increase
 of recessives” (*Amer. Nat.*, 1912).

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 Agric. Chem., Univ. Munich, Ger.
 Book.—“Agric.” 3rd edn., 1911.

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 —97.

Books.—Biograph. Notices of Astronomers,
 in *Encyc. Brit.*; “Cat. of 1,012 Southern Stars,”
 1887; “Cat. of 717 Stars,” 1896; “Cat. of
 1,101 Stars,” 1899, publish. in “Dunsink Observa-
 tions and Researches” Vols. 6, 7 and 8;
 “Radcliffe Cat. of 1,772 Stars,” publish. at
 Oxford, 1906. Contrib.—“Parallax of Double
 Stars” (*Monthly Notices, R.A.S.*, 1890);
 “Determ. of Double Star Orbits from
 Spectros. Observ.” (*Ib.*, 1891); “Correc-
 tions for Refract. to Measure of Stellar
 Photos.” (*Astron. Nachr.*, 1892); “Under-
 ground Temper. at Oxford” (*Phil. Trans. Roy.
 Soc.*, 1900).

Relative position and movements of stars.

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 Chem., London, 1909.

Books.—“Qual. Anal.” 1873; “Chem.
 Theory,” 1884; “Syst. of Inorg. Chem.,” 1891;
 “Elem. System. Chem.,” 1891; “Gases of the
 Atmosphere,” 1896; “Modern Chem.,” 1902;
 “Essays, Biog. and Chem.,” 1908; Ed. “Text-
 bks. of Phys. Chem.,” 1904. Contrib.—“Mole-
 cular Weights of Liquids” (*Phil. Trans.*, 1892);
 “Argon” (with Lord Rayleigh (*Ib.*, 1895);
 “Congeners of Argon” (with M. W. Travers)
 (*Ib.*, 1900); “Production of Helium from
 Radium” (with F. Soddy) (*Proc. Roy. Soc.*,
 1904).

Gases of the atmosphere, Helium.

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Contrib.—“Mechan. Coagulation of Pro-
 teins” (*Arch. f. Physiol.*, 1894); “Some New
 Properties of Urea” (*J. Physiol.*, 1902); “Sur-
 face-Membranes, Bubbles, Emulsions, and
 Mechan. Coagulation” (*Proc. Roy. Soc.*,
 1903).

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Books.—“Modern Plane Geom.” (with Rich-
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Books.—“Swedenborg's Investig. in Nat.
 Sci.”; “Nerves of Diaphragm”; “Functions
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 in Peritoneum.” Contrib.—“Developm. of
 Heart” (*Ups. Lakaref. Fh.*, 1898); “Nerves
 of Peritoneum” (*Mitt. Grenzgebiet Med.-Chir.*,
 1906, 1907); “Swedenborg as an Anatomist”
 (*Brit. Med. J.*, 1910).

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Contrib.—“Expansion of fused quartz at
 high temp.” (*Phys. Rev.*, 1910); “Infra-red
 line spectra of various elements” (*Ann. d.
 Phys.*, 1910, *Astrophys. J.*, 1911); “Residual
 rays of Selenite” (*Astrophys. J.*, 1911).

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Books.—"Shades and Shadows, and Perspective," 1902; "Elem. of Descrip. Geom.," 1905.

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Books.—"Physiol.," "Tetanus," "Blood Circulation," "Life Conditions of Nerves," "Mankind," "Phys. Anthropol. of Bavaria," "Craniology." *Contrib. to Bois-Reymond's Archiv. Archiv. f. Anthropol., Sitzber. d. Bay. Acad. Sci.*, etc.

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Books.—"Tapeworms of Genus Hymenolepis Parasitic in Man," 1904; "Taenioid Cestodes of N. American Birds," 1909; "Nematodes Parasitic in Aliment. Tract of Cattle, Sheep, and other Ruminants," 1911. *Contrib.*—"New Avian Cestode-Metroliaesthes lucida" (*Trans. Amer. Micros. Soc.*, 1900); "Tapeworms of American Chickens and Turkeys" (21st Ann. Rep. Bur. Animal Ind., 1905); "New Cestode from an African Bustard" (*Proc. U.S. Nat. Mus.*, 1911); "Two New Species of Parasitic Nematodes" (*Proc. U.S. Nat. Mus.*, 1911).

Haemonchus contortus, 1906; *Habronema muscae*, 1911.

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Books.—"Prognosis in Lung Dis.," "Stethometry," "Causes of Consump.," "Causes

and Prev. of Phthisis"; "Treatment of Phthisis"; "Researches on Tuberc." (Weber-Parkes Prize Essay); Principles of Open Air Treatment and of Sanatorium Construction," 1903. *Contrib.*—"Observns. on Value of Stethometry in Prognosis of Chest Dis." (*M.C. Trans.*, 1881); "Epidemic Cycles" (*Proc. Lit. and Phil. Soc.*, 1880); "Form of the Epidemic Wave" (*Trans. Epidem. Soc.*, 1882); "Influence of Certain Natural Agents on Virulence of Tubercle Bacillus" (*Proc. Roy. Soc.*, 1894).

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Contrib.—"Retrograde degen. in spinal nerves" (*J. Comp. Neur. and Psych.*, 1906); "Alterations in spinal ganglion Cells following neurotomy" (*Id.*, 1909); "Non-medullated nerve fibres in spinal nerves" (*Amer. J. Anat.*, 1911); "Struc. of spinal ganglia and spinal nerves" (*J. Comp. Neurol.*, 1912).

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Arts. on Elec. Engrng. and Elec. Railroads, in *Teknick Ugeblad, Elektrotek. Tidsskr.*, etc.

Inv. New elec. arc lamp; Elec. welding machinery.

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Book.—"Text-bk. of Geol." (with P. Lake), 1910. *Contrib.* on Geol. of Cumberland, Yorkshire, Cambridgesh., and S. Africa.

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Books.—"Brazilian Palcont.," "Marine Invertebrats and Fisheries of U.S.," "Museum Administration."

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Contrib. on CSe₂ and other Selenium Compounds; CSCl₂, CSCl₁; Biguanid; etc., to *J. f. Prakt. Chem.*; *Liebigs Annalen.*; *Ber. d. Chem. Ges.*

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Contrib. on chem. of milk, in *Ergeb. d. Physiol.* (vol. 2), *Arch. f. Kinderheilk.*

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Chapters on Anthrax, Glanders, Rabies in "Osler's Mod. Med.," on Etiol., etc., in "Klebs' Tuberc." *Contrib.*—"Comp. Virulence of Tuberc. B. from Human and Bovine Sources" (*Lancet*, 1901); "Intercommunic. of Hum. and Bov. Tuberc." (*Proc. Phila. Path. Soc.*, 1902); and numerous on rabies, etc.

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Contrib.—Numerous.

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Book.—"Hist. of Hindu Chem.," 2 vols. *Contrib.*—"Mercurous Nitrite and its Numerous Derivs." (*J. Chem. Soc. Lond.*); "Nitrites of Alkyl Ammonium Series" (*Z. f. Anorg. Chem.*); and to *Liebigs Ann.*, etc., since 1897.

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Books.—"Theory of Sound"; "Sci. Papers," 5 vols.

Disc. argon, with Ramsay, 1895.

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Contrib.—"Stability of Oxides at High Temper." (*J. Chem. Soc.*, 1894); "Chem. Relations of Iron and Carbon" (*ib.*, 1894); "Chem. and Mech. Relations of Iron, Carbon and Manganese" (*Iron and Steel Inst.*, 1910); "Chem. and Mech. Relations of Iron, Carbon and Chromium" (*ib.*, 1911).

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Book.—"Kaiserin Augusta River" (S. Sea Ger. Exped.), 1913. *Contrib.*—"Anthropol. of Neolith. Age in Silesia and Bohemia" (*Arch. f. Anthropol.*, 1909); "Expts. on Growth and Sex Propn. of Melanesian Children" (*Korresp.-Bl. d. deut. Ges. f. Anthropol.*, 1910); "Explorn. of Kaiserin Augusta River, New Guinea" (*Globus*, Vol. 97); "Length-Breadth Index and Length of Skull" (*Arch. f. Anthropol.*, 1911).

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Books.—"Cantor Lect. on Petroleum," 1886; "Transport of Petroleum in Bulk" (Telford Premium, Inst. C.E.), 1894; "Treatise on Petroleum," 2 vols., 1896, 2nd edn., 1906; "Detect. and Estim. of Inflamm. Gases in Air" (with Clowes), 1896; "Handbk. on Petroleum" (with Capt. Thomson), 1901, 2nd edn., 1906; *Arts.*—"Petroleum," in Prof. Thorpe's "Dict. Applied Chem.," 1892; "Petroleum Ind. and Lamps," in "Chem. Technol.," 1895; "Petroleum," in *Encyc. Brit.* (supplement), 1902, 11th edn., 1911.

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Book.—"Introduct. to Verteb. Embryol.," 2nd edn. *Contrib.*—"Struc. and develop. of thyroid gland in Petromyzon" (*Proc. Acad. Nat. Sci. Phila.*, 1902); "Develop. of Amer. alligator" (*Smithsonian Misc. Collec.*, 1908); "Develop. of digestive canal of Amer. alligator" (*ib.*, 1910); "Food and chem. reactions of spotted newt, *Diemyet. viridisc.*" (*J. Animal Behavior*, 1912).

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Art.—"Injurious animals" in Sorauer's *Handb. d. Pflanzenkrankh.*; "Articulated animals" in Neumayer's *Sci. Guide to Travellers. Contrib.*—"Limbs of Seal" (*Jena. Zeitschr. f. Naturwiss.*, 1893); "Phytopath. Observns." (*Jahrb. d. Hamburg. wiss. Anstalten*, 1901).

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Books.—"Ger. S.W. Africa, its Industrial Possibilities and Water Resources"; "Sketch of Water-power Works in District of Murg," 2nd edn., 1910. *Contrib.*—"Hydraulic Lab. at Karlsruhe" (*Z. f. Bauwesen*, 1903 and 1910); "Ger. S.W. Africa" (*Kolon. Z.*, 1897—1904).

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Art.—"Lighting" in Weyl's *Handb. of Hyg. Contrib.* on Clothing, Lighting, Disinfectn., Tuberc., etc.

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Books.—"African Birds," 3 vols., 1900—05; "Sea Birds," 1907; "Papuan Birds"; "Birds of Zool. Gardens," 1884, etc. Ed. *J. f. Ornithologie und Ornithol. Monatsberichte. Contrib.*—450.

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Contrib.—"Anat. of *Pentacrinus decorus*" (*Z. f. wiss. Zool.*); "Ophiopsila" (*Ib.*); "Light-emitting Organs," etc., since 1905.

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Chap. on Respiration and Animal Heat Mechanism, in Amer. "Text-bk. Physiol." *Arts.* in "Reference Handbk. Med. Sci.," etc. *Contrib.*—Several hundred on Phys. of the Circulation, Respiration and Heat Mechanism, Toxic Principles of Snake Venoms, Differentiation and Specificity of Homologous Vital Substances in Relation to Genera, Species, etc., and Org. Evolution; Applic. of stereochem. to protoplasmic processes.

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Contrib.—Numerous Sci. Memoirs in *Phil. Trans.*, *J. of Physiol.*, etc., 1887—1905.

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Contrib.—"Cal. Earthquake of Apr. 18, 1906" (*Carnegie Inst. Wash.*); various on glaciers, earthquakes and geophy.

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Book.—Ed. "Holden's Osteol.," 8th edn. *Contrib.* to *St. Thomas's Hosp. Repts., J. Anat. and Physiol., Proc. Aberd. Univ. Anat. and Anthropol. Soc., J. Roy. Anthropol. Inst.*

REID, WALTER FRANCIS, V.-P. & P.-P. Soc. Chem. Ind.; Vice-Chairman, Brit. Beekeepers' Assoc.; Gov., Nat. Phys. Lab.; Mem. Bd. of Trade Internat. Exhib. Comm.

Fieldside, Addestone, Surrey, Eng. F.I.C. *Soc.* F.C.S.; Aeronaut.

Contrib.—Numerous.
Inn. smokeless powder.

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Publications.—"Ripe Eggs and Spermatozoa of Wall Eyed Pike" (*Rept., Mich. State Bd. of Fish Comm., 1893*); "Old and New Suggestions concerning Artific. Fertilization" (*ib.*, 1893); "Plankton Studies on the Great Lakes" (*Bull., U.S. Fish Comm., 1894*). *Contrib.*—"Develop. of Adhesive Organ and Head Mesoblast of Amia" (jtly.) (*J. of Morph., 1908*); "Develop. of Hypophysis of Amia" (*ib.* 1908); "Exper. Study of Warning Coloration in Coral Reef Fishes" (*Pub., Carnegie Inst., Wash.*); "Methods of Studying Habits of Fishes" (*Proc. 4th Internat. Fish. Cong., 1909*).

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Contrib.—"Action of light on esters of cinnamylidene acetic acid" (*Amer. Chem. J., 1911*); "Reaction of org. magnesium comps. with cinnamylidene esters" (*Amer. Chem. J., I.-IV., since 1907*).

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Book.—"Cholesterin and its Derivs.," 1888. *Arts.* in Gintl's Tech. Dic. and Lueger's Lex. *Contrib.*—"Gum ferment" (*Zsch. f. physiol. Chem., 1890, 1909, 1910*); and on enzymes, plant physiol., etc.

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Books.—"World as Fact"; "We and Nature"; "Theor. Biol."; "Phil. of Bot."; "Elements of Biol."; "Art of World Perception," etc. *Contrib.* to *Wiss. Meeresuntersuch.*, etc., on Algenflora of the W.E. Sea, etc.

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Books.—Numerous on Chem. Technol. of Sugar, Brewing, etc.

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Book.—Ed., "Ganot's Phys.," "Papers on Properties of Thin Films" (with Ricker).

REISS, EMIL, Chief Physician, Med. Clin., Munic. Hosp., Frankfurt a. M., Ger.

Contrib. on refractometric anal. of blood and its utiliz. in diagn. of dis., in *Arch. f. Exper. Pharm. u. Path., Ergeb. d. inneren Med.*

REKSTAD, J. B., Fell. Norweg. Acad. Sci.; 1st Geologist, Norweg. Geol. Surv., Christiania, Norway.

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Contrib.—"Pine and snow line in Norway" (*Centrabtl. f. Miner., 1903*); "Geol. of N. Helgeland" (*N. G. U., vol. 62*).

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1896; 8th Internat. Pharm. Cong., 1896; Chairman, Sect. 8b. 7th and 8th Internat. Cong., 1910, Appl. Chem. London, Washington, New York, 1912; U.S. Repres. of Federation Internat. Pharm., Hague, Holland, 1911.

Books.—"Practice of Pharm.," 1886, 18 issues since; "U.S. Dispensatory," since 1877; Ed. and Chairman, "U.S. Pharmacopocia," since 1901; Lippincott's "Med. Diet.," 1897. *Contrib.*—Numerous, since 1867.

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Books.—"Principles of Theor. Chem.," "Org. Chem.," "Intro. to Study of Chem.," "Elements of Chem.," "Inorg. Chem.," "Lab. Manual," "Chem. Expts." *Contrib.*—"Oxidation of Substitution Products of Aromatic Hydro-carbons"; "Nature and Constit. of Double Halides"; "Decompos. of Diazo Compounds with Alcohol"; "Isomeric Chlorides of Orthosulphobenzoic Acid," all in *Amer. Chem. J.*, 1879—1903.

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Books.—"Classific. of Flowering Plants"; Monocotyledons in Cat. of Welwitsch's "African Plants"; "Orchids of Jamaica" (with W. Fawcett); Ed. of Botany, *Encyc. Brit.*, 11th edn., and author of numerous arts. *Contrib.*—Numerous Bot. Arts., chiefly Systematic, in *J.* and *Trans. Linn. Soc., J. of Bot.*, etc.

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Contrib.—"Benzylphenol and its Derivs." (*J. Chem. Soc.*, 1886); "Colouring Matters of Drosera Whittaker" (*ib.*, 1887); "Colouring Matter of *Lomatia ilicifolia*" (*ib.*, 1895);

"Interactions of Copper and Nitric Acid in Presence of Metallic Nitrates" (*ib.*, 1911).

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Book.—"Aims and Methods of Nature Study."

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Books.—"Nat. Hist. Essays," 1904, 1905, 1907; "Animal Romances, 1908, 1911. *Contrib.*—"Vanishing African fauna" (*Selborne Soc.*, 1899); "Leucodema and Palaeogene" (*Brit. Med. J.*, 1910, 1911); and numerous to *Zoologist*.

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Contrib.—"Studies on Putrefaction" (*J. Biol. Chem.*, 1906, 1908, 1912); "Bacillary White Diarrhoea of young chicks" (*Storrs Agric. Expt. Station Bull.*, 1909, 1910, 1912); "Studies on Bacterial Variation" (*J. Med. Research.*, 1911).

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Contrib.—"Moderator band and its relat. to papillary muscles" (*Johns Hopkins Hosp. Bull.*, 1909); etc.

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Cotenusius Gold Med.; Letterstadt Gold Med.; Stockholm Physicians Great Gold Med.; Great Gold Med. of Linnæus, 1912. *Late Prof. Histol. and Anat., Roy. Caroline Med.-Chir. Inst., Stockholm.*

Books.—"Anat. of Nerv. Syst. etc.," 1875—76; "Finnish Craniology," 1878; "Hearing Organs of Verteb.," 1881—84; "Ancient Swedish Skulls," 1898; "Swedish Anthropol.," 1902; "Human Brain," 1896; "Brain of Apes," 1906; "Anat. Researches," 1872; "Biol. Researches," 16 vols., 1890—1912. *Contrib.* on Struct. of Sev. Organs of Verteb. and Inverteb. Animals, esp. Nerv. Systs. and Sensual Organs, Organs of Generation, Anthropol. of Sweden and Finland.

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Books.—"Fossil-bearing cryst. measures of Bergen," 1883; "Geol. of Norway," 1910.

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Arts.—"Butter and Milk Products" (with E. R. Bolton), in Allen's "Org. Anal.," 4th edn.; "Fatty Foods" (with Bolton), 1912.

Contrib.—"Nature of Cellular Elements Present in Milk" (with Hewlett and Villar) (*J. of Hyg.*, 1909—11); "Stability of Physiol. Properties of Coliform Organisms" (*Cent. f. Bakt.*, 1910); "Note on Product. of Permanently Atypical *B. Coli*" (*Ib.*, 1911); and on bacterial variation.

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Book.—"Phys.-chem. Theories," 1897, 3rd edn. 1903 (and in Eng., Bohem., Russ. and Ger.). *Art.*—"Chem. Mechanics" in Guareschi's *Nuova Encic. di Chim.* *Contrib.*—"Terpenes and camphor" (*Bull. Soc. Chim. Paris*, 1896—8); "Constit. of salt solns." (*Ib.*, 1892 and *J. de Chim. Phys. Genève*, 1904 and 1909; "Adsorption" (*J. Chim. Phys.*, 1909, 1910); "Electrophorus" (*Ib.*, 1911).

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Book.—"Finsen Process." *Art.*—"Light Treatm. of Skin Dis." in Noorden's *Encyc. Contrib.*—"Deficient Wassermann reaction in tert. syph. of skin" (*Arch. f. Derm. u. Syph.*, 1912); "Opsonins" (*Lancet*, 1908); etc.

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Books.—"Verteb. Skeleton"; "Geol. Excursion of Bristol District." *Arts.*—"Palaeozoic Rocks of Gloucester and Somerset" (Jubilee Vol. of Geol. Assoc.); 4 Memoirs:—"Cave Hyena," "Bears," "Canidae," "Mustelidae" (Palaeont. Soc.). *Contrib.*—"On Older Rocks of Ireland, Wales and Bristol District in *Q.J. Geol. Soc.*," since 1896.

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Books.—"Cell Mech. and Cell Life," 1904; "Foraminifera of Plankton Exped.," 1909—11.

Arts.—"Motive Organs," "Correlation," "Organs of Animal Bodies" in Handwörterb. d. Naturw., 1912. *Contrib.*—"Mech. Explanation of indirect Cell and Nuclear Segmentn." (*Arch. Entwick.-mech.*, 1896); "Phys. Anal. of Life Phenom. of Cells" (*Ib.*, 1898—9); "Aggregn. and Phys. Condition of Living Cell Contents" (*Zeitschr. f. allgem. Physiol.*, 1902); etc.

Artificial imitation of life phenomena.

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Books.—"Handb. of Gen. Path. and Path. Anat.," 4th edn., 1911; "Handb. of Path. Histol.," 2nd edn.; 1902; "Path. of Tumours," 1904; "Carcinoma in Man," 1911.

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Books.—"Hereditiy," 1873, and in Eng. 1875; "Schopenhauer's Phil.," 1874; "German Psychol. of To-day," 1879, and in Eng. 1886; "Eng. Psychol.," and in Eng. "Dis. of Memory," 1881, Eng. 1882; "Dis. of the Will," 1883; "Psychol. of Attention," 1889, Eng. 1890; "Psychol. of Emotions," 1896, Eng. 1897; "Evol. of Gen. Ideas," 1897, Eng. 1899; "Essay on Imagination," 1900; "Logic of Emotions," 1905; "Essay on the Passions," 1906; Fr. transl. of Herbert Spencer's "Princip. of Psychol."

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Books.—"Theory of Surfaces," 1898; "Complem. Algebra," 1900. *Contrib.*—"Syst. of Congruent Orthogonals" (*Mem. Accad. Lincei*, 1896); "Continuous groups of Motion" (*Mem. Soc. Ital. Sci.*, 1899); "Transform. of Diff. Quadratic Forms" (*Rendic. Accad. Lincei*, 1912).

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Contrib. on astrophys. in *Mem. Ital. Spectros. Soc.*, and *Rend. R. Acad. Lincei*; on seismic. and vulcanol. in *Bulls. of Meteorol. and Geod., Survey, Rome.*

Observ. of solar eclipses in Russia, Africa and Spain; determ. of value of gravity in Sicily and Calabria.

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Contrib.—"Gill Struct. in Lamellibranchs" (*Jena Z. f. Nat.-wiss.*); "Fusion of Filaments in Lamellibranch Gill" (*Biol. Bull.*, 1900); "Gill Develop. in Mytilus" (*ib.*, 1908); "Chondrocranium of Eumeces" (*Science*, 1911)

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Book.—"Oceanography."

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Book.—"Manual of Wood Turning," 1902. *Contrib.*—"Heating value of corn" (*Cassier's Mag.*, 1895); "Entropy-temp. and air-flow diagrams for air" (*Bull. Engrng. Expt. Station*, 1913).

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Testing Materials; Bunsen; Faraday; Iron and Steel Inst.; Phys. Chem. Fr.; *Late* Assist. Prof. Mineral, Lehigh Univ., 1887—1903; Hon. Mem. Amer. Electroplaters Assoc.

Books.—"Aluminium," 1st edn. 1886, 3rd edn. 1896; "Metall. Calculations," 3 parts. *Arts*.—"Metallurgy," in "Chandler's Encyc.," Transl. 4 monographs from Ger. on "Applied Electrochem." *Contrib.*—"Electrochem." (*Trans. Amer. Electrochem. Soc.*, 1902—11); "Electrometall." (Metall. and Chem. Engrng., 1902—11); "Metallurgy" (*J. Franklin Inst.*, 1891—11); Miscellaneous sci. subjects in various sci. J., 1887—1911.

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Books.—"Guide to Prac. Chem.," "Prac. Chem." *Contrib.*—Various, to *Analyst*, *Lancet*, *Chem. News*, etc.

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Books.—"Treatise on Ore Dressing," 4 vols. and Index; "Text-bk. on Ore Dressing"; "Ore Dressing in Min. Indust." *Art.*—"Ore Dressing," in *Encyc. Brit.* *Contrib.*—Many to Amer. Inst. Min. Engrng. Ore concentration.

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Book.—"Exper. Researches on Atomic Weights," in Ger., 1909. *Contrib.* to Stähler's *Handbk. d. Anorg. Chem. Arbeitsmethoden*; "Atomic Weights of Sodium and Chlorine," (*Pub. Carn. Inst. Wash.*, 1903); "Compressibilities of Elements" (*Ib.*, 1907); "Determin. of Atomic Weights" (*Ib.*, 1910); "Faraday Lect." (*J. Chem. Soc. Trans.*, 1911); and numerous others.

Revised atomic weights of 20 elements; Determ. compressibilities of elements and showed their periodicity; Thermochem. methods; New precise fixed points in Ther-

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Book.—"Electron Theory of Matter" (in press). *Contrib.*—Numerous on Thermionics, Electron Theory, Photoelec. Action, etc., since 1901.

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Contrib.—Various to *Math. Annalen*, *Trans. Amer. Math. Soc.*, *Bull. Amer. Math. Soc.*, since 1906.

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Arts.—"Meat Canning," in *Encyc. of Amer. Agric.*; "Meat and Meat Products," in Allen's "Commerc. Org. Anal." *Contrib.*—"Deterior. and Commerc. Preserv. of Flesh Foods" (*J. Amer. Chem. Soc.*, 1908); "Storage of Beef" (*J. Ind. and Engrng. Chem.*, 1909); "Occurrence of Nitrates in Veg. Foods" (*J. Amer. Chem. Soc.*, 1907); "Testing of Commerc. Anhydrous Liquid Ammonia" (*J. Ind. and Engrng. Chem.*, 1910).

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Books.—"Mean Density of the Earth" (with Krigar-Menzel), 1898; "Progress in Elec.," 2nd edn., 1902; "Changes of Temper. in Artificially Up-and-down Moved Air," 1902;

"Elements of Maxwell-theory combined with Theory of Electrons," 1909; Ed. "Theory of Heat," Helmholtz, 1903. *Contrib.*—"Formation of H_2O_2 and $S_2O_8H_2$ in Electrol." (*Ann. Physik*, 1887); "Steam Jet and Dissoc. of Gases" (with Helmholtz) (*ib.*, 1890); "Theory of Dulong-Petit's Law" (*ib.*, 1893 and 1899); "Elec. and Magnetic Forces of Atoms" (*ib.*, *Phys. Zeitschr.*, 1911).

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Books.—Ed. "Dict. of Physiol.," 9 vols., since 1895; "Animal Heat"; "Physiol. of Muscles and Nerves."

Serotherapy, anaphylaxy.

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Contrib.—"Apparat. for testing thin sheet-iron" (*Elektrotech. Zsch.*, 1903); "Hysteresis heat" (*ib.*, 1910); "Spark. Compression in alternat. current commutat. motors" (*ib.*, 1911); etc.

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Books.—"Theory of Definition," 1888; "Cognition," 1892, 3rd edn., 1912; "Limits of Scientific Conception," 1896—1902, 2nd edn. 1912; "Culture and Science," 1899, 2nd edn. 1910; "Psychophys. Causality and Parallelism," 1900; and others on philos.

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A.B. (Ind.) 1902; Ph.D. (Chic.) 1907.

Contrib.—Numerous, on growth of feathers and metabolism in relation to egg formation.

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Books.—"Water and its Purific."; "Sewage, and the Bact. Treatment of Sewage"; "Disinfection and Disinfectants." *Contrib.*—Various.

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Books.—"Origin of Metallic Currency and Weight Standards," 1892; "Origin and Influence of Thorough-bred Horse," 1905; "Early Age of Greece," 1901; "Who were the Romans?" 1907; "Minos the Destroyer," 1910; "Applic. of Zool. Laws to Man," Brit. Assoc. Address, 1908; "Ethnol. of Europe," 1910. *Arts.* in *Encyc. Brit.*, Smith's "Dict. of Antiq.," *Encyc. Biblica.* *Contrib.*—"Racial Origins" (*Sci. Progress*, 1910); "Studies on Equidae" (*Proc. Zool. Soc.*, 1909).

Civilisation of the Aegean the outcome of a race which had developed there from Stone Age; Use of iron and bronze first disc. in Central Europe.

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Hon. Mem. Manc. Lit. Phil. Soc.

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Books.—"Materials for a Flora of the Malay Peninsula"; "Monocotyledons," 3 vols. *Contrib.*—"Bot. and Geol. of Fernando de Noronha" (*J. Linn. Soc.*, 1890); "Orchideae of Malay Peninsula" (*ib.*, 1894); "Gesneraceae of Malay Peninsula" (*J. Roy. Asiatic Soc., Singapore*, 1900); "Symbiosis of Ants and Plants" (*Annals Bot.*, 1910).

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Book.—"Textb. of Exper. Phys.," 2 vols., 5th edn., 1912. *Art.*—"Dielec. of Crystals," and "Pyro. and Piesoelec." in *Handwörterb. d. Naturw.*, 1912.

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Contrib.—Numerous on Dermat.

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Books.—"Econ. Geol.," 3 edns.; "Clay," 2 edns.; "Building Stones and Clay Products"; "Hist. of Clay Working Ind. in U.S.," jtly. *Arts.* on Geol. in New Internat. Encyc. *Contrib.* on clay to Repts. of Can. and State Geol. Surveys.

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Book.—"Amer. Text-bk. of Path." *Arts.*—"Typhoid Fever," in Hare's "Modern Treatment"; "Animal Parasites," in Musser and Kelly's "Pract. Treatment"; "Dis. of Mouth," in Osler's "Syst. of Med."; "Cretinism," in Buck's "Reference Handbk." *Contrib.*—"Treatment of Typh. Fever by continuous Saline Instillation" (*J. Amer. Med. Assoc.*, 1910); "Albuminous Expectora. follg. Thoracocentesis" (*Amer. J. Med. Sci.*, 1902); "Acute Recurrent Pulmon. Oedema" (*ib.*, 1907); "Hemorrhagic diathesis in Bright's Dis." (*ib.*, 1909).

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Book.—"College Algebra." *Contrib.* on Group Theory, Math. of Statistics, etc.

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Contrib.—"Graphic Construc. of Eclipses and Occultations" (*Pop. Astron.*, 1896); "Jesuit Astronomy" (*ib.*, 1904); "Eclipse Exped. of Creighton Univ. to Washington, Ga."

(*Tech. Q.*, 1901); "A Shadow in Court" (*Sci. Amer.*, 1911—12).

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Contrib.—"Osteol. of Hoplophonus" (*Kans. Univ. Inst.*, 1896); "Dinosaur Beds" (*Field Mus. Pubs.*, 1901); "Struc. and Relationships of Dinosaurs" (*ib.*, 1903, 1904).

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Books.—"Quant. Estim. of Dryness of Beer and Wort," 1897; "Unsat. Org. Comps.," 1909. *Arts.* on Chem. in Norweg. Illust. Encyc. *Contrib.*—"Synth. of Truxill Acid" (*Ber deut. Chem., Ges.*, 1902); "Oxidn. of Allo-Cinnamyl-acetic Acid" (*ib.*, 1911).
Patents for fertilisers.

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Books.—"Solubility of Phosphate of Lime," 1899; "Estimation of Solubility in Agric. Chem.," 1911. *Contrib.*—"Milk Sugar" (*Neuer Z. f. Rubenzuck. Ind.*, 1880); "Optical Activity of Lactose" (*ib.*); "Difficulty Sol. Calcium Salts in Aqueous Sol. of Ammonium Salts" (*Z. f. Phys. Chem.*, 1909); "Humic Acid" (*Intern. Mitteil. f. Bodenkn.*, 1911).

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Books.—"Heat Engines"; "Steam-Engine Theory and Pract."; "Machine Drawing and Design." *Contrib.*—"Researches on Superheated Steam" (*Proc. Inst. C.E.*, 1899); "Mean Pressure Indicators" (*ib.*); "File Testing Machinery" (*Proc. Sheff. Soc. Engrns. and Metall.*, 1910).

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Books.—"Constants of Precession and Movement of Sun in Fixed Star Systrs." 1892; "Omissions in Star Cat. of 18th and 19th Cents.," 1909; "Astron. Cat. for S. of S. Amer.," 1911—13; "Prof. Lects. on Astron. at Univ. Chili," 1912. *Arts.* in Valentiner's "Handwörterb. d. Astron.," "Publ. d. Observ. d. Santiago," 1910—12. *Contrib.*—Numerous to *V.Z. Astron. Ges.*, *Astron. Nachr.*, since 1892.

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Contrib.—"Budding in Compound Ascidians" (*J. Morph.*, 1896) "Halocyonhia Johnsoni, and Law and Order in a Single Animal Species" (*Univ. Cal. Pub., Zool.*, 1909); "Life from Biol. Standpoint" (*Pop. Sci. Monthly*, 1909); "Controv. between Materialism and Vitalism" (*Sci.*, 1911).

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Books.—"The Todas," 1906; "Influence of Alcohol and other Drugs on Fatigue," 1908. *Arts.*—"Vision," in Schäfers' "Text-bk. of Physiol.," "Vision," "Kinship," etc., in Repts. Cambridge Exped. to Torres Straits. *Contrib.*—"A Human Exper. in Nerve Division" (with Head) (*Brain*, 1908); "Senses of the Todas" (*Brit. J. of Psychol.*, 1905); "Totemism in Polynesia and Melanesia" (*J. Roy. Anthropol. Inst.*, 1909); "Primitive Concep. of Death" (*Hibbert J.*, 1912).

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Contrib.—Various, on anthrop., ethnog., lang., etc.

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Contrib. on Physiol. of Mar. Inverteb.

Osmotic Press. of Haemoglobin and of Ionising Salts of Serum Proteins, Carbon Dioxide Output during Decerebrate Rigidity.

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Contrib.—"Cat. of Southern Variable Stars" (*Astron. J.*, 1901); "Apooidal Binary Star Systs." (*Brit. Assoc. Rept.*, 1905); "Variable Star Research" (S. African Sci. Cong., 1908); "Variation of δ Arae" (*Astrophys. J.*, 1911).

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Book.—"Practice of Midwif.," 1876, 4th edn., 1896. Ed. Browne's "Religio Medici," 1892, revised edn., 1898.

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Contrib.—Numerous.

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Contrib.—"Case of Mediastino-Pericarditis" (*Lancet*, 1903); "Pericarditis Sinistra" (*Liverpool Med. Chir. J.*, 1908); "Case of Cerebellar Tumour" (*ib.*, 1903); "Case of Ankylostomiasis" (*Med. Press and Circ.*, 1906).

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Contrib. to *J. Inst. C.E.*, and *J. Inst. E.E.* Designed engrng. work in Post Office, Lond., teleph. syst.

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Contrib.—"Sch. of Mines Series of Rocks from Washington" (*Bull. U. of W.*, 1904); "Min. Sch. Graduates" (*Pub. Amer. Min. Cong.*, 1908); "Wonderland of Glaciers and Snow" (*Nat. Geog. Mag.*, 1909); "Nicola Valley Coal Field, B.C." (*Trans. Amer. Inst. Min. Engrs.*, 1909).

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Books.—"Math. Design of Transformers," 1911; "Transformers" (with H. Bohle) 1911. *Contrib.*—2 on "Armature Windings" (*J. Inst. E.E.*, 1902); "Rotor Hysteresis" (*Electrician*, 1911); "Elec. Meters on Variable Loads" (*J. Inst. E.E.*, 1912); "Indicating Coil" (*ib.*, 1912).

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Books.—Transl. and Ed. Bertin's "Marine Boilers"; "Water Tube Boilers"; etc. *Contrib.*—"Mech. Propulsion on Canals," "Light Rys.," etc.

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Contrib. on theory of explosives, their manuf., decomp., etc., in *J. Chem. Soc., Zeits. f.d.g. Schiess-u. Spreng., Chem. News, J. Soc. Chem. Ind.*

Inv. of new explosives and war material; improv. in manuf. of explosives and their ingredients.

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Book.—"Phys. Chem. of Proteins," 1912. *Contrib.* on Enzymatic Synth. of Protein; Mode of Ionisation of Protein Salts; Autocatalytic character of growth-process; Separat. of Fertilising Agent in Echinoderm Spermatozoa.

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Contrib. to *Q. J. Micros. Sci.* and *J. Anat. and Physiol.*

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Books.—"Flora of Galapagos Is.," Ed. "Synoptical Flora of N. Amer.," "Gray's Manual of Bot.," 7th edn. *Contrib.*—"Rhodora" (*J. of New England Bot. Club*); and many papers on Classific. of Plants.

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Contrib.—"High Speed Engines" (*Inst. E.E.*, 1897).

Inv. syst. of air-cushioning in single-acting steam engines; appliance for releasing ships' boats.

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Books.—"Manual of Physiol. Chem.," "Chem. Anal." *Contrib.*—Numerous on Physiol. Chem., etc.

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Book.—"Morphol. and Physiol. Variability in Microbes."

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Contrib. on radiog. and radiotherapy to *Lancet* and *Arch. Röntgen Ray*.

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Book.—"In the Guiana Forest," *Arts.*—"Guiana" and "West Indies" in Mill's "Internat. Geog." *Contrib.*—"Guiana Orchids" (*Timekri*, 1894); "Flowers in Guiana Forest" (*Nat. Sci.*, 1893); "Nature's Triumph" (*Pop. Sci. Monthly*, 1893); and on Interdepend. of Plants and Insects, and Insect Pests to Cultiv. Plants.

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Books.—"Trigonom. for Schs. and Colls." (with Anderegg), 1896; "Sylvester's Determinant," 1898; "Selected Chaps. in Algebra" (with Metzler and Bullard), 1907; "Coll. Algebra" (with Metzler and Bullard), 1908. *Contrib.*—"Symmet. Functions" (*Amer. Math. Monthly*, 1899); "Note on Symmet. Functions" (*Amer. J. Maths.*, 1903); "Coeff. in Product of an Alternant and a Symmet. Function" (*Trans. Amer. Math. Soc.*, 1904); "Coeff. in Quotients of 2 Alternants," 1905.

Disc. and measurement of new double stars.

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Arts.—Sect. on Electrochem. in "Standard Handbk. for Elcc. Engrs." *Contrib. to Trans. Amer. Electrochem. Soc., Electrical World*, etc.

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Books.—"Intro. to Pract. of Biochem. for Students of Med.," 1904; "Textbk. of Biochem." 1908. *Contrib. to Zeitschr. f. Physiol. Chem., Pflüger's Archiv., Biochem. Zeitschr.*

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X-rays.

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Book.—"Geol. and Knowledge of Soil," 3 vols., 1907—10.

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Books.—"Animal World and Agric.," 1906; "Game, Hunt and Agric.," 1912; "Plant Protect.," 1912. *Art.*—"Zool." in *Landlexikon*, 1908—12.

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Contrib.—Numerous on Path., Cytol., etc.

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Contrib.—Various Repts., Book and Papers on Geol. of the Cape Prov.

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Book.—"Intro. to Study of Minerals," 1912. *Arts.*—"Crystallog.," "Phys. Crystallog.," "Chem. Crystallog.," in *Cyc. Amer. Contrib.*—"Minerals of Galena-Joplin lead and zinc district" (*Univ. Geol. Surv. Kans. Repts.*, 1908); "Coal measure faunal studies," with J. W. Beede (*ib.* 1910); "Determin. of minerals in crushed fragments" (*Sch. of Mines Q.*, 1906); "Validity of law of rational indices" (*Proc. Amer. Phil. Soc.*, 1912).

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Contrib.—"Resect. of Large Intest." (*Phila. Monthly Med. J.*, 1899); "Intest. Obstruc. in Infant 64 Hours Old" (*Med. News*, 1897); "Bullet Injuries to Spinal Cord" (*J. of Nerv. and Ment. Dis.*, 1903); "Influence of Ment. Attitude of Patient in Surg. Operations" (*Colo. Med.*, 1911).

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Contrib. on Sci. and Technol. of Brewing and Fermentol., since 1902.

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Books.—Bulls. of Ill. State Water Surv., Geol. Surv., Topog. Surv.

Contrib. to *Amer. Nat.*, *Amer. Engineer*, *J. Geol.*, etc.

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Books on Osteotomy, Dis. of Bones, Infantile Paralysis, etc. *Arts.* in *Encyc. Med. Ital.*, *Ital. Dic. of Med. Sci.* *Contrib.* to *Arch. Ital. di Ortopedia*, etc.

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Books.—"Human Anat.," 1890; "Topog. Anat.," 1900; "Embryol.," 1881—82. *Contrib.*—100.

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Books.—"Synth. of Altern. Current Waves," 1898; "Vibration of Telephone Diaphragms," 1906.

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Books.—"Hist. of Nav. War of 1812," 1882; "Hunting Trips of a Ranchman," 1885; "Winning of the West," 1889—95; "Wilderness Hunter," 1893; "Rough Riders," 1899; etc. *Contrib.* on mammalogy, etc.

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Contrib.—Many on Phys. and Elec. Measurements, in *Phil. Mag.*, *Phys. Rev.*, *Bull. Bur. Standards*, etc., since 1889.

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Arts. on chem. in *New Internat. Encyc.* and *Year Book.* *Contrib.*—"Princ. of optical superposition" (*J. Amer. Chem. Soc.*, 1905); "Victor Meyer's esterification law" (*ib.*, 1908); "Partial vapour pressures of binary mixtures" (*Zeits. phys. Chem.*, 1910); "Velocity of sugar hydrolysis" (*ib.*, 1911); etc.

New meth. for determ. of partial vapour pressures (Nichols gold medal, Amer. Chem. Soc.); Math. theory of distillation.

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Publ.—111 on Geog.; "Land and People of Finland," 1906.

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Books.—"Treatise on Chem.," 7 vols.; "John Dalton"; "Genesis of Atomic Theory," jly.; "Life and Experiences."

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Books.—"Celotomy," 1866; "Healing Sys. in the Open," 1867; "Tetanus," 1869, 1897; "Zurich Aid Expedn. at Belfort," 1871; "Delirium Tremens and D. Traumat.," 1872, 1884; "Goitre and Its Radical Cure," 1878; "Pericardial Effusion," 1884; "Jubilee of Bethany Hosp.," 1897. *Contrib.*—12 on Surg. Diag. of Illness, 1865—68; "A Ger. Operating Room in XV. Cent.," 1889; 10 on Colour Dis.

Colour measurer and spectrum grating for distinction of colour dis. and colour lunacy, etc.; Artific. ivory Tibia, 1903.

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Book.—Transl. Roscoe's "Primer of Chemistry." *Contrib.*—"Liebig and Kopp" (*Jahresber. d. Chem.*, 1869).

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Arts. in "Cyc. Amer. Hortic.," "Contrib. U.S. Nat. Herb.," etc.

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Books.—"Metall. of Gold," 5th edn., 1906; "Precious Metals," 1909. *Art.*—"The Mint," *Brit. Encyc.*, 11th edn. *Contrib.* on Gold, Silver, and their Alloys.

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Books.—Ed., "Landois' Text-bk. of Physiol.," 12th edn., 1909; "Physiol. and Toxic. Influence of Alcohol," in Abderhalden's "Bibliog. of Alcohol," 1904; Chap. on Alcohol in Oppenheimer's "Biochem. of Men and Beasts," 1908. *Contrib.*—"Influence of Alcohol on Albumen" (*Pfäuger's Arch.*, 1901, 1903); "Physiol. of Digestion" (*ib.*, 1907, 1910, and 1911).

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Soc.—Sci. Upsala. *Late Prof. of Geod., General Staff, Stockholm.*

Books.—"Comet VI. 1863," 1866; "Swed. Precision Meas., 1886—1905," 1906; "Astron.-Geod. Researches," 1882—1903; "Meridian degree Meas. in Swed.," 1911.

Measure of arc of merid. at Spitzbergen.

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Books.—"Disinfection and Disinfectants"; "Trop. Dis.," in Musser and Kelly's "Pract. Treatment"; "Milk and its Relation to Pub. Health"; "Milk Question," 1912; "Org. matter in expired breath," 1912. *Contrib.*—"Anaphylaxis" (*Bull. Hyg. Lab.*, 1896); "Standard of Measurement of Tetanus Antitoxin" (*P.H. and M.H.S.*, 1895); "Typhoid Fever in D.C." (*ib.*, 1896—99); "Yellow Fever and Malaria" (*ib.*, 1892—94).

Built and organised Hyg. Lab., Washington; Established degree Dr.P.H.

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Books.—"Micro-organisms in Wound Dis.," and numerous others on Gangrene, Tetanus, Erysipeloid, etc.

Inv. New Tuberculin.

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Books.—"Microsc. Physiog. of Minerals and Stones," 2 vols., 1873, 1877; "Steiger Slates and their Contact Zones with Granites of Barr-Andlau and Hohwald," 1877; "Elem. of Petrog.," 1898. *Arts* on Microscopy, Identif. of Rocks, etc.

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B.A. (Cantab.) 1900; B.C.E. 1901, D.Sc. 1909 (Melbourne). *Soc.*—Phys. Lond.; Iron and Steel Inst.; Inst. Metals (Counc.); Optical Lond. (P.F.); Internat. Testing Assoc.; Hon. Mem. Metall. Birmingham. *Late Mem.* of Exec. Comm., Optical Conv., 1905 and 1912.

Book.—"Glass. Manuf.," 1907. *Arts.*—"Glass" in *Encyc. Brit.*, 1912; "Metallog." in Thorpe's *Dict. Appl. Chem.*, 1912. *Contrib.*—"Crystall. struc. of metals" (jtly.) (*Phil. Trans.*, 1899); "Lead—Tin Alloys" (*Ib.*, 1908); "Aluminium—Zinc Alloys" (*Ib.*, 1911); 9th and 10th Repts. to Alloys Research Comm. of I. Mech. E. (*J. I. Mech. E.*, 1910 and 1912), etc.

Disc., with Ewing, formation of "slip bands" in strained metals.

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Contrib. to various Soc., including Internat. Rail. Cong.

Designed and carried out underground railways:—Gt. Northern, Brompton and Piccadilly, and partly Gt. Northern and City.

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Books.—"Induced Cell-Reproduction and Cancer"; "Further Researches into Induced Cell-Reproduction and Cancer."

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Book.—"Prev. of Malaria."

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Books.—"Theory of Riemann's Theta Functions," 1901; "Theory of Pijm's Func.," jtly. with F. Pijm, 1911.

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Books.—"Exercises in Phys. Chem.," 1907; "Refractometer Manual" (with Eisenlohr), 1911; Ed. "Landolt-Börnstein's Phys.-Chem. Tables," 4th edn., 1912. *Contrib.* on Thermochem. and Cryosc. Measurements.

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- Book.*—"Textb. of Math. and Phys.," jly., 1911, 1913. *Contrib.* on math. and phys.
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- Contrib.* on electrotech. in Ger., Fr., Polish and Eng. since 1894; and on works organis. since 1904.
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- Books.*—Numerous on Zool.
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- Books.*—"Struggle of Parts in Organism," 1881; "Importance of Nuclear Figures," 1883; "Mechanics of Evolution," 2 vols., 1895; "Exper. Methods in Mech. Evol.," 1897; "Evolutionary Mechanics of Organisms, a new Branch of Biol.," 1905. *Contrib.*—"Proportions of Spongy Sub. of Bone" (*Z. f. Orthopaed. Chir.*, 1896); and numerous others on Embryol., Evol., Anat., etc.
- Inv. Methods for auto-coag. of floating drops, finding course of current in electrolytes, etc.*
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- Books.*—"Syph. of Nerv. Syst.," "Intest. Dis.," "Action of Indol, Phenol, etc., on Bodily Organs."
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- Books.*—"Inflam. of Urinary Bladder," 1889, in Ger., 1890; "Surg. Dis. of Urinary Organs," 1895, 1898, 1900, 3 vols.; "Infect. Dis. of Urinary Organs," 1897; "Abdom. Surg.," 1910. *Contrib.* to "Langenbeck's Archiv.," "Annals of Surgery," etc., on Treatment of Arthritis by Vaseline Injection, Nitrate of Silver, Antiseptic, Carbolic Treatment of Tuberc. Cystitis, Methods for Gastropexis and Hepopexis.
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- Books.*—"Montana Coal and Lignite Deposits"; "Volcanic Ash Beds of Mont.," "Econ. Geol. of Mont.," "Pract. Miner. Simplified"; "Essentials of Miner." *Contrib.*—"Mont. Gypsum Deposits" (*Amer. Geol.*, 1905); "Coal Indust. of Mont." (*Engnrg. and Mining J.*, 1908); "Cour d'Alene Mining Dist., Idaho" (*Min. World*, 1908—09); "Mines of Missoula Co., Mont." (*Mines and Minerals*, 1911).
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- Book.*—"Art of Taxidermy."
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- Contrib.* on Variable Stars, esp. of Long Period.
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- Books.*—"Gen. and Nat. Pharmacop.," "Treatise on Hyg.," "Influence of Anaesthetics on Respir.," "Cure of Pulm. Tuberc.," Founder and Ed. of *La Salute Publica*, 1888—1908. *Contrib.* on Vaccination, Infect. Dis., Direct Artific. Respir., Method of Continual Inhalations in Treatment of Tuberc.
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Contrib., numerous, on infra-red spectrum, long heat waves, optical properties of metals, etc.

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Books.—"Anal. Geom.," Pt. I., 8 edns., Pt. II., 5 edns.; "Hist. of Problem of Quadrature of Circle," 1892; Ed., "Euler's Works."

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Book.—Assist. Ed. Ure's "Dict. of Arts and Manufacts.," 3 vols., 1875. *Arts.*—On Miner. in *Encyc. Brit.*, 9th and 11th edns.; and in Thorpe's "Dict. of App. Chem.," etc. *Contrib.*—Numerous to *Q. J. Sci.*, *Pop. Sci. Rev.*, *Annals of Geol.*, *Procs. Geol. Assoc.*

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Natural indigo, Essential oils, Rubber and Chem. of trop. products.

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Amer. Physicians; F.R.G.S. *Late* M.O. to Tor. Light Horse.

Arts.—"Untoward Effects of Drugs" in Harc's "Pract. Treatment," 1910; "Blood Pressure," "Tor. Univ. Study"; "Dis. of Bronchi," in Forscheimer's "Syst. of Treatment," 1911. *Contrib.*—Numerous.

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Book.—"Physics of the Earth," 1911. *Contrib.* to *Bull. Astron.*, *Bull. Acad. Cracow*, etc.

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Books.—Monog. "Graptolites of N.Y.," N.Y. State Mus. Mem. 1904 and 1908; "Guelph Fauna of N.Y.," jty. (*ib.*, 1903); "Eurypterida of N.Y.," jty. (*ib.*, 1912); etc.

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Contrib.—"Product. and Nature of Streptococcolysin" (*J. Amer. Med. Assoc.*, 1903); "Streptococci of Scarlatinal and Normal Throats" (*J. Infect. Dis.*, 1906); "Studies on Streptococcus Infections" (*J. Amer. Med. Assoc.*, 1905—06); "Studies on Self-Purific. of Streams" (*J. Amer. Pub. Health Assoc.*, 1911).

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Books.—"Field of Distinct Vision," 1907; "Princ. of Educ.," 1910; "Agencies for Improvem. of Teachers in Service," 1911. *Contrib.*—"Period of mental reconstr." (*Amer. J. Psychol.*, 1907); "Mental training through ideals" (*Educ. Rev.*, 1908).

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Books.—"Methods of Corn Breeding," 1889; "Organis. of Plant Breeding," 1909; "Methods of Plant Breeding," 1910; "Agric. Studies in N. Amer.," 1910; "Daily Problems of Mod. Agric.," 10 parts; "Support of our People by Home-production," 1912; and 160 others on Farm Management, etc.

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Arts.—"Puzzles" in "Cyc. of Educ.," 1913; "Psych. of Efficiency" (Monog.) 1910.

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Soc.—Chem. Ind. (Hon. Sec., Liverpool Sect.).

Contrib.—"Dicyclopentadiene" (*J. Chem. Soc.*, 1906—08); "Tetraketopiperazine" (*Ib.* 1907); "Action of Hydrogen Sulphide on Alkylloxides of Metals" (*Ib.*, 1911).

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Books.—"Syph. Dis. of Nerv. Syst.," "Cholera," "Dis. of Heart," "Social Med."

Test of skin sensibility by tuning-forks.

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Book.—"Lectures on Alternating Current Machines," *Contrib.* to Danish Dicts. and to *Ingeniøren and Elektroteknikeren*,

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Books.—"Equations"; "Series"; "Anal. Plane Geom.," *Contrib.*—Numerous.

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Books.—"Treatise on Theory of Alternat. Currents"; "Theory of Elec. Cables and Networks"; "Lord Kelvin, his Life and Work," *Contrib.*—"Capacity Coeffs." (*Proc. Roy. Soc.*, 1909); "Inductance of a Concentric Main" (*Phil. Mag.*, 1909); "Mean Spherical Candle Power" (*J. Inst. E.E.*, 1903); "The Convection of Heat" (*Proc. Phys. Soc.*, 1910).

Cable grading; *Inr.* an absolute volt-balance, Russell-Leonard photometer, electromagnetic device for solving equations of any degree.

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Books.—"Foundations of Geom.," 1897; "Philos. of Leibniz," 1900; "Principles of Math.," 1903, Vol. II. 1911, III. 1912 (with Whitehead); "Principia Mathematica," Vol. I. 1910. *Art.*—"Geom., Non-Euclidean," *Encyc. Brit. Contrib.*—"Logic of Relations" (*Rev. Math.*, 1901); "Theory of Implic." (*Amer. J. Maths.*, 1906); "Math. Logic" (*Ib.*, 1907).

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Books.—"Lessons on Soil"; "Problems in Agric. Chem.," "Soils and Agric. of Kent, Surrey and Sussex"; "Soil Conditions and Plant Growth." *Arts.* on Soil in "Standard Cyc. of Agric." *Contrib.* on Properties of Pure Substances (*Trans. Chem. Soc.*, 1899—

1902); on Factors determining Fertility in Soils (*J. Agric. Sci.*, 1902—1912).

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B. 1849, Richmond. *Educ.* Harrow; Ch. Ch., Oxford. M.A. (Oxon.) 1878; F.R. Met. Soc.; Fell. Roy. San. Inst.; F.S.S.; Smithsonian Inst. Silver Med., 1896, for Essay on Atmosphere in Relat. to Health.

Books.—"The Utopian"; "Epidemics, Plagues and Fevers"; "On Hail"; "Strength and Diet"; "Spread of Influenza"; "Reduct. of Cancer"; "Human Prosperity"; "Preventable Cancer"; "London Fog." *Contrib.*—"A Ministry of Health" (*Nineteenth Cent.*, 1891); "Eruption of Krakatoa" (*Roy. Soc. Rept.*, 1888); "Causes of Rain" (*Trans. Roy. Met. Soc.*); "Prevalence of Haze and its Causes" (*ib.*, 1898).

Absorp. of heat by thin films of water; Formation of dew; Improvement of climate with slight elevation; Statistic of connect. of cancer and diet.

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Contrib.—"Prev. and Treatment of Typhoid Fever by Vaccine" (*Boston Med. and Surg. J.*, 1911); "Anti-typhoid Vaccination" (*Johns Hopkins Bull.*, 1910); "Prev. Typhoid Fever" (*Mil. Surg.*, 1909); "Dysentery Bacilli" (with Hiss) (*Med. News*, 1903).

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Books.—"Dairy Bact.," "Agric. Bact.," "Exper. Dairy Bact." (with E. G. Hastings); "Pub. Water Supplies" (with Turneure). *Contrib.*—*Repts. and Bull.* in Wis. Exper. Sta., *J. of Infectious Dis., Centralbl. f. Bakt.*, on Dairy Bact., Bovine Tuberc., Ripening of Cheese.

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Books.—"Radioactivity"; "Radioactive Transformns." *Contrib.*—Numerous.

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Public.—Numerous on Geol. of Belg., cretac., tert., and quatern.; Prehistory; Applic. of Geol. to Hydrol. and Public Works.

Disc. fossils and prehistoric industries.

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Contrib. on artificial alkaloids and other org. bases, glycol fats, margaric acid, etc.

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Several exploring expedts. to W. and E. Coast of Greenland.

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Books.—“Technol. of Paint and Varnish,” 1904; “Housepainting,” 1908; “Ger. and Amer. Varnish-making,” 1912. Art. on “Varnish” in “Rogers and Aubert's Indust. Chem.,” 1912.

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Books.—“Fevers of Man, Dog and Fowl,” 1893; “Bibliog. of (his) Sci. Works,” 1912. *Contrib.*—“Fevers of dog” (*Hématol. Clinique*, 1900); “Technique of blood colouration” (*Gaz. hebdom. Med. Bordeaux*, 1908—12); and numerous on filariosa, trypanosomes, etc.

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Books.—“Italian Fungi,” 1877—86; “Fungi,” 20 vols., 1881—1911; “Bot. in Italy,” 1895—1901. *Contrib.*—Numerous, on Chromotoxia, Fungi, etc.

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Books.—“Tertiary of Piedmont,” 1889; “Tertiary Molluses of Piedmont,” 1889—1904; “Appennines,” 1891—1912; “Valle Padana,” 1886—1912; “Essay on Selenology,” 1907; “Orogeny of the Earth,” 1895, 1906. *Contrib.*—230 on Geol., Geotectonics, Palaeont., Astron., etc.

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Arts. on Haemolysins, etc. in “*Ergeb. d. allgem. Path.*,” “*Handb. d. Biochem.*,” “*Handb. d. Path. Mikrogr.*” *Contrib.*—Numerous on immunity and sero-diagnosis.

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Contrib. on purif. of water and sewage disposal, in *Proc. Ind. Engrng. Soc.*, 1900—11, *S.P.E.E.*, 1912.

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Contrib. to *Trans. I.N.A.*, *Trans. Soc. N.A.* N.Y., *Trans. Inst. Engrs. and Shipb.*

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Books.—“U.S. Dispensatory” (Chem. Ed., 15th—19th, edns., 1880—1906); “Text-bk. of Pharm. Med. Chem.” 4th edn., 1906;

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- Book.*—"X-Rays" in Bouchard's "Radiol."
- Contrib.*—"Diffus. of X-Rays" (*Comptes Rendus*, 1897—99); "Propagn. of Light" (*Ib.*, 1899, 1905, 1911); "New Relations in Reflect. and Refract. of Polarised Light" (*Jubilee H. A. Lorentz*, 1901); "Anomalous Propagn. of Light" (*Soc. de Phys.*, 1903).
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- Books.*—"Clin. Pract.," 6th edn., 1911, Transl. in Eng., Ital., Span., Russ.; "Topog. Percussion in Infancy," 1881; "Tuberculin and Immunity," 1912, 4th edn., and in Eng. and Fr. *Contrib.*—Many.
- Use of salol and guaiacol; Glutoid test of pancreas; Omopon, a new opium prepn.; Sphygmobolometer and graph; Desmoid test of stomach; Butyromet. exam. of stomach.
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- Books.*—"Conditions of Possibility of Pract. Phil.," 1855; "Princ. Forms of Ethics," 1869; "Ethical Princ. of Kant, Schleiermacher and Boström," 1877; "Princ. Forms of Logic," 1883—84; "Relativity of the World," 1889; "The Inner Life," 1893. *Arts.*—"Rudolph Eucken's view of life" 1909; "Swed. Phil.," 1911. *Contrib.*—"Princ. Contrariety in World" (*Nordisk Tidsk.*, 1856); "Meth. of phil. according to Boström," (*Works in mem. of Boström*, 1897); "Tragical conflict in Sophocles' Antigone" (*Vart Land*, 1899); "Synop. of princ. forms of social life" (*Works in hon. of E. Burman*, 1910).
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- Contrib.* on Clin. and Therap.; convalesc. fever in typhoid; typho-grip. fever, etc., to *Arch. Med. de Toulouse*.
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- Contrib.*—"Wave-lengths of elec. in iron wires" (*Phil. Mag.*, 1894); "Gen. circ. of calcium vapour in solar atm." (*Astrophys. J.*, vols. 32 and 34); "Tertiary standards in plane grating" (*Ib.*, vol. 35); "Light-emissive capacity of bodies at high temp." (*Ann. d. Phys.*, 1895).
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- Contrib.*—"Turbine Pumping Plant" (*Trans. Water Engrns.*, 1902); "Hist. of Windsor Waterworks" (*Ib.*, 1907).
- Patents on stop-cock key; Fluid valve cover.
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- Books.*—"Internal Secretions," etc.; Ed. "Ann. of Universal Med. Sci.," 1888—96; "Cyc. of Pract. Med.," 1896—1913; etc.
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Chapter.—"Math. and Phys. Sci. in Japan," in Count Okuma's "Fifty Years of New Japan." *Contrib.*—"Metallic Compounds contg. Bivalent Hydrocarbon-radicals" (*J. Chem. Soc.*, 1880, 1881); "Methylene Chloriodide" (*ib.*, 1885); "Constit. of Glycocoll and Its Derivs." (*J. Coll. Sci., Tokyo*, 1895); "Molec. Conductivity of Amidosulphonic Acid" (*ib.*, 1897).

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Contrib.—"Effect of Alcohol on Secretion of Bile" (*Amer. J. Phys.*, 1906); "Influence of Alcohol on Compos. of Urine" (*J. Pharm. and Exper. Therap.*, 1910); "Toxicity of Caffeine" (*Proc. Amer. Soc. Pharm. and Exper. Therap.*, 1910); "Influence of Caffeine on Protein Metabolism" (*ib.*, 1910, *J. Pharm. and Exper. Therap.*, 1911).

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Books.—"Comp. Cost. in Chili of Gas and Elec." 1896; "Formulae and Calcns. for Hydraulic Circuits," 1898; "Elec. Transmiss. of Power at Long Distance," 1899.

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Books.—"Cycle of Life"; "Evolution the Masterkey"; "Worry"; "Health, Strength, and Happiness"; "Parenthood and Race Culture"; Ed. "New Library of Med."

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Books.—"Reinforced Concrete in Theory of Construc." 3rd edn. 1911. *Art.*—"Fire resistance," "Roofs and Halls," "High Chimneys" in "Handb. of Reinforced Concrete," 1909.

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Contrib.—Numerous to *Annalen d. Chem.*, *Ber. d. chem. Ges.*, etc. Co-ed. *Jahresber. u. d. Fortschr. d. Chem.*

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Books.—"Infect. Dis. of Cattle"; "Tuberc. of Food-Producing Animals"; "Dis. of Poultry." *Contrib.*—Numerous on Immunity, etc., in *Ann. Rept. Bur. Animal Indust.*, 1884—1906; *Trans. Amer. Pub. Health Assoc.*; *Trans. Amer. Vet. Med. Assoc.*, etc.

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Contrib.—Numerous on Geol., Palaeont., Crystallog., etc.

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Books on Mandible; Larynx; Surg. of Lungs, Heart and Pericard., Tendons, Nerves, etc.

Contrib.—Numerous to *Clinica Chirurg.*

Suture of heart, pneumotomy, etc.

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Arts.—"Black-water Fever." *Encyc. Med.*,

1899; "Spotted Fever of Rocky Mountains," Allbutt's Syst. Med., 1907. *Contrib.*—"Rept. on 2 expts. on mosquito-malaria theory" (*Trans. Med. Chir. Soc.*, 1902); "Elucidation of sleeping sickness" (*Trans. Epidem. Soc.*, 1903); "Acclim. of Europeans in trop. lands" (*Proc. Roy. Geog. Soc.*, 1898); "Part played by Metazoan parasites in trop. path." (*J. Trop. Med.*, 1908).

Disc. Schistosoma mansoni, Sparganium bacteri; 12 new species of Linguatulidae; many new Protozoa; Sleeping Sickness transmitted by Tsetse fly, 1903.

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Books.—"Tables of Four Great Satellites of Jupiter." *Art.*—"Sun," *Encyc. Brit. Contrib.*—Several to *Mem. R.A.S.*, *Proc. Lond. Math. Soc.*, *Phil. Trans.*

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Contrib.—"Enumeration of blood corpusc. by simplified meth." (*Lancet*, 1909); "Paratyphoid Fever during course of Medit. Fever" (*R.A.M.C.J.*, XII.); "Paratyphoid in Malta, and Paratyphoid simulating Medit. Fever" (*ib.*, XIII.); "Influ. of Malta Fever infect. on foetus in Utero" (*Lancet*, 1911).

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Contrib. on theory of heterogen. react. with ref. to electrochem. processes, and on various applic. of phys.-chem. meth. to chem. anal., in *Trans. Chem. Soc.*, *Phil. Mag.*, *Proc. Roy. Soc.*, *Trans. Faraday Soc.*, *J. Soc. Chem. Ind.*

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Books.—"Cort.-bulb. and Protub. Pyramidal Fibres," 1903; "Simulation and Diagn. of Works Accidents," 1907; "Monog. on Tentaculiferous Infusoria," 1901. *Contrib.*—"Case of Medullary Sclerosis of Tuberc. Origin" (*Bull.*

Acad. Med. Belg., 1903); "Neuronophagia" (*Mém. Acad. Med. Belg.*, 1906); "Arteriosclerosis" (*ib.*, 1910); "Colouration of Nerve Fibres" (*Comptes Rendus Assoc. Anat.*, 1910).

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Books.—"Med. Dis. of Egypt"; "Egypt as a Winter Resort" *Arts.*—"Pellagra" in *Encyc. Med.*; "Bilharziasis" in Allbutt and Rolleston's Syst. Med.

Disc. Existence of pellagra in Egypt.

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Books.—"Elements of Phys.," "Phys. Theory of Electric." *Contrib.*—"Radiation in Alternat. Condenser Field" (*Phys. Rev.*, 1905); "Contact E.M.F. and Cohesion" (*ib.*, 1908); "Phys. Lines of Force" (*ib.*, 1908); "Positive Atomic Charges" (*ib.*, 1911).

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Books.—"Wishram Texts," 1909; "Takelma Texts," 1909; "Yana Texts," 1910; "Takelma Language of S.W. Oregon," 1912. *Contrib.*—"Song recitative in Paiute Mythol." (*J. Amer. Folk-Lore*, vol. 23); "Hist. and varieties of hum. speech" (*Pop. Sci. Monthly*, vol. 79); "Prob. of noun incorporation in Amer. languages" (*ib.*); "Anthropol. surv. of Can." (*Sci.*, N.S., 1911).

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Public.—Numerous on Pelagic Spawning of Codfish; Artific. hatching of Cod.; Inverteb., Crustacea, etc.

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Contrib. on Hist. of Sci.

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Books.—"Textb. of Heat; Theor. and Pract.," jty.; "Pract. Phys.," jty.; "Senior Magnetism and Elec.," jty. *Contrib.*—"Ra-em. in atmosphere" (*Phil. Mag.*, 1908 and 1910); "Absorp. of Ra-em. by coconut charcoal" (*ib.*, 1910); "Quant. of Radium and Th-em. contained in air of certain soils" (*Proc. Camb. Phil. Soc.*, 1912); "Number of a Particles expelled when an atom of Th-em. disintegrates."

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Books.—"Cylindrome"; "Pulsating Ophthalmus"; "Exophthalmic Goitre." *Contrib.*—"Struc. of Choroid" (*Graefes Arch. f. Ophthalm.*, 1877); "Treatment of Trachoma, past and present" (*Zeitschr. f. Heilk.*, 1891); "Import. of Bact. in Ophthalm." (*Internat. Cong. Heidelb.*, 1888); "Op. treatm. of Short-Sight" (*Klin. Mitt. f. Augenheilk.*, 1904); etc.

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Books.—"Lects. on Bright's Dis.," 1889; "Lects. on Diabetes," 1891; "Lects. on Renal and Urinary Dis.," 1900, 4th edn.; "Med. Ethics." 2nd edn., 1907; "Treatment of Dis. of Digest. Syst.," 1906. *Art.*—"Diabetes" in Allbutt's "Syst. of Med.," 1907.

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Soc.—Amer. Assoc. Adv. Sci.; Amer. Breeders' Assoc.

Various Bull. and Repts. issued by Dept. of Agric., Can., since 1903. *Contrib.*—"Wheat Breeding in Can." (*Supp. to J. Bd. of Agric.*, 1910).

Early-ripening Cereals, esp. spring wheat.

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Books.—"Compressed Air Production"; "Compressed Air Information." *Contrib.* on Quarrying (*Amer. Soc. C.E.*); Tunnelling in the Alps and Driving Headings in Rock Tunnels (*Amer. Inst. Min. E.*); Compressed Air (*J. Franklin Inst.*, and N.Y. Rail. Club); Ed. *Compressed Air Mag.*

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Books.—"Lab. Exper. in Metall." (jtly.). *Arts.*—"Iron and Steel Manuf." any "Metallog." in *Encyc. Amer. Contrib.*—Nearly 100 on Metall. of Iron and Steel, Metallog., Alloys, etc.

Inv. Pipeless process for casting ingots; Magnetic deflector for rolling steels.

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Contrib.—"Geol. of Tama Co., Ia." (*Ia. Geol. Surv.*, 1902); "Geol. of Fayette Co., Ia." (*Ib.*, 1904); "Lower Paleozoic Stratigraphy of S.W. Illinois" (*Amer. J. Sci.*, 1908); "Geol.

and coal resources of the Herrin, Ill., quadrangle" (*Ill. Geol. Surv. Bull.*, 1911).

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Books.—"Phys. Diagn. of Dis. of Lungs and Heart, with Exam. of Urine," 1870; "Floating Kidney," 1872; "Pract. Med.," 5th edn., 1912; "Notes on Med. Educ.," 1889; "Insomnia, its Causes and Cure," 1907, 2nd edn., 1912; "Clin. Thermometry," 1875; "Points of Pract. in Maladies of Heart" (Lumleian Lects.), 1908, 2nd edn., 1913; "Coprostasis," 1912. *Contrib.*—"Paralysis of Adductors of Vocal Cords" (*Birm. Med. Rev.*, 1876); "Improvements in Diabetic Diets" (*Brit. Med. J.*, 1904); "Fuming Inhalations in Asthma" (*Folia Therap.*, 1907); "Causation of Cancer" (*Lancet*, 1900).

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Books.—"Org. Mat. Med.," "Essentials of Pharm."

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Contrib.—Various in *Memoirs of Acad. Sci. Naples, and Acad. Lincei Rome.*

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Book.—"Maxwell's Theory of Elec. and Magn.," 1908. *Arts.*—"Elec. Influence," "Propagation of Waves," "Interference," in "Handwörterb. d. Naturwiss." *Contrib.* on Theory of Dispersion, Integ. Equations, on Bending of Elec. Waves, etc., in *Ann. d. Phys.*

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Books.—"Adv. Text-bk. of Physiol.,"

- "Pract. Physiol.," "Essentials of Histol.," "Course of Pract. Histol.," "Quain's Anat.," "Text-bk. of Microsc. Anat." *Contrib.*—Numerous in *Trans. and Proc. Roy. Soc., J. Physiol.*, etc.
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Contrib.—"Lateral wall of cavum nasi in man" (*J. Morph.*, 1910); "Sinus maxillaris and its relations in embryo, child and adult man" (*Amer. J. Anat.*, 1910); "Genesis and develop. of nasolacrimal passages in man" (*Ib.*, 1912); "Types of ostia nasolacrimalia in man and their genetic significance" (*Ib.*, 1912).
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Books.—"Pract. of Pharm. and Toxicol.," 1897 (with Zenetti); Ger. Ed. Plugge's "Best Remedies," 1886; "Work of C. F. Schönbein," 1901 (with Kahlbaum). *Arts. in Realecyc. d. Pharm., Liebig's H.v.b. d. Chem., etc. Contrib.*—"Hydrogen Peroxide" (*Mitt. d. Berne Nat. Ges.*, 1869); "Chem. of Blood and of Ferments" (*Z. f. Biol.*, 1871); "Resorp. of Carbolic Acid" (*Arch. d. Pharm.*, 1881); "Active Influences" (*Liebig*, 1902).
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Art.—"Bone and Cartilage" in "Krause's Enzyk. d. Mikr. Technik" *Contrib.*—"Histol. of Human Organs," 1—8 (*Sitzber. Akad. Wiss. Wien*); "Thyreo-thym. Syst." (*Ib.*); "Histol. and Evol. of Cartilag. Tissue," 1—3 (*Zeitschr. Wiss. Zool.*).
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Books.—"Trees of Ohio and Surrounding Territory"; "Lab. Outlines for Gen. Bot.," "Pteridophytes of Ohio." *Contrib. to Bot. Gaz., Ohio Nat.*, etc.
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Books.—"Hist. of European Fauna," 1899; "European Animals, their Geol. Hist. and Geog. Distrib.," 1907; "Distrib. and Origin of Life in Amer.," 1911. *Contrib.*—"On the Intra-ovarian Egg of some Osseous Fishes" (*Q. J. Microsc. Sci.*, 1887); "Rhynchodemus howesi, a New Species of Planarian Worm" (*J. Linn. Soc. Zool.*, 1900).
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B. 1870, Frankfurt a. M.
Book.—"Photochem. and Photog." *Contrib.*—Numerous on photog. and phys. chem.
- SCHAUMAN, GEORG CARL AUGUST**, Direc. of Regional Bureau, Internat. Cat. of Sci. Lit.; Librarian, House of Learned Soc. of Finland; Assist. Librarian, Univ. Library, Helsingfors, Finland.
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Books.—"Life of Anders Chydenius"; "Life and Work of Anton Menger"; "Studies in Econ. Lit. of Sweden, 1718—40"; "Ch. Gide's Princ. of Polit. Econ.," Swed. Transl., 3 edns.; "P. Kalm's Travels in N. Amer.," new edn.; etc., including several on Bibliog.
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Books.—"Ann. Repts. of Progress of Phys.," "Repts. of Ger. Phys. Soc.," "Pract. Metronomy," 1911. *Contrib.*—Numerous.
- SCHHEEL, OLAF**, Reader on Intern. Med., Univ. Christiania, Norway; M.D.
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Books.—"Diff. Eqns. with known infinities. Transformms.," jty., 1891, 2nd edn. 1912;

"Continuous Groups," jtly., 1893; "Geom. of Contact Transformm.," jtly., 1896; "Applic. of Diff. and Integ. Calc. to Geom.," Vol. I., 1901, 2nd edn. 1910, Vol. II. 1902, 2nd edn. 1913; "Textb. of Math.," 1905, 2nd edn. 1911; "Textb. of Diff. and Integ. Calc.," jtly., Vol. I., 5th edn. 1908, Vol. II., 5th edn. 1911, Vol. III., 3rd edn. 1909. *Arts and Contrib.*—40.

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Books.—"Spectrum Anal. of Stars"; "Star Photog.," "Radiation and Temperature of Sun"; "Struct. of the Universe"; "Theory of Spectrum Anal." *Contrib.*—Numerous.

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Books.—"Ustilagineae of Switz.," 1911.

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Books.—"Geol. Map of S.W. Africa," in Meyer's "German Colonies," 1910; "Vegetation in Ger. S.W. Africa," 1903. *Contrib.* on Geol. and Geog. of S. Africa to *Petermann's Mitt., Zeitschr. Geol. Ges., Verhandl. d. Geog. Tages.*

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Contrib. to *Geb. d. Physiol.*, etc.

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Books.—Jt. Ed. with Haussner, "Jena edn. of Works of [his brother] Ernst Schering," Vol. I., 1902, Vol. II., 1909. *Arts.*—6 reprints.

on progress of terrest. magnetism, in Wagner's Geog. Yearb., since 1889. *Contrib.*—"Descrip. of new phys. lab. at Darmstadt," 1895; "Hist. evol. of hypotheses in optics and elec.," Rector's discourse, 1900; and on terrest. magnetism in *Ann. d. Phys., Publ. Soc. Sci. Göttingen*, etc.

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Book.—"Rubber," 1911. *Arts.* in *Encyc. Brit. Contrib.*—"Proteolytic Enzyme of Malt" (*J. Inst. Brewing*, 1903); "Chem. of Whisky" (*J. Soc. Chem. Ind.*, 1905); "Viscosity of Rubber" (*ib.*, 1909); "Tensile Properties of Rubber" (*India-rubber J.*, 1909).

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Contrib.—Numerous on bees, starfish, molluscs, etc.

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Book.—"Introd. to Study of Chem." (Ital. and Ger.) 1875. *Contrib.* since 1856.

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Books.—"Variable Stars"; 251 Pleiades Stars.

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Contrib. on geol. of Unterengadin (Switz.) and S. Amer.

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- Books.*—"Geom. Anal. Theory of Symmet. S. Functions with Simple Minima," 1897; "New Kinemat. Models for Introd. to Theory of Curves," 1899; "Nomography of M. d'Ocagne," 1900; "Applic. of Descrip. Geom. to Photogrammetry," 1904; etc.
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- Books.*—"Street Railways in U.S.A.," 1903; "Hamburg and its Traffic," 1903; "Econ. of City and Suburb. Rys.," 1913. *Arts.* in Roelt's *Encyc. of Railways*, 2nd edn.
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- Books.*—"Corn in Relat. to Climate," 1893; "Theory of Cultiv. on Physiol. Basis," 1896; "Sci. and Pract. of Agric.," 1909.
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- B. 1862.
- Contrib.*—"Phenylhydrazine Compounds with Magnesium Salts" (*J. f. Prakt. Chem.* 1893); "Protein Estim." (*Z. f. Anal. Chem.* 1898); "Protein Formn. and Transformn. of Barley" (*Comptes Rendus Carlsberg Lab.*, 1906); "Protein Transformn. during Malting" (*ib.*, 1910).
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- Contrib.*—"Craniol. of Semang" (*Abh. Mus. Dresden*, 1907); "Travels in Kais. Wilh. Land, New Guinea" (*ib.*, 1910); "Ethnog. Collectn. from Kaiserin-Augusta River" (*ib.*, 1910); "Travels in Melanesia" (*Verh. Schweiz. Nat. Ges.*, 1911).
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- Book.*—"Textb. of Pract. Surg.," jtly, 2 vols., 1913. *Contrib.*—"Complete removal of stomach" (*Lancet*, 1898); "Fracture of metacarpal bone" (*Saml. Klin. Vorträge*, 1910).
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- Ed. Publ.* of Allegheny Observ.
- Determ. orbits of Spectros. Binaries and investig. from evolutionary view; Accurate determ. of distances of stars by photog.
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- Books.*—"Mech. Cost Calculators in Machine Construe.," 1911; "Accident and Trade Insurance," 1910. *Contrib.*—"Machine tools at Liège Exhib." (*Zsch. Ver. deut. Ing.*, 1905—6); and on lighting, etc.
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- Books.*—"Theory of Linear Differential Equations," 1895—98; "Introd. to Theory of Diff. Equations," 1900. 2nd edn. 1904; "Lectures on Linear Diff. Eqns.," 1908; "Origin of Linear Diff. Eqns.," 1909; "Gauss on Theory of Functions," 1912. *Contrib.* to *Crelle's J.*, *Math. Ann.*, *Comptes Rendus*, etc.
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- Book.*—"Manual of Forestry," 5 vols. *Art.*—"Forestry," in *Encyc. Brit. Contrib.*—"Afforestation in G.B. and I.," 1886; and numerous others.

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Book.—"Princ. of Agric. Chem."
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Book.—"Hdb. of Paediatrics," jtly. with Pfaunder, transl. in Eng., Span., Ital.

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Books.—"Alkaloids of *Adlumia cirrhosa*"; "Chem. of *Stylophorum diphyllym*"; "Chem. of *Argemon Mexicana*."

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Books.—"Human Geog.," 1906; Ed. "F. v. Richthofen's *Commerc. Geog.*," 1908. *Arts.* in Weyrich-Bothe's *Mod. Geog. Educ.*, 1912, and Hoops' *Realex. of German Antiq.* 1912. *Contrib.*—"Austro-Hungar. sphere of Occupation" (*Geog. Zschr.*, 1909); "Relat. of Nature

and Man in Geog.," (*Ib.*, 1907); "Principles of Human Geog.," (*Arch. f. Sozialwiss.*, 1905).

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Contrib.—Numerous to *Met. Zschr.* and *Ann. d. Phys.*

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Contrib.—"Catenarian Curves of Hyperboloids" (*Sitz-ber. Vienna Acad. Sci.*, 1881); "Contact Curves of Helicoids" (*Ib.*, 1890); "Contour Estim. of Surfaces of Second Degree" (*Ib.*, 1904); "Cubic Problems and Complex Diameters" (*Ib.*, 1906).

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Books on Intestin. Dis. *Contrib.* on Asthma, Nervous Dis., etc.

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Books.—"Cyclic Refrac.," 1878; "Solar Refrac.," 1891. *Contrib.*—"Undulations and earthquakes" (*Jahrb. Vereins Naturk. Württ.*, 1888); "S. Ger. earthquake of Nov. 16, 1911" (*Wiss. Jahrb. Statist. u. Landesk.*, 1912); and various to *Gerland, Phys. Zschr.*, etc.

Vertical seismometer; trifilar gravimeter.

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Contrib.—"Transmission of heat through scale-covered boiler tubes" (*Railroad Gaz.*, 1901); "Freight train resistance and average

car weight" (*J. Amer. Soc. Mech. Engrs.*, 1910, and *Bull. 43, Engrng. Expt. Station, Univ. Ill.*, 1910); "Effect of cold weather upon train resistance and tonnage rating," *jtly. (Ib., Bull. 59, 1912).*

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Books.—"Compend. of Prac. Photog.;" "Photog. Vade-mecum"; "Instantaneous Photog." *Contrib.*—"Colour Photog." (*Bayern-Landes-Gewerbe Zeit.*, 1911); "Dry Colour Process" (*Zeitschr. f. Bucherfreunde*, 1910); "Apprentice Question" (*Photog. Korresp.*, 1901); "Toning" (*Ib.*, 1894).

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Books.—"Diff. and Int. Calculus" (with Lorentz); "Kathode Rays." *Contrib.* on Fluorescence of Sodium and Potassium; Radioactivity of Thorium; Electrol. of Salt Vapours, etc.

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Books.—"Bacteria"; Ed. and Jt. Auth. of "Flora of Koh Chang (Gulf of Siam)," 1900—10. *Contrib.*—"Life-Hist. of Eel" (*Repts. and Proc. Internat. Council for Explor. of Sea*, 1906); "Post Larval Develop. of Gadoids" (*Medd. f. Kommiss. f. Havundersøgelser*, 1905—08); "Pelagic Fry and Spawning Regions of Gadoids in N. Atlantic from Iceland to Spain" (*Repts. and Proc. Internat. Council for Explor. of the Sea*, 1909); "Biol. of Eels, esp. Conger" (*Nature*, 1911).

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Contrib. on optics and elec.

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Book.—"Genito-Urinary and Venereal Dis." *Contrib.* on genito-urinary, venereal and skin dis.

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Books.—"Pain in Intern. Dis.," 2nd edn. 1910, and in Eng.; etc.

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Books.—"Blindness"; "Eye Therap. and Ophthalmoscopy," 7th edn.; "Connection of Eye with other Dis.," 2nd edn.; "Glaucoma," 2nd edn.; "School Short-sight and its Prev." *Contrib.*—"Origin of Neuritis Optica" (*Archiv. f. Ophth.*, 1869); "New Method for Estim. of Refraction in Ophthalmoscopy" (*Berlin Klin. Woch.*, 1877); "Colour of Macula Lutea" (*Archiv. f. Ophth.*, 1903).

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Contrib.—200 on Hippuric Acid Synthesis, Muscarins, Sulphur Acids, etc.

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Lichens, root nodule bact., medicinal plants.

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Books.—"Textb. of Comp. Animal Histol.," 1902; "Vitalism," 1903; "Pract. Comp. Animal Histol.," 1908; "Introd. to Theory of Descent," 2nd edn. 1911; "Theory of Descent from Religious Standpoint," 1910; "Lect. on Animal Psychol.," 1909; "Pract. of Animal Psychol.," 1912. *Contrib.*—"Plasma struc. and motion of protozoa and plant-cells" (*Zool. Inst. Wien*, 1905).
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Book.—Trans. Gattermann's "Pract. Methods of Orga. Chemis." *Arts.* on Chem., "Chandler's Encyc." *Contrib.*—"Action of Certain Alcohols on (m) Diazobenzene Sulphonic Acid" (*Amer. Chem. J.*); "Sulphuric Acid on Anisol" (*ib.*); "Sulphuric Acid on Phenetol" (*ib.*); "Propanetrisulphonic Acid" (*ib.*).
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Contrib. on electrol., etc.
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Books.—"Annual Repts. of Eye Clinic," 1874—82. *Contrib.*—Numerous on astigmatism, fluid secretion, phys. struc. of eye, operns. for detachment of retina, optico-ciliaris neurotomy, etc.
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Book.—"Gas Machine," 5th edn., 1909.
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Contrib.—Numerous, on noxious insects, etc.
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Book.—"Monogr. on Fulminic Acid." *Contrib.* num. to *Ber. Chem. Ges.*, *Liebigs Ann.*, *Wiener Monatsh. f. Chem.*, on anthracene dyes, etc.
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Books.—"Text-bk. of Pharm. Chem." *Arts.* in "Realenyc. d. Pharm.," and "Ladenburg's H. w. b. d. Chem." *Contrib.*—Numerous to *Ber. Chem. Ges.*, *Arch. d. Pharm.*, *Ber. Pharm. Ges.*, *Z. f. Elektrochem.*, since 1895.
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Books.—"Microchem. Anal." 1908; "Org. Anal." I., 1911.
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Books.—"Bacteria," 1909, and in Eng. & Russ., 1912. *Contrib.*—"Import. of intestinal bact. in nutrition" (*Arch. f. Hyg.*, 34, 42, 67, 79).
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Books.—"Nature and Methods of Planimetric Teaching," 1890, 2nd edn. 1893; *Ed.* "Reidt's Planim. and Stereom. Guide to Math. Teaching." *Art.*—"Hist. of Math. Educ." in Rein's *Encyc.*
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Books.—Numerous.
Inv.—Various meteorol. instruments.
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Books.—"Colorimetric, Turbidity, and Titration Methods used in Soil Investig.," 1906; "Lawn Soils," 1911; "Sesquiterpenes," 1903; "Chem. of Soil Org. Matter," 1910. *Contrib.*—"Boric Acid and its Salts" (*Z. f. Phys. Chem.*, 1896); "A simple Colorimeter for Gen. Use" (*J. Amer. Chem. Soc.*, 1904); "Effects of a Harmful Org. Soil Constituent" (*Bot. Gaz.*, 1910); "Distrib. of Org. Constituents in Soils" (*J. Franklin Inst.*, 1911).

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Books.—"Moors of Switz.," with Früh, 1904; "Veget. of Lake of Constance," with Kirchner, 1896, 1906; "Plant Life of Alps," 1904, 1908.

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Books.—"Textb. of Astron.;" "Researches on Proper Motion"; "Meridional Observns.," *Art.*—"Astron" in Salmonsen's Encyc.

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Books.—"Monuments of Samarcand," 1899; "Architectonics," 1907; etc. *Contrib.*—"Statics and Dynam. in Nature and Art" (*Allgem. Bauz.*, 1910); "Mohammedan monuments in Algeria and Tunis"; etc.

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Contrib.—Numerous.
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Soc.—F. Amer. Inst. E.E.; West. Engrs.; Illum. Eng.; P.P. Chicago Elec. Assoc.

Chap. on Cent. Stat. Engrng., in "Cyc. of App. Elec." and "Cyc. of Mod. Engrng." *Contrib.*—"Use of Power Limiting Reactances" (*Trans. Amer. I.E.E.*, 1911); "Protection of High Tens. Transmiss. Syst." (*Elec. World*, 1908); "Transformer Testing" (*ib.*, 1902); "Rotary Converter Substations" (*J. West. Soc. Engrs.*, 1907)

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Books.—"Breakage of Wolhusen Bridge," 1894. *Contrib.*—"Armoured Concrete Girders," (*Repts. Swiss Testing Off.*, 1906, 1908, 1909); and numerous others.

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Contrib.—"The ideal and the practical column" (*Proc. Engrng. Assoc. of South*); "Hydraulic diagrams" (*ib.*); "Constrained, continuous, and reinforced concrete beams" (*ib.*); "The greatest bending moments produced by Cooper's E 40 loading" (*Bull. No. 128, Amer. Ry. Engrng. Assoc.*).

Water works for city of Covington, Ky.; irrigation works in Kern Co., Cal.; sewerage system of cities of Monroe, La. and Oxford, Miss.

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Books.—"Plant Life in High Seas"; "Anal. Study of Plankton"; "Peridineae of Plankton Exped.," etc.

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Contrib.—"Calorim. Measurment," jtlly. with Wartha (*Wiedemann Ann.*, 1877); "Yellow volatile modif. of Arsenic" (*Math. u. Naturw. Ber. aus Ungarn*, 1889); "Distillins. into vacua of Quartzglass" (*Zeitschr. f. anorg. Chem.*, 1909); "Tetraarsenic-trisulphide, As₄S₃" (*Math. u. Nat. Ber. Ungarn*, 1897).

Inv.—Automatic mercury pump; durable mercury contact.

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Books.—"Notion and Essence of Rent of Land," 1899; "Polit. Econ. of Italy in Recent Years," 1891; "'Colonat' in Prov. of S. Austria," 1908; "Elements of Polit. Econ.," 1911. *Arts.*—"Bankruptcy" and "Polit. Econ.," in *Zeits. f. Volkswirt.*, 1892; "Hist. Study on Taxation of Agric. in Austria," in "Hist. of Austrian Agric.," 1896; "Foreign Trade" and "Polit. Econ.," in *Jahrb. f. Nat. Okon. u. Statistik*, 1911.

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Books.—"Chem. of Coal-tar"; "Tables of Dye-stuffs"; "Handbk. of Chem. Technol." *Contrib.* to Heumann's "Dyes," and to *Ber. Chem. Ges., Ann. d. Chem.*, etc.

Org. dyes; explosives; photog.

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Books.—"Dis. of Mening. and Hydroceph.," 1901; "Textb. of Nerv. Dis.," 1898; "Hypertrophy and Progress. Muscular Atrophy," 1886. *Contrib.*—"Syringomyelia" (*Zsch. f. klin. Med.*, Vol. 13); and on spinal dis., etc.

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Books.—"Namaland and Kalahari," 1907; "Melanesian Speech," 1911. *Art.*—"Ger. S.W. Africa," in "Meyer's Kolonialreich," 1910. *Contrib.* on Antipatharia and Medusae; Regener. of Ciona, etc.

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Book.—"Text-bk. of Anat. and Embryol." *Contrib.*—Numerous.

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Book.—"Psychol. Studies," 1907, 1908, 1909.

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Books.—"Text-bk. of Anal. Geom.," 1898, 1912; "Foundations of Geom.," 1909. *Contrib.* to *Math. Ann.*, *J. f. Math.*, *Z. f. Math u. Phys.*, etc.

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Book.—"Theory of Optics." *Art*.—"Spectrosc." in "Encyc. Brit.;" "Progress of Phys., 1875—1908."

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Books.—"Hist. of Forest and Game," 1887 2nd edn. 1891; "Guide to Wood Survey," 2nd edn. 1903; "Growth of normal Pines," 1889; "Pines," 1890; "Beeches," 1893; "Oaks," 1905; "Common Beech," 1911; "Tables of Produce," 1912; "Measure Tables," jtly., 4th edn., 1912; "Forestry," 2nd edn. 1908; "Neudamm Forest," jtly., 4th edn. 1912.

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Contrib.—"Low Tension Thermal Cutouts" (*J. Inst. E.E.*); "Fuse Phenom." (*Ib.*); "Testing of Rubber for Elec. Work" (*Ib.*); "Corrugation of Rails" (*Ib.*)

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Contrib.—"Observ. on Tumours of Veronica

Chamaidrys" (*Annals of Bot.*, 1910); "Roo Dis. of Juncaceae" (*Ib.*, 1910); "Life Hist. and Cytol. of Sorosphaera Graminis" (*Ib.*, 1911).

Plasmiodiophoraceae, two new species.

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Books.—"Causal Geol.;" "S. A. Geol." *Contrib. to Q.J. Geol. Soc., Geol. Mag. Lond., J. Geol. Chic., Geol. Survey Memoirs Cape Town, Records Albany Mus. Grahamstown, Rept. Sci. Assoc. S.A., Geog. J. Lond.* on Causal geol., extension of planetismal hypoth. of origin of earth and atmosph. from meteoritic gases, S.A. Palaeozoic fossils, stratig. sequence in S.A.

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Contrib. on series, in *Q.J. Math., Messenger of Math.*, and in Eng. and Ger.

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Books.—"Atmospheric Elec." (jtly.), 1909; "Textb. of Phys. for Pharm. Students," 1909; "Pract. Exercises," 1911.

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Books.—"Dis. of Eye," 7 edns.; "Amer. Textb. of Dis. of Eye, Ear, Nose and Throat," jtly.; "Toxic Amblyop." *Contrib.*—Numerous.

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Book.—"Collected Works." *Contrib.*—Numerous.

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Books.—"Instr. for Expts. in Materials Testing," jty., 1911. *Contrib.*—"Tests of cement mortars when mixed with oils" (*Proc. Ind. Engrng. Soc.*, 1911); "Strength of concrete building blocks" (*Proc. Ind. Acad. Sci.*, 1910); "Strength of brick piers" (*Ind. Engrng. Soc.*, 1909); "Instr. in a Materials Testing Lab." (*Proc. Amer. S.P.E.E.*, 1912).

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Books.—"Introduct. to Struct. Bot.," Part 1, 8th edn., 1912, Part 2, 6th edn., 1912; "Studies in Fossil Bot.," 2nd edn., 1908—09; "Evolution of Plants," 1911; "Palaeobot. (Palaeozoic) in *Encyc. Brit.*, 10 and 11; "Paleont. Record—Plants," in "Darwin and Mod. Sci.," 1909. *Contrib.*—"Struct. and Affinities of Fossil Plants from Palaeozoic Rocks" (*Phil. Trans.*, 1897—1905); "Present Position of Palaeozoic Bot." (*Progressus Rei botanicae*, 1907); and many others.

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Contrib.—"Case-Hardening" (*J. Iron and Steel Inst.*, 1907), etc.

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Contrib.—"Change of type in Leukaemia" (*Lancet*, 1907); "Obstruction atrophy of Pancreas" (*J. Path. and Bact.*, 1906); "Romanowsky staining for blood cells" (*Folia Haemat.*, 1911); "Successive double staining for histol. purposes" (*J. Path. and Bact.*, 1912).

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Books.—"Psychol. of Advertising," 1908; "Influencing Men in Business," 1911; "Increasing Hum. Efficiency in Business," 1911.

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Books.—"Introduct. to Geol.," "Mammals of W. Hemisphere"; Ed. and joint-author, "Repts. of Princeton Univ. Exped. to Patagonia," 8 vols. *Contrib.*—About 60, on paleont., etc.

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Books.—"Bull. of Laws Observ., vol. 1"; "Pract. Astron. for Engrs."

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Books.—"Outlines of Astron.," 1874, 2nd edn., 1875; "Essays," 1910; "Annals of Harvard Coll. Observ.," vols. LXII., LXV.—LXVII. *Arts.*—"Zodiacal Light" in "Ann. Harv. Coll. Observ.," vol. XIX.; "Meridian Observ." (*ib.*, XXXIII.); "Theory of Combination of Observ." (*ib.*, LX.). *Contrib.*—"Zodiacal Light" (*Proc. Amer. Acad.*, XIX.); "Phases of Moon" (*ib.*, XIX.); "Econ. of Solar radiation" (*ib.*, XXIV.); etc.

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Book.—"Exper. Elasticity," *Contrib.*—"Problems in Elec. Convection" (*Phil. Trans.*, 1896); "Meas. of magnetic hysteresis," with T. G. Bedford (*ib.*, 1902); "Studies in magnetic testing" (*Proc. Inst. E. E.*, 1904); etc.

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Books.—"Elem. Expts. in Psychol.," "Psychol. in Daily Life," *Contrib.*—"Normal illusions" (*Yale Studies*, 1897); "Localiz. of Sound" (*Ia. Studies in Psychol.*, 1900); "Mental work" (*ib.*, 1905); "Psychol. of music" (*Psychol. Rev. Monographs*, No. 53, 1910).

Inv. Tonoscope; Spark Chronoscope; Psychergograph; Audiometer; Sound Perimeter; Multiple Recorder; etc.

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Contrib.—"Iowa Discomycetes" (*Bull. Lab. Nat. Hist. State Univ. Ia.*, 1910); "Hypocreales" (*N. Amer. Flora*, 1910); "Studies in Pyrophilous Fungi—I. II. Mycologia," 1909—10; "New Species of Sphaerosoma" (*J. Mycol.*, 1905). Assoc. Ed. *Mycologia*, since 1909.

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Books.—"Hist. of Atomic Weights," 1884; "Man. on Artificial Manures," 1907; "Textb. on Inorg. Chem. for Students," 1910; "Elem. Textb. on Chem. for Agric. Schs.," 1912. *Contrib.*—Chem. of milk and dairy feeding and feeding stuffs, artificial manures and their effects, photochem. effect of sunshine, anal. chem. of cellulose and nitrogen, in *J. of Physiol.*, *Phil. Mag.* and native and foreign *J.*

Inv.—Automatic pipette for measuring acids.

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Books.—"Archean Sediment. Rocks in S.W. Finland," 1899; "Granite and Gneiss," 1907; "Volcanic Rocks," 1909. *Art.*—"Geol. of Finland and Fennoscandia" in Atlas de Finlande, 1910.

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Books.—"Annals of Munich Observ.," 4 vols.; "Theory of Heliometers." *Contrib.*—130.

SEGALE, MARIO, Prof. of Path., Univ. Genoa, Italy; Chief Ed., *Pathologico*.

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Books.—"Regeneration of Nerves," 1903; "Applic. of Phys. Chem. in Pathol.," 1905—8; "Anaphylaxis," 1909—11; "Cholera," 1912.

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Contrib. on Geom. to Acad. Turin and Lincei, and to *Math. Ann. Ann. di Mat., Rendic. Palermo*, etc.

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Book.—"Solub. of Inorg. and Org. Substances," 1907, reprinted 1911. *Contrib.*—Over 30, on chem. and pharmaco.

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Books.—"Receipt Poeketbk. for Children's Dis.," Ed. Gerhardt's "Children's Dis.," "Med.-Clin. Diag." (with Müller), 13th edn.;

"Atlas of Histo-Path. of Nose" (with Kahn). *Arts.* in Lesser's Encyc., Heymann's Handb., Schröder-Blumenfeld's "Handb. d. Therap.," Katz and Blumenfeld's "Handb. d. Exper. Chirurg." *Contrib.* to *Internat. Centrabl. Vienna, Rev. de Laryng., Archiv. f. Dermatol., Dermatol. Woch., Würzb. Abh.*, etc.

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Book.—"Foetal Heart-Sounds during Birth." *Arts.* in v. Winckel's "Handbk. d. Geburtsh." *Contrib.*—"Increase of Myomia" (*Munich Med. Wochenschr.*, 1911); "Clinic and Stats. of Eelampsia" (*Arch. f. Gynaec.*, 1908); "Intracranial Bleeding in Newly-born" (*ib.*, 1907), etc.

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Books.—"Conjugations of Maya Language," 1886; "Travels," 1887; "Wall-Pictures of Paläste of Mitla," 1895; "Codex Borgia," 3 vols, 1904, 1906, 1908; "Ancient American Languages," 1902; Collected works, 1902, 1904, 1908.

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Contrib.—"Lift and Drift of Arched Surfaces" (*Sci. Amer. Suppl.*, 1908); "Centre of Pressure on Arched Surfaces" (*Amer. Aeronaut.*, 1910); "Interfer. of Aeroplane Surfaces" (*ib.*, 1910); "Notes on Aeroplane Propellers" (*ib.*, 1910).

Inu. new type of aeroplane.

SELLHEIM, H., Prof. of Obstet. and Gynaec., Tübingen Univ., Ger. *Inu.* New Type of Aeroplane.

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Books.—"Tables relating to Survivorships," 1880; "New Computing Machine," 1887. *Contrib.*—"Binary and Ternary Quadratic Forms" (*J. f. Math.*, 1873); "Quadratic

Forms applied to Crystallog." (*J. des Math.*, 1877); "Formula for Empiric Series" (*J. f. Math.*, 1890); "New Computing Machine" (*Zeitschr. f. Math. u. Phys.*, 1905).

Calc. machine, 1912.

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Contrib.—"Phoronis" to "Fauna and Flora of Gulf of Naples"; and on Tunicata and Petromyzon to *Archiv. d. Biol., Mem. Acad. Belg., Wiss. Meeresuntersuch.*, etc.

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Book.—"Ethereal Oils Constit." *Contrib. to Ber. Chem. Ges.* on synth. of ether. oils.

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Contrib. to Phil. Trans., Allbutt's "Syst. Med.," Heath's "Dict. Surg.," Heymann's "Handbk. d. Laryng.," *Lancet* and *Brit. Med. J.*, *Trans.* of various Soces., etc.

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Books.—"In the Australian Bush," 1899; "Zool. Travels in Australia and Malay Archip.," 1893—1913; "Transmiss. of Acquired Charact.," 1912.

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Books.—"Lect. Notes on Urine Anal.," "Lect. Notes on Trigonom. and Mechs." *Contrib.*—"Response in Living Bodies to Elec. Stimulus" (*Calcutta Univ Mag.*, 1907).

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Essay.—"University and Tech. Training," 1910. *Arts.*—"Cyanic Acids," Watt's "Dict. of Chem.," 1910; Sect. in Chem. of Drugs, Thorpe's "Dict. of Chem." *Contrib.*—Chiefly on Org. Chem. to *Trans. Chem. Soc.* and *Ber. Chem. Ges.*

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Books.—"Outlines of Phys. Chem.," 3rd edn., 1912; "Text-bk. of Inorg. Chem.," 1911. *Contrib.* on Bio-Chem. and Phys. Chem., in *J. Chem. Soc.*, *Zeitschr. f. Phys. Chem.*, *J. Phys. Chem.*, *Trans. Faraday Soc.*, etc.

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Book.—"Pseudo-Cumenols," 1896.

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Books.—Transl. and Ed. of Finsen's "Phototherapy," 1901; "Dis. of Skin," 1911. *Art.*—"Rodent Ulcer," "Dis. of Hair and Nails" in "Index of Treatm.," 1908; "Lupus" in "Tuberc. in Infancy and Childh.," 1908; "Tuberc. of Skin" in "Allbutt's Syst. Med." *Contrib.*—"Treatm. of rodent ulcer by X-Rays" (*Brit. Med. J.*, 1900); "Varieties of ringworm and their treatm." (*ib.*, 1906); "Treatm. of cancer by radio-therapy and radium" (*Internat. Surg. Cong.*, 1908).

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Contrib. on microbiol., trop. path. and hyg. to *Ann. Inst. Pasteur*, *C.R. Acad. Sci.*, *C.R. Soc. Biol.*, *C.R. Soc. Path. exotique*, etc.

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Books.—"Origin of Europ. Peoples and their Relation to those of Af., Asia and Oceania," 1908; "Man, his Origin, Variation and Geog. Distrib.," 1911; "Human Origins: Paleont. Researches," 1912.

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Books.—"Lab. Practice in Bot." *Contrib.* on Algae and Fungi to *Cal. Public. in Bot.*, etc.

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Book.—"Lab. and Factory Tests in Elec. Engrng." (with F. Townsend).

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Contrib. to Buck's "Ref. Handbk. of Med. Sci."; Howell's "Amer. Text-bk. of Physiol."; Musser and Kelly's "Treatment"; Kleb's "Tubero."; Forchheimer's "Treatment"; and to *J. Physiol.*, *Amer. J. Med. Sci.*, *J. Amer. Med. Assoc.*, *Med. News*, etc.

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Books.—"Fossil Plants," 2 vols.; other books and papers on palaeobot.

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Books.—"Qual. Anal.;" "Quant. Anal.;" "Elem. Metall.;" "Elem. Chem.;" "Fuel and Refractory Materials.;" "Chem. of Materials of Engrng.;" "Assaying" (with Rhead); "Producer Gas.;" and on Metall. of common Metals; "Principles of Iron-founding."

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Book.—"Heart of the Antarctic."

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Contrib.—"Lower Ludlow Formation and its Graptolitic Fauna" (*Geol. Soc.*, 1900); "Tarannoa Series of Tarannoa" (*Geol. Soc.*, 1906); joint author "Monograph of Brit. Graptolites" (*Palaont. Soc., London*, 1900—1912).

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Contrib.—"Effect of changes of temp. on Young's Modulus of Elasticity" (*Phil. Mag.*, 1899); "New meth. of determ. radiation constant" (*Proc. Roy. Soc.*, 1912).

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Book.—"Surg. Anat. of Horse," 3 vols *Contrib.* on Anat. and Surg.

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Publ.—Several hundreds.

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Contrib.—"Diet in Typhoid Fever"; "Pericarditis."

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Contrib.—Numerous.

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Books.—"Man. of Chem."; Expt. Station Bulls. on Agric. *Art.*—"Lima Bean" in Bailey's Cyc. of Agric. *Contrib.*—"Beet-sugar cultiv." (*U.S.J. Polit. Econ.*, Vol. 12); "Polariscope method for determ. of Gliadin" (*J. Amer. Chem. Soc.*, Vol. 29).

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Book.—"Dynamo Lab. Manual," 2 vols. *Contrib.*—"Determ. of conductors for transmission and distribution" (*Engrng. Q.*); "Series Motors" (*Ib.*).

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Book.—"Synopsis of Linear Associative Algebra," Carneg. Inst. Wash., 1907. *Contrib.*—"Theory of linear assoc. Alg." (*Trans. Amer. Math. Soc.*, 1903); "Nilpotent Algebras" (*Ib.*, 1903); "Algebras defined by finite groups" (*Ib.*, 1904); "Standard forms of Peirce Algebras" (*Amer. J. Math.*, 1910).

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Books.—"Geol. Rambles in E. Yorks."; "Making of E. Yorks."; "Lost Towns of Yorkshire Coast"; Hull Mus. Publ., 1—80; "Cat. of Mortimer Mus." *Contrib.*—"Coast Changes in Humber Dist." (*J.R.G.S.*, 1910); "Roman, Angle and Dane in E. Yorks." (*Trans. Hull S. and F.N.C.*, 1908); "Prehist. Man in Holderness" (*Ib.*, 1900); "Classified List of Org. Remains from Rocks of E. Yorks." (*Proc. Yorks. Geol. Soc.*, 1909). Ed. *Trans. of Hull Sci. and Field Nat. Club.*

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Book.—"Geol. Survey Memoirs" (jtl.). *Contrib.*—"Foraminifera and other org. in raised reefs of Fiji" (*Harvard Geol. Series*, 1903); "Relat. of Permian to Trias in Notts." (*Q. J. Geol. Soc.*, 1911); "Glacial origin of clay-with-flints of Bucks., and on a former course of the Thames" (*ib.*, 1912).

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Books.—"Methods of Org. Anal."; "Chem. of Food and Nutrition"; "Iron in Food and its Functions in Nutrition." *Contrib.*—40 to *J. Amer. Chem. Soc.*, *J. Biol. Chem.*, *J. Ind. and Engrng. Chem.*, *Sch. of Mines Q.*

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Books.—"Integrative Action of Nerv. Syst.," 1906. *Contrib.* numerous to *Trans.* and *Proc. Roy. Soc.*

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Book.—"N. Amer. Index Fossils," with A. W. Grabau. *Contrib.*—"Old age in Brachiopods" (*Amer. Nat.*, 1906); "Dwarf faunas" (*ib.*, 1908); "Early Man" (*Sci.*,

Conspectus, 1913); "Spiriferoids of Lake Minnewauka Sect., Alta." (*G.S.A. Bull.*, 1913).

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Books.—"Pearls and Parasites," 1908; Part *Trans.* "Weismann on Heredity," 2 vols., 1889—92; "Zool. of Inverteb.," 1893; "J.," a Memoir of John Willis Clark," 1913; *Jt. Ed.* and Part Auth. of "Camb. Nat. Hist.," *Ed.* "Fauna of Brit. India Series"; *Ed.* "Pitt Press Nat. Sci. Manuals, Biolog. Series"; Part Auth. and *Ed.* of Text-bk. on Zool. and Handbk. to Nat. Hist. Cambridge. *Arts.* in *Encyc. Brit.*, *Encyc. of Sport, Allbutt and Rolleston's "Syst. of Med.," Encyc. Biblica.* Co-ed. "Parasitol.," and of *J. of Econ. Biol.*; *Rept.* of Grouse Dis. Inquiry. *Contrib.*—Numerous.

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Books.—"Lichen Flora of Queensland," 1888—9; "Internat. Cat. of Sci. Lit. Queensland," 1899; "Additions to Fossil Flora of Qd." (*Bull. Geol. Surv. Qd.*, 1898); "Fossil Plants from Duingang, etc." (*Bull.* 18, *ib.*). *Contrib.*—"Geog. Distrib. Qd. Lichens" (*Austral. Assoc.*, 1893); "Bot. of Basaltic Tablelands of S.E. Qd." (*ib.*, 1911).

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Contrib.—"Bogoslovsk Estate" (*Trans. Amer. Inst. Min. E.*, 1908); "Gold Dredging in the Urals" (*ib.*, 1906); "Notes on Coal and Iron Fields of Shansi" (*China Inst. Min. E.*, 1903).

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Chaps. on Nat. Hist. of U.S.; Negro race. Osteol. of Birds; Studies of Human Form *Contrib.* over 1100 on osteol. of vertebr., fossil birds, photog. of living animals and fishes, etc.

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Books.—"Developm. of *Sium cicutaefol.*," (*Carnegie Inst. Publ.* 30); "Bursae bursa-past. and Heegeri" (*Publ.* 112). *Contrib.* on Latency, Corn-breeding, Reversible sexmutants in *Lychnis dioica*, to *Bot. Gaz.*, &c.

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Contrib.—Repts. and Bulls. of *Exper. Farm*, and in *Trans. Roy. Soc. Can.*

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Contrib.—"Carbonif. Limestone of Weston-super-Mare" (*Q.J. Geol. Soc.*, 1905); "Carbonif. Limestone of Mendip Area" (*Ib.*, 1906); "Faunal Succession in Carbonif. Limestone of Midland Area" (*Ib.*, 1908).

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Contrib.—"Connection between Solar Spots and Earth Magnetic Storms" (*Mem. R.A.S.*, 1901); "Spectrum of Nova Aurigae" (*Ib.*, 1892); "Spectrum of Nova Persei" (*Monthly Notices R.A.S.*, 1902); "Spectrosc. Studies of Astrophys. Problems" (*Proc. Roy. Inst.*, 1904).

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Books.—"Org. Chem. of Nitrogen," 1911. *Contrib. to J. Chem. Soc.*

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Books.—"Aspergillus and Eurotium," 1882; "Mycosis of Human Ear," 1887; "Corrosion of Bone Labyrinths of Human Ear," 1890; "Blood-vessels of Human Ear, 1894; "Anat. and Pathogenesis of Deaf Mute," 1908, etc. *Arts.* in Bardeleben's "Handbk.," "Ency. d. Chirurg.," Bezold's "Lehrb. d. Ohrenheilk.," Schwalbe's "Therapeut. Technik." *Contrib.*—70 to *Zeitschr. f. Ohrenheilk.*, etc.

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Books.—"Minerals of Lower Austria," 1909; "Miner. Sect. of Joanneum Mus.," 1911. *Contrib.*—"Basalt of Steiermark" (*Tschermak's Min. Mitt.*, Vols. XV., XVI., XVII., XVIII., XXIII.); "Eruptive rocks of Gleichenberg" (*ib.*, XXI.); "New mineral-finds in Steiermark and Lower Austria" (*Mitt. Nat. Ver. Steierm.*, Vols. 47-9).

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Books.—"San. Engrng." (with Moore). *Contrib.*—Many.

Sewage purification.
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Book.—"Ophthalmology," 7th edn. *Contrib.*—50 to *Zeitschr. f. Augenheilk.*, etc.

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Books on Myriapods, Thisanura, Termites, and Protura, a New Order of Insects; Developm. of Hymenopt. Parasites.

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Arts.—"Pottery Glazes and Fritts," in Thorpe's "Dict. of App. Chem.," 2nd edn. *Contrib.*—"Constitution of Certain Silicates" *J. Chem. Soc.*, 1903; "Reduced Silicates" *ib.*, 1904; "Lead Silicates in Relation to Pottery" (with Sir E. Thorpe) (*ib.*, 1901, 1910); "Influence of Grinding upon Sol. of Lead in Lead Fritts" (with Sir E. Thorpe) (*Manchester Memoirs*, 1901).

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Book.—Ed., "Dic. of Nat. Sci." *Contrib.*—"Photometry of Ultraviolet" (*Ann. d. Phys.*, 1896); "Acoustic Phenom. with Arc Lights" (*ib.*, 1898); "Dynamics of Arc-Lights and Hysteresis" (*Phys. Z.*, 1905); and numerous others on light-teleph., interrupters, elec. oscillations, etc.

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Book.—"Lects. on Treatment of Common Dis. of Skin."

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Contrib. to *J. Chem. Soc.*
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Books.—"Contribs. to Obstet. and Gynaec.," 1879; "Axis Traction Forceps"; "Caesarean Hysterio-Oöphorectomy"; "Marriage Question from Standpoint of Gynaec.," "Religio Obstetrici"; Ed. Sir J. Simpson's "Clin. Lects. on Dis. of Women."

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M.D. (St. And.) 1853; M.R.C.S. (Eng.) 1852. C/o Accountant-Gen., India Office, London, S.W.

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Contrib.—Numerous.

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Contrib.—"Pyramidal Tract" (*Internat. Monatsh. f. Anat. u. Physiol.*, 1902); "Body Temper. of Fishes and other Mar. Animals" (*Proc. Roy. Soc. Edin.*, 1908); "Causal Factors in Diurnal Variation in Body Temper." (*Rept. Brit. Assoc.*, 1909); "Relation between Bile Secretion and Bile Pressure" (*Proc. Soc. Exper. Biol. and Med.*, 1910).

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Contrib. on scrof.-tuberc., etc.

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Books on Anal. Geom. Diff. Calculus; "Hist. of Chairs of Maths. Pure and Applied at Univ. of Charkov in First 100 Years of the

Univ." *Contrib.*—"Researches on Functions of Bernoulli" (*Kasan Ges.*); "Theory of Connexes in Space" (1894, *Kasan Univ.*); "Connexes with Point, Line, Plane, Element" (*Charkov Ges.*, 1904).

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Contrib.—"Septic scrolls having a rectilinear directrix" (*Amer. J. Math.*, 1907); "Concerning systs. of conics lying on cubic, quartic and quintic surfaces" (*ib.*, 1908); "Some loci associated with plane curves" (*ib.*, 1909); "Threespreads satisfying 4 or more homogeneous linear partial differential equations of 2nd order" (*ib.*, 1911).

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Books.—"Ex. in Prac. Phys.," Vol. 4, Parts 1 and 2, of Bosscha's "Text-bk. of Phys." *Contrib.*—"Measure of Elliptical Polarisation of Light" (*Arch. Néerland*, 1885); "Kerr's Magneto-Optical Phenom." (*Ann. d. Phys.*, and *Phil. Mag.*, 1891); "Gen. Properties of Images formed through Series of Spherical Surfaces" (*Trans. Amster. Acad. Sci.*, 1900); "Metallic Reflection" (*Arch. Néerland*, 1905).

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Book.—"Text-bk. of Vet. Anat."

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Books.—"Travels in Primeval Forests of W. Africa," 1904; "Sci. Results of Swed. Exped. to Kilimanjaro, etc.," 1905—6, and in Ger., 3 vols., 1907—10; "Wilds of E. Africa," 1911. *Contrib.*—"Ornith. of Cameroons" (*Svenska Akad. Handl.*, 1895); "Termites of Africa" (*ib.*, 1900, 1904).

Disc. 2,000 animal species in Africa.

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Contrib.—"Photog. action of radium rays" (*Phil. Mag.*, 1904); "Cavitation in lubrication" (*ib.*, 1904); "Drosometer, or Measurer of Dew" (*Q. J. Met. Soc.*, 1912).
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Books.—"Elements of Hygiol. and Hyg.," 1900; "New Cosmol.," 1910; "Formation and Life of the Earth," 1910; "Forces of the Earth," 1911; about 150 books and arts. on Anat., Biol., Hyg., Cosmol., Geol.
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Books.—"Principles of Mechanics"; "Physics."
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Book.—"Elec. Engrng.," jtly., 1890. *Contrib.* to *Elec. Rev.*, etc.
Duplex teleg. system; applic. of secondary batteries to teleg.; fireproof wiring.
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Contrib.—"Radial Velocities of Standard Stars" (*Astrophys. J.*, 1905); "Spectra of Major Planets" (*Lowell Observ. Bull.*, 1909); "Anomalous Calcium Absorp. in certain Star Spectra" (*ib.*, 1911); "Spectrum of Halley's Comet" (*ib.*, 1911).
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Contrib. on comp. study of eyes of verteb., normal activity of white rat, effect of various diets on activity, growth, and longevity of white rat.
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Books.—"Human Parasites"; "Holothria and Tunicata of Siboga Exped.," "Tunicata of Charcot's Antarctic Exped." *Contrib.* on Echinoderms, Tunicates, Coral-reefs, etc., in *Natuurk Tijdschr. Nederl. Indie*, since 1880.
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Books.—"Monograph of N. Amer. Species of Genus Polygonum"; "Flora of S.E. United States." *Arts.*—"Families" in *N. Amer. Flora*; Britton and Brown's *Illus. Flora of N. United States and Canada*; *Manual of Flora of*

N. United States and Canada. Contrib.—
Numerous Js.

Explor. of Everglades of Florida.

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Book.—"Animal Biol." *Contrib.*—"Maturation, etc., Haminea" (*Bull. Mus. Comp. Zool. Harv.*, 1904); "Chromosome Vesicles in Maturation" (*Morph. Jahrb.*, 1905); "Studies on Nerve Cells" (*J. Comp. Neurol. and Psychol.*, 1908); "Re-examination Cytol. of Hydractinia and Pennaria" (*Biol. Bull.*, 1909).

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SMEATON, WILLIAM GABB, Assist. Prof. of Gen. Chem., Univ. Michigan, Ann Arbor, Mich., U.S.A.

Books.—Transl. of Bottger's "Qual. Anal."

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Book.—"Relations between Phys. Properties and Chem. Constitution." *Contrib.*—Various on Org. Compounds of Sulphur, in *J. Chem. Soc.*

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Contrib.—"Applic. of Theory of Limiting Factors to Growth in Ceylon" (*Annals Bot. Gards., Ceylon*, 1907); "Internal Temper. of Leaves" (*Ib.*, 1909); "Assimilation in Water Plants" (with D. F. F. Blackman) (*Proc. Roy. Soc.*, 1911).

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Books.—"Teaching of Chem. and Phys." (with E. Hall); "Lab. Outline of Gen. Chem."; "Intro. to Inorg. Chem."; "Gen. Chem. for Colls." *Art.*—"Chemistry," *Cyc. of Educ. Contrib.* on Org. Chem., Amorphous Sulphur; Vapour Pressure.

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Books.—"Class-bk. of Bact.," 1902; "Comp. Gen. Path.," 1906. *Arts.*—"Parasites," Tyson's "Pract. of Med.," "Death by Asphyxiation, Heat and Cold," Haines and Petersen's "Amer. Text-bk. of Med. Jurisprud." *Contrib.*—"Contrib. to Syst. Helminthol." (*Pa. Univ. Med. Bull.*, 1908); "New Protozoan Parasite of Man" (*Ib.*, 1910); "Filaria Mitchellii (U.S.) of Gila Monster—with Tick as Intermed. Host" (*Ib.*, 1910).

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Book.—"Phys. Geog. for Schs.," 1911. *Contrib.*—"Glaciation of Black Combe District, Cumberland" (*Q.J. Geol. Soc.*, 1912).

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Books.—"Prac. Testing of Dynamos and Motors"; "Prac. Alternat. Current and Testing"; "Vectors and Vector Diagrams." *Contrib.*—"Losses in Motors" (*J. Inst. E.E.*, 1907); "Single-phase Induct. Motor" (*Ib.*, 1909); "Field of Polyphase Induct. Motor" (*Ib.*, 1910); "Effects of Eccent. of Rotor" (*Ib.*, 1911).

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Books.—"Publics. of Madras and Kodaikanal Observ. *Art.*—"Zodiacal Light," *Encyc. Brit.*, 9th edn.; "Observs. on a Green Sun and Associated Phenom." (*Trans. Roy. Soc. Edin.*, 1884); "Observs. on Atmos. Elec." (*Ib.*, 1885); "Absorp. Spectra of certain Veg. Colouring Matters" (*Proc. Roy. Soc. Edin.*, 1890).

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Books.—Classen's "Quant. Anal.," 1878; "Chem. Anal. of Urine" (with J. Marshall), 1881; Richter's "Inorg. Chem., 5th edn.," 1902; Smith and Keller's "Chem. Expts.," 5th edn., 1902; Richter's "Org. Chem.," 3rd edn., 1900; Smith's "Electrochem. Anal.," 5th edn., 1911; "Oettel's "Pract. Exercises in Electrochem.," 1897; "Oettel's Electrochem. Expts.," 1897; "Elements of Chem.," 3rd edn., 1911. *Contrib.*—Over 200 to *J. Amer. Chem. Soc.*, etc.

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Contrib.—"Syphilis of the lung" (*Med. Fortnightly*, 1906); "Talma's operation for cirrhosis of liver" (*Interstate Med. J.*, 1906); "Advisability of accepting men with org. heart lesions for transportation and teleg. depts." (*Med. Index, Lancet*, 1907); "Pleural Vomicae" (*J. Amer. Med. Assoc.*, 1912).

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Books.—"Bact. in Relation to Plant Dis.," I., 1905, II., 1911, III., 1913; "Influ. of Sewerage and Water-supply on Death Rate in Cities," 1886; "Resemblances of Crown Gall to Hum. Cancer," 1912; Assoc. Ed. *Centrab. f. Bakt.*, 2 Abt. and *Phytopathology*.

Disc. Fusarium dis. of plants (1895), Cancer in plants (1911); Identified Sporotricum as cause of human dis. (1898); Numerous bact. dis. of plants since 1893.

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Contrib.—"Mercury Standards of Resistance" (*Phil. Trans. R.S.*, 1904); "Weston Normal Cell" (*ib.*, 1908); "Silver Voltmeter" (*ib.*, 1908); "Cadmium Amalgams" (*Phys. Soc. Lond.*, 1909).

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Books.—"Problems in Cardiac Path.," "Differential Diagnosis," 1899; "Lects. on Forensic Med.," 1900; "Then and Now" (Hunt. Oration) 1900; Ed. of 5th and 6th edns. Taylor's Medical Jurisprudence, 1905. *Contrib.*—"Treatment of Typhoid Fever" (*Med. Soc. Trans.*) 1901; "Case of Friedreich's Ataxia with Rapidly Fatal Diabetes in a Young Girl" (*Lancet*, 1898).

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Book.—"Gem-Stones and their Distinctive Characters," 1912. *Contrib.*—"Three-circle goniometer" (*Miner. Mag.*, 1899); "Crystalline develop. of Corlaverite" (*ib.*, 1912); "Gnomonic project. and drawing of crystals" (*ib.*, 1903); "Red-silver minerals" (*ib.*, 1907); etc.

Designed 3-circle goniometer, crystal refractometer, and universal protractor.

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Books.—“Archaeol. of Lytton, B.C.”; “Cairns of Brit. Columbia and Washington”; “Shell-heaps of Lower Fraser River”; “Archaeol. of Gulf of Georgia and Puget Sound”; “Prehist. Ethnol. of a Kentucky Site”; “Archaeol. of Yakima Valley.”
Contrib.—“Primitive Work in Metal” (S. Workman, 1911); “Indian Tribes of N.W. Coast” (*Amer. Mus. J.*, 1910); “Archaeol. Remains on Coast of N. Brit. Columbia and S. Alaska” (*Amer. Anthrop.*, 1909); “A Vast Neglected Field for Archaeol. Research” (*Washington Q.*, 1907).
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Publ.—About 40 on Direct Current Generators and Motors; Alternat. Current Phenom. of High Potent. and Low Frequency, etc.
- SMITH, HENRY HERON**, Chem., Roy. Lab. for Metall. and Chem., Roy. Ordnance Factories, Woolwich, London; F.I.C., 1890.
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Repts.—“Epidemic of Typhoid Fever in Belfast,” 1897—98; “Poisonous Action of Coal-gas and Carburetted Water-gas,” 1899; “Cat., Path. Mus. Univ. Manchester,” 1906. *Contrib.*—“Path. effects of oxygen at a high tension in the air breathed” (*J. Physiol.*, 1899); “Mass and oxygen capacity of blood in man” (*ib.* Vol. 25); “Vol. and oxygen capacity of blood in Anaemia” (*Trans. Lond. Path. Soc.*, Vol. 6); “Cyanosis and Plethora in assoc. with Adherent Pericardium” (*ib.*, 1902).
- SMITH, JAMES PERRIN**, Prof., since 1892, of Paleont., Stanford Univ., Cal., U.S.A.; Geol. since 1906, U.S. Geol. Survey.
B. 1864, Cokesbury, S. Carolina. A.B. (Wofford Coll.) 1884; A.M. (Vanderbilt) 1886; Ph.D. (Gött.) 1892. *Soc.*—Paleont. Amer.
Contrib.—“Carboniferous Ammonoids of Amer.” (Mon. XLII, *U.S. Geol. Survey*); “Triassic Cephalopod Genera of Amer.” (Prof. Paper XL, *ib.*); and to *J. Geol., Amer. J. Sci. Cal. Acad. Sci.*, etc.
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Contrib.—“Oxidation of sulphur compounds in manuf. of caustic soda,” with G. Lunge (*J. Soc. Chem. Ind.*, 1883); “Methods for detec. and estim. of org. bodies based on their oxid. by pot. permang.” (*ib.*, 1887); “Sensitizers and desensitizers for bleach-out dyes” (*Colour Supplem., Brit. J. Photog.*, 1908); “Bleach-out process of colour photog. and Utocolor paper” (*Photog. J.*, 1910).
Inv. Utocolor process of colour photog. on paper; machinery for coating and cutting photog. plates, printing frame for colour screen plates, etc.
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Contrib.—“Correlation” (*Monthly Weather Rev., U.S. Weather Bur.*, 1911); “Relat. between the precipit. over watershed of Ohio River and stream flow at Cincinnati” (*Weather Bur. Bull.* 40); “Climate of Ohio” (*O. Agric. Exp. Stat. Bull.* 255); “Weather forecasts” (*Agric. Coll. Extension Bull.* 6).
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Books.—"Field Manual of Surveying Instruments"; Jt. Auth., "Johnson's Surveying," last edn., 1910. *Contrib.*—"Improvements of Engrs' and Surveying Instruments" (*Trans. Amer. Soc. C.E.*, 1902); "Accuracy of Stadia Measurements" (*Engrng. News*, 1905); "Improvement of Wis. River Levee" (*Wis. Engr.*, 1906); "Adverse Possession of Land" (*ib.*, 1910).

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Contrib.—"Ten generations of corn breeding" (*Bull.* 128, *Ill. Agric. Expt. Station*, 1908); "Effect of selection upon certain phys. characters in Corn Plant" (*ib.*, 132, 1909).

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Contrib.—"Comb. of Sulphur Dioxide and Oxygen" (*J. Chem. Soc.*, 1900); "Carbon Monosulphide" (*ib.*, 1902); "Slow Combust. of Carbon Disulphide" (*ib.*, 1906); "Slow Oxidation in Presence of Moisture" (*ib.*, 1906).

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Book.—"Press Working of Metals." *Contrib.*—"Reform in Rail. Construc." (*Forum*, 1891); "Valuation of Manufactories" (*Amer. Machinist*, 1896).

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Contrib. to *Trans. Amer. Math. Soc.*, *Annals of Maths.*

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Author.—"Philippine Is." in "Handbk. d. Regionalen Geol." 1910. *Contrib.*—"Develop. of Scaphites" (*J. Geol.*, 1905); "Coal Resources of the Philippines" (*Econ. Geol.*, 1909); "Geol. Reconnaissance of Mindanao and Sulu" (*Phil. J. Sci.*, 1910—11); "Ore Deposits of Benguet" (*ib.*, 1911).

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Contrib.—Various to *J. Amer. Chem. Soc.*

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Contrib.—Many to *J. Chem. Soc.*, *J. Soc. Chem. Ind.*, etc., on resinoid coals, ammonium salts, bye-products of coke oven, etc.

Disc.—True cause of Flour Mill Explosions, 1872; α , β , and $\alpha\beta$ dinaphthyls, β phenyl-naphthalene (vap. densities determ. with Viktor Meyer); higher phenols, blast furnace tar, eucalyptol arsenate, glycerol phthalate.

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Books.—"Co-ord. Geom." 1883; "Intro. Modern Geom." 1893; "Infinities. Anal." 1898; "Clue to Trigon." 1889; "Colour Line," 1905; and several on Theol., [including

"Ecce Deus" and "Pre-Christian Jesus." *Arts.*—Math. and sci. definitions in *New Internat. Dict.*, 1910.

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Books.—"Lab. Text-bk. of Pub. Health"; Ed. "Guy and Ferrier's Forensic Med.," 7th edn.; "Diphtheria," etc.

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Contrib. on bot. to *Rec. Bot. Surv. India*, etc.

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Contrib. on flame and spectrum anal., and on sci. and Univ. educ.

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Contrib. in *Bull. Acad. Cracow, Annals Phys., Phil. Mag.*, on Conduct. of Heat in Rarefied Gases and in Powdered Substances, Kinetic Explan. of Brownian Movements, of Crit. Opalescence Phenom., and other Researches in Kinetic Theory of Gases, Hydrodynamics and Elec. Osmosis, Elastic Theory of Formation of Mountain Ranges.

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Essay on "Diag. and Path. of Injuries of Spinal Column and Cord" (awarded Gold Med., Path. Soc., Dub. 1871). *Arts.*—"Dis. of Ext. Genital Organs" in Allbutt and Playfair's "Syst. Gynaecol."; "Peri- and Para-Metritis," Quain's "Diet. Med."; "Puerperal Septicaemia and Adenoma Malignum," "Encyc. Med." *Contrib.*—"Functions of Organs of Foetus in Utero" (*Dub. J. Med. Sci.*, 1878); "Two Cases of Hystero-Epilepsy" (*ib.*, 1879); "Use of Antiseptics in Childbed" (*Proc. Dub. Obstet. Soc.*, 1881), etc.

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Contrib. on Org.-S. comps. to *J. Chem. Soc.* and on geol. to *Q. J. Geol. Soc.*

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Contrib.—Bulls. on mineral resources, soils, clays and clay industries, road materials, and lead and zinc of Okla.

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Book.—"Dutch Avifauna," 1908.

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Contrib.—"Influ. of temp. upon physiol. processes compared with chem. reaction velocities" (*Amer. J. Physiol.*, 1906—11); "Latency of knee-jerk response in man as measured by thread galvanometer" (*Ib.*, 1910); "Viscos. of body fluids" (*Ib.*, 1911); "Electromyogram studies" (*Ib.*, 1913).

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Contrib.—"Cat. of Shore Fishes collected by S.S. Albatross about Hawaiian Is. in 1902" (*Bull. U.S. Fish Comm.*, 1902); "Relat. of fishes of lakes of S.E. Oregon" (*Bull. Bur. Fisheries*, 1907); "Fishes of coastal streams of Oreg. and N. Cal." (*Ib.*, 1907); "Fishes of Okinawa, one of Riu Kiu Is." (*Proc. U.S. Nat. Mus.*, 1912).

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Books.—"Treatise on Differential Calculus," 1898; "Diff. and Integ. Calculus," 1902, 1912. *Contrib.* on anal. projective geom., to *Amer. J. Math.*, *Trans. Amer. Math. Soc.*, etc.

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Contrib.—"Expts. on digestion in stomach" (*Bull. Soc. Med. Nat. Jassy*); "Neuromuscular galvanophor." (*J. de Physiol. et Path.*, 1902). "Muscular fatigue in man" (*Jassy*, 1913).

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Books.—"Radioactivity," 1904; "Interpret. of Radium," 1909; Chem. of Radio-Elements," 1911; "Matter and Energy," 1912. *Contrib.*—Numerous on radioactiv. and properties of highly rarefied gases to *Phil. Mag.*, *Proc. Roy. Soc.*, etc.

Disintegr. theory of radioactivity, with E. Rutherford; Product. of helium from radium, with Sir W. Ramsay; Relat. betw. radio-elements and periodic law.

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Contrib.—"Decompos. of Chlorates," 5 parts (*Trans. Chem. S.*, 1900—02); "Apparatus for Accurate Gas Anal." (*J. Soc. Chem. Ind.*, 1903); "Temperature Regulators" (*Ib.*, 1904); "Unburnt Products in Chimney Gases" (*Chem. News*, 1904).

Liquid fuel installations; Time and percussion fuses; Increase in range and speed of torpedoes.

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Contrib.—"Magnetic observ. in Nordland, 1905—6" (*Arch. f. Math. og Naturvid.*, 1907); "Photog. Influence of Hydrogen Peroxide and Metals" (*Ann. d. Phys.*, 1908); "Light-electric and actino-dielect. influence of alkaline earth phosphates," jty. with Lenard (*Ib.*, 1909).

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Contrib.—"Critical Prep. Studies," I.—IV. (*Zeitsch. f. anorg. Chem.*); "Titrimetric researches, especially on use of Sodio Oxalate," 7 memoirs (*Zeitsch. f. Anal. Chem.*); "Synth. of Amino acids," I.—IX. (*Comptes rendus de Lab. Carlsberg and Zeits. f. Physiol. Chem.*); "Researches on enzymes," I.—II. (*ib. and Biochem. Z.*)

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Books.—"Sound-producing Organs in Fishes," 1884; "Who Discovered the Kitchen-middens?" 1899; "On Two Orders of Arachnida," in Eng. (with H. J. Hensen), 1904. *Contrib.*—"Anat. of Gonyleptidus" (*Copenh. Nat. Tidsskr.*, 1879); "Connection of Bones in Fins, etc., with Spinal Column" (*Copenh. Vidensk. Selsk.*, 1890); "Extensive Muscles of Air-bladder and Voluntary Product. of Sound" (*J. Anat. and Physiol. Edin.*, 1895); "Struct. of Fruit at Moment of Maturity" (*Bull. Acad. Denmark*, 1911).

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Contrib. on Morphol. of Man, Verteb. and Inverteb. to *Arch. f. mikr. Anat., Morph. Jahrb., Schr. nat. Ges. Halle, Greifswald and Danzig.*

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Books.—"Age of Earth," 1905; "Ancient Hunters," 1911; "Tetractinellida," 24th vol., *Challenger Repts. Art.—Sponges*, in *Encyc. Brit.*, 11th edn. *Contrib.*—"Origin of freshwater faunas" (*Soc. Trans. Roy. Dub. Soc.*, 1884); "Intimate structure of crystals" (*Proc. Roy. Soc.*, 1898—1908); "Method for Investig.

of Fossils by serial sections" (*Phil. Trans.*, 1905); "Cranial and facial characters of Neanderthal race" (*ib.*, 1908).

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Book.—"Elec. Lamps," 1898. *Contrib. to Nature, Electrician*, etc.

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Books.—"Hist. Ger. Psychol. and Aesthe-

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Books.—"Theory of Spin," with Klein; Ed., vol. on Phys. in Math. Encyc.

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Books.—"Pract. San. Sci.," 2nd edn.; "Outlines of Pub. Health." *Arts.*—"Disinfectants," in *Encyc. Mun. and San. Engrng.*, 1909; "Preservatives and Adulterants in Foods," in Knocker's "Accidents in their Medical Aspect," 1910. *Contrib.*—"Some Observs. on Bact. and Chem. of Sewage Purific." (*Trans. Soc. Engrs.* (awarded Gold Med.), 1909); "Phosphorus in Foodstuffs" (Rept. 7th Internat. Cong. of App. Chem., 1909).

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Books.—"Bibliog. of Non-Euclidean Geom.," 1911; "Concrete Representations of Non-Euc. Geom.," 1911. *Contrib.*—"Semi-regular Networks in Absolute Geom." (*Trans. Roy. Soc. Edin.*, 1905); "Links and Knots in n Dimensions" (*Mess. Math.*, 1907); "Sunset and Twilight Curves" (*Proc. Roy. Soc. Edin.*, 1908); "Periodic Properties of Cyclo Compos." (*Proc. Lond. Math. Soc.*, 1909).

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Books.—"Path. and Therap. of Perityphlitis," 7th edn. in press; "Operations," 2nd edn., 1910. *Contrib.*—"Dis. of Bladder and Prostate in "Handbk. d. prakt. Chir.," "Dis. of Lungs," in "Handbk. d. Therap. d. inn. Krankh.," Numerous on Appendicitis, Peritonitis, etc.; Buring and Freezing (*Deutscher. Chir.*).

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Norweg. Acad. Sci., 1898; Direc. of Kap Mycol. Lab., Kap, Norway.

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Books.—(Prior to 1907 under name of Johan-Olsen) "Edible and Poisonous Fungi," 1882—5; "Disinfect. Apparatus," 1884; "Syst. and Developm. of Basidiomycetes," with Brefeld, 1887; "Pure Culture of Microbes, for Beer (1888), Milk (1888), and Cheese (1889—1900)"; "Cheese Fermentn.," 1905 (publ. by Norweg. State). *Contrib.*—"Mycol. Studies on Insect-destroying Fungi" (*Trans. Norweg. Acad.*, 1903, 1911); "Taette, the Early Norweg. Preserved Milk" (*Centrabl. f. Bakt.*, 1912); "Dis. of Microbes" (*Norweg. Acad.*, 1906 and 1911).

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Books.—"Handb. of Plant Dis.," 1874, 3rd edn., 3 vols., 1908—13; "Plant Protection," 2d edn., 1892, 5th edn., 1910; "Fruit Trees and their Dis.," 1900; "Anat. Anal. of Smoke-injured Plants," 1912; etc.

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Contrib.—“Catalytic decomp. of Hydrogen Peroxide under high pressure of oxygen” (*J. Amer. Chem. Soc.*, Vol. 30); “Syst. of qual. anal. for common elements,” *jtly.* (*ib.*, Vol. 30); “Causes of high results in electrol. determ. of zinc” (*ib.*, Vol. 32); “Func. of inorg. agents in electrolyt. deposit of Cu” (*8th Int. Cong. App. Chem.*).

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Books.—“The World's Minerals,” 1911; Eng. Trans. M. Bauer's “Precious Stones,” 1904, and R. Brauns' “Mineral Kingdom,” 1909. *Arts.*—“Minerals,” in Conway's “Bolivian Andes,” 1901; “Crystallog.,” “Mineral.,” and on various Mineral Species, in *Encyc. Brit.*, 11th edn.; Mineral Arts., in Thorpe's “Dict. of Applied Chem.,” 2nd edn. *Contrib.* on Mineral Subjects; Bibliog. Lists of New Mineral Names every three years since 1897; Abstracts of Papers on Mineral Chem. for *Chem. Soc. J.*, since 1895.

Miersite, tarbuttite, and parahopeite.

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Books.—Ed. “Zool. Jahrb.”; Ed. “Ergeb. u. Fortschr. d. Zool.” *Contrib.* on Amphibia (Urogenital syst.), Gephyrea, Mollusca, and Enteropezusta, to *Fauna Flora Naples*, 1893, etc.

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Books.—Ed. and transl. Richter's "Org. Chem.," 11th Ger. edn. *Contrib.*—"Origin of Jet" (*Chem. News.*, 1906—08); "E.M.F. of certain Platinum Compounds" (*Trans. Faraday Soc.*, 1909).

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Contrib.—"E.M.F. of Clark Cells" (*Phil. Mag.*, 1896); "Contact Elec." (*ib.*, 1899).

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Books.—"Atlas of Bact." (jtly.) 1898; "Photomicrog.," 1899; "Microscopy," 1907 and 1909. *Arts.*—"Kidney," in *Grays' Anat.*, 7th edn.; also on nat. hist., in *Marvels of the Universe* and on med., astron., optical and photog. subjects.

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Books.—"Life and Times of Thomas Wakley," 1897; "Odd Issues," 1899; "Medicine and the Public," 1905.

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Contrib.—"Vitality of rubber seeds" (*Agric. Bull. Straits and F.M.S.*, 1912); "A new cover crop" (*Agric. Bull. F.M.S.*, 1912); "Tapping expts. in Kuala Lumpur" (*ib.*, 1912).

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Contrib.—"Exper. Investig. of Surges on an Underground A.C. Syst. and Protection by Aluminium Cells" (with E. F. Creighton) (*Trans. Amer. Inst. E.E.*, 1909).

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Contrib.—"Geol. appl. to mining" (*Engng. and Min. J.*, N.Y., 1905); "Geol. of Tonopah Min. District, Nev." (*Govt. Printing Office*, 1905); "Geol. of Yukon Gold District Alaska" (*ib.*, 1908); "Theory of ore-deposition" (*Econ. Geol.*, 1907).

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Books.—"Companion to Brit. Pharmacop."; "Pocket Companion"; "London Hosps."; "Methods and Formulae for Microsc. Work."

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Arts.—"Botany" in "Pauly-Wissowas Realenzyk."

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Books.—"Hdb. of Inn. Med.," jtly., 6 vols. 1911—13. *Arts.*—Diagn. of Heart and Assimilat. Dis. in Krause's *Lehrb. d. Diagn. Contrib.*—Various on Inn. Med.

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Contrib.—"Insertion of muscles on chitinous skeleton of arthropoda" (*Kgl. Danske Vid. Selsk. Skr.*, 1904).

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Arts. on Engng. in "Harmsworth's Encyc."
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Contrib.—"Pract. applic. of metallog." (*J. Transvaal Inst. Mech. Engngs.*, 1909); "Ancient copper workings and smelting in N. Transvaal" (*Proc. Univ. Durh. Phil. Soc.*, 1910); "Relation between archaeol. and geol. in S.A." (jtly.) (*Trans. Geol. Soc. S.A.*, 1909); "Penetration of gold into amalgamated copper plates, etc." (jtly.), (*J. Chem. M. and M. Soc. S.A.*, 1911).

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Book.—"Elec. Furnace." *Contrib.*—"Solution Theory of Carburized Iron" (*Iron and Steel Inst. J.*, 1899—1900); "Burning and Overheating of Steel" (*ib.*, 1903); "Teaching Metall. in Coll. Labs." (*J. Can. Min. Inst.*, 1906); "Electrochem. Production of Steel from Iron Ore" (*ib.*, 1907).

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Contrib.—"Simple Pattern of Michelson Interferometer" (*Proc. Opt. Convent. I.*, 1905); "Observ. and Photog. of Black and Grey Soap Films" (*Proc. Roy. Soc.*, 1906); "Echelon Specscop., Its Secondary Action, and Struct. of Green Mercury Line" (*Phil. Mag.*, 1909).

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Contrib.—"Methods of Analysing Coal and Coke" (*U.S. Bur. Mines, Tech. Paper* 8, 1912).

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Arts.—"Known Plants of Liberia," in H. H. Johnston's "Liberia"; "Apocynaceae," "Lentibulariaceae," "Myristicaceae," "Lauraceae," etc., in "Flora of Trop. Africa"; "Gramineae," etc., in "Flora Capensis";

Contrib.—"Flora of Mt. Kinabalu" (*Trans. Linn. Soc.*, 1894); "Species of Genus Ephedra," 1889; "Aconites of India" (*Ann. Bot. Gards., Calcutta*, 1905); "Oil Grasses of India and Ceylon" (*Kew Bull.*, 1906).

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Contrib. on Mother Substances of various Heterocyclic Compounds; Hist. of Arabic Alchemy and its Relations to Origins of Chem., to *Mem. Bengal Asiatic Soc.*, 1905—10.

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Books.—"Elec. in Gases," 1902; "Elec. Quantities" 1910; "Elem. Radiation," 1911. *Contrib.*—"Emission of light by canal rays in hydrogen" (*Ann. d. Phys.*, 1906); "Theory of elec. arc" (*ib.*, 1903); "Theory of valency on an atomistic elec. basis" (*Jahrb. d. Rad. u. Elek.*, 1908); "Theory of valency II. Metallic conduction of elec." (*ib.*, 1912).

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Contrib. to *Miner. Petrol. Mitt. Wien, Sitzber. Akad. Wiss. Wien*, etc.

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Contrib.—"Deficient Humidity of Atmos." (*Montreal Med. J.*, 1906); "Observ. on Instruments for Recording Relative Humidity" (with H. T. Barnes) (*Trans. Roy. Soc. Can.*, 1909); "New Bact. Standard for Water Anal." (*J. Roy. San. Inst.*, 1908); "Typhoid and Typhoid-like Infections" (*ib.*, 1911).

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Books.—"Principles of Human Physiol.," 1912; "Elements of Human Physiol.," 8th edn., 1907; Lects. on Physiol. of Digestion (Mercer's Co.) 1906; "Fluids of the Body," 1908; Transl. of Metchnikoff's "Comp. Path. of Inflammation," 1893; Jt.-Ed. "Collected Works of late Dr. L. C. Wooldridge," 1893. *Arts.*—"Lymph," "Urinary Secretion," and "Special Muscular Mechanisms," in Schäfer's "Handbk. of Physiol." *Contrib.*—Papers on Physiol. of Heart and Circulation, Lymph Formation, Urinary Secretion, Intest. Movements, Pancreas, Mammary Glands, Diabetes, etc., in *J. of Physiol.*, etc.

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Books.—"Indians of S. Mexico"; "Ethnol. Notes on S. Mexico"; "In Indian Mexico"; "The Ainu Group"; "First Steps in Human Progress." *Contrib.*—"Notes on Ethnol. of Congo Free State"; "Congo Free State and Congo Belge J. of Race Progress"; "Iowa Archaeol." (*Trans. Davenport Acad. Sci.*); "Japanese Riddles" (*Proc. Asiatic Soc. Japan*).

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Contrib. on tellurium (*Zsch. f. anorg. chem.*, 1895); graphitic acid and graphite (*Ber. Chem. Ges.*, 1898—9); "Sci. experimental magic" (*Ann. d. Naturphil.*, 1910); "Magic as exptl. Nat. Sci." (*Leipzig Akad. Verlagsges.*, 1912).

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Books.—"Bacteriol.," "Handbk. of Inorg. Chem."

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Contrib. over 70.

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Books.—"Injurious Insects of Indian Forests," 1899; "Departmental Notes on Forest Insects," 1902—05; "Manual of Forest Zool. of India," 1908; "Jungle By-Ways in India," 1910; "Stalks in the Himalaya," 1911. *Contrib.*—"Life Hist. of new Monophlebus from India" (*J. Linn. Soc.*, Vol. 29); "Life Hist. of *Chermes himalayensis* Steb." (*Trans. Linn. Soc.*, Vol. 11); "Scolytidae from Indian Region" (*Indian Forest Mem.*, Vol. 1); "Insect Pests of Himalayan Coniferae" (*Ib.*, Vol. 2); Repts. on Forests in Arakhan and Baluchistan.

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Books.—"Essays on Darwinism"; "Amphipoda of H.M.S. *Challenger*"; "Naturalist of Cumbrae"; "Hist. of Crustacea." *Arts.*—Crustacea, Entomostraca, Thyrostraca, in *Encyc. Brit.*, edns. 10 and 11. *Contrib.*—"Some Gradations in Forms of Animal Life" (*Fraser's Mag.*, 1873); "Wolves and Wild Boars in Mod. France" (*Blackwood*, 1893); "Curiosities about Crustacea" (*Nineteenth Cent.*, 1897); "Voyage of the *Valdivia*" (*Edin. Rev.*, 1902).

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Contrib. on stellar spectrosc. and photometry. **STECHERT, CARL**, Head of Chronom. Testing Dept., Imp. Naval Observ., Hamburg.

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Contrib. on Astron. and Chronom. to *Astron. Nachr.*, *Ann. d. Hydrog.*, *Q. J. Astron. Ges.*, *Valentin's Dic. of Astron.*, and *Repts. of Hamburg Observ.*

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Books.—"Dis. of Heart," 1906; "Phys. Signs of Pulm. Dis.," 2nd edn., 1900; "Sphygmograph in Clin. Med.," 1899. *Art.*—"Dis. of Heart," in *Encyc. Med. Contrib.*—"Heart Failure as a Result of Chronic Alcoholism" (*Manchester Med. Chron.*, 1893); "Temper. and Pulse-rate Curves of Typhus Fever" (*Ib.*, 1884); "Angina Pectoris" (*Ib.*, 1905).

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Art.—"Sewage Disposal" in "Vivat's Encycy.", 1904. *Contrib.*—"Water Gas," 1905; "Theory and Pract. in Tech. Chem.," 1908; "Future of Chem. Ind. in the Netherlands," 1912.

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Book.—"Math. Problems Solutions," 1882. *Contrib. to Mess. of Maths., Edin. Math. Soc., Engng., J. of Photog., J. of Educ., etc.*

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Books.—Kalhana's Sanskrit "Chronicle of Kings of Kashmir," 3 vols., 1892—1900; "Ancient Khotan," 2 vols., 1907; "Ruins of Desert Cathay," 2 vols., 1912; etc.

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Books.—"Etiol. of Acute Suppuration," 1889; "Menstru. and Ovulation," 1890; "Path.-Histol.," 1909. *Contrib.*—100 on Tumours, etc., to Virchow, *Zeitschr. f. Heilk.*, etc.

Intranuclear parasite Karyophagus Salamandrac, 1887; Myeloid form of chlorome.

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Books.—"Elements of Palaeont." (with Doederlein), 1890; "Geol. Guide to Environs of Freiburg" (with Gräff), 18 0; "Introd. to Palaeont.," 1903, 3rd edn., 1912; "Geol. Basis of Theory of Descent," 1908; "Glac. Epoch and Prehist. Man," 1910; Ed. "Handbk. d. Regionalen Geol." *Contrib.* on Geol. and Palaeont. of S. Amer.

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Books.—"Astron. and Meteorol.," 1889; "Theory and Calc. of Altern. Current Phenomena," 1897, 4th edn. 1908; "Theor. Elements of Elec. Engrng.," 1901, 3rd edn. 1909; "Gen. Lect. on Elec. Phenomena and Oscillations," 1909; "Radiation, Light and Illum.," 1909; "Elec. Engrng. Math.," 1910; "Elec. Discharges, Waves and Impulses," 1911. *Contrib.*—Numerous.

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Books.—"Standard Nat. Hist. of Birds"; "Ornith. Explor. in Kamohatka and Com-

mander Is."; "Russian Fur Seal Is."; "Asiatic Fur Seal Is. and Fur Seal Indust.," "Herpetol. of Japan." *Contrib.*, about 300 on Birds, Reptiles, etc., in *Proc. U.S., Nat. Mus., Proc. Wash. Biol. Soc.*, etc.

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Books.—"Motion of Solid in an Indefinite Liquid," 1893; "Gen. Methods for Resolving fundamental Problems of Math. Phys.," 1902. *Contrib.*—"Theory of Trigon. Series" (*Bull. Acad. Cracovie*, 1903); "Certain gen. Equalities common to several Series of Functions" (*Mém. Acad. Petersb.*, 1904); "Asympt. expressions of certain funct. defined by diff. eqns. of 2nd order" (*Communic. Soc. Math., Kharkov*, 1907); "Theory of fermet. of syst. of orthog. functions" (*Mém. Acad. Petersb.*, 1912).

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Book.—"Prac. Study of Malaria and other Blood Parasites" (jtly.). *Arts.*—"Blackwater Fever" in Osler's "Mod. Med.,"; "Cholera" in Allbutt and Rolleston's "Syst. of Med.,"; "Malaria and its Relation to the Mosquito" in Nothnagel's "Encyc. Pract. Med." (Eng. edn.). *Contrib.*—"Repts. to Malaria Comm. Roy. Soc." (jtly.) (1900—02); "Note on Changes in the Red Cell produced by Malig. Tertian Parasite" (jtly.) (*Brit. Med. J.*, 1903); "Peculiar Morphol. of a Trypanosome from Sleeping Sickness, *T. rhodesiense*" (jtly.) (*Proc. Roy. Soc.*, 1910).

STEPHENSON, HENRY HOLDER, Ed. "Who's Who in Science."

7, Great Marlborough Street, London, W. B. 1880, Bellary, S. India. *Soc.*—Chem. Ind.; Eng. Ceram. *Late Chem., Roy. Doulton Potteries, Lambeth, Eng.*, 1903—13.

Book.—"Ceram. Chem." 1912. *Contrib.*—"Molecular Volumes of Solids" (*Chem. News*, 1910); and numerous on Pottery.

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Book.—"The Hadiqatu-l-Haqiqat of the Hakim Sanai" (text, transl. and commentary). *Contrib.*—Various, mainly on Aquatic Oligochaeta, in *Records and Mem. Indian Mus.*, and *Trans. Roy. Soc. Edin.*

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Contrib.—Numerous. **STERNBERG, GEORGE MILLER**, General (ret.); Prof. of Prev. Med., George Washington Univ., U.S.A.

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Book.—"Photog. by Rule." *Contrib.*—"Standard Plates and Some Causes of Apparent Alteration in Rapidity" (*Photog. J.*, 1895); "The Two Latent Images" (*ib.*, 1898); "Separation of Develop. into Prim. and Second. Actions" (*ib.*, 1904); "Action of Oxidisers upon Develop. of Latent Image" (*ib.*, 1907).

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Books.—"Fossil Plants of Red Sandstone of Chemnitz," 1875, and in Fr. 1886; "Paleont. of Stone-Coal Formn. in Rocks of Becken," 1881; "Flora of Red Sandstone in N.W. Saxony," 1886; "Cretaceous Soils," 1893; "Subsiggilaria," jtly., 1894; "Medulloseae," jtly., 1896; "Carbonif. and Sandstone Flora in Baden," 1907.

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Contrib.—"Elasticity of wires" (*Phil. Mag.*, 1910); "Absorption of X-Rays" (*Ib.*, 1911); "Vibrations of strings" (*Ib.*, 1912).
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Books.—"Pract. Arith."; "Dis. of Econ. Plants"; "Agric. for Beginners" (jtly.); "Hill Readers" (jtly.); etc. *Contrib.*—Mitosis of primary nucleus in *Synchytrium decipiens*; Oogenesis and fertilisation in *Albugo Ipomoeae-Panduraceae*; plant path.; Apple rot due to *Volutella*; and numerous others.
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Contrib.—"Effect of Magnetization upon Elasticity" (*Phys. Rev.*); "Study of Molecular Contact" (*Ib.*); "New Method of Measuring Surface Tension" (*Amer. J. Sci.*); "New Phys. Pendulum" (*Ib.*).
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Books.—"Bot. Sect., Sayre's "Pharmacog." and Blakiston's "Mat. Med."; "Introd. to Bot."; "Plant Anat.", 2nd edn. *Contrib.*—"Apparatus for Phys. Bot." (*Bot. Gaz.*, 1895); "Spore Formation of Ferns" (*Ber. d. d. Bot. Ges.*, 1898); "Behaviour of Kinoplasm in *Asclepias*" (*Kans. Univ. Sci. Bull.*, 1900); "Spore Formation in *Botrychium*" (*Annals of Bot.*, 1905).
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 M.D. (Brux.) 1894; F.R.C.S. (Edin.) 1884; L.R.C.P. (Edin.) 1873; M.R.C.S. (Eng.) 1873. *Soc.*—Roy. Med.; Corresp. Fell. Obstet. Soc. Edin.
Contrib.—"Intra-Peritoneal Haemorrhage" (*Edin. Obstet. Trans.*, 1888); "Tetanus after Laparotomy" (*Brit. Gynaec. Trans.*, Vol. 6);
- "Two Cases of Ectopic Gestation" (*Obstet. Trans. Lond.*, 1893).
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Books.—4 vols. on coal region of Penna.; 2 vols. on Geol. of Colo. and New Mexico. *Contrib.*—"Carbonif. of Appalach. Basin" (*Bull. Geol. Soc. Amer.*, 1903—07); "Forms of coal beds" (*Proc. Amer. Phil. Soc.*, 1911—13).
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Contrib.—"Raspberry cane blight and raspberry yellows" (*N.Y. Expt. Station Bull.*, 1902); "Troubles of Alfalfa in N.Y." (*Ib.*, 1908); "Notes on New York plant dis." (*Ib.*, 1910); "Potato spraying expts., 1902—11" (*Ib.*, 1912).
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Books.—"Man. of Physiol.", 6th edn., 1910; "Collected Papers from Cushing Lab. of Exper. Med., Cleveland", 1911. *Contrib.*—"Researches on Circulation Time" I.—IV. (*J. Physiol.*, 1893); "Studies on Resuscitation" (*J. Exper. Med.*, 1906); "Studies in Haemolysis" (*J. Physiol.*, 1899); "Blood-flow in Man" (*Heart*, 1911).
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Contrib.—"Spectral energy curve of acetylene flame and of black body at room temp." (*Phys. Rev.*, 1901, 1903); "Interrelation of illum. power, density and viscos. of kerosene oils" (*Ib.*, 1910); "Acoustic shadow of a rigid sphere" (*Ib.*, 1911).
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Contrib. on cardiac hypertrophy, myocarditis, vasodilator subs. in serum, etc.

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Contrib.—Numerous to *Phys. Rev.*, etc.

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Books.—*Bulletins* 103, 106, 109 of Utah Agric. Exper. Sta., and 145 of Ill. Agric. Exper. Sta. *Contrib.*—"Nitrogen and Humus Problem in Dry Farming" (*J. Ind. and Eng. Chem.* 1910); "Leōw's Lime-magnesia Ratio" (*Ib.*, 1911); etc.

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Contrib.—"Excited Radioactivity" (*Proc. Roy. Soc. Can.*, 1902); "Time Serv. at Dom. Observ." (*J. Roy. Soc. Can.*, 1907); "Personalvity with Transit Micrometer" (*Ib.*, 1910); "Modified Method for Nadir Observ." (*Ib.*, 1910).

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Chapter.—"Leather Manuf." in Herzog's "Chem. Tech." 1911. *Contrib.*—"Theories of Tanning" (*Collegium*, 1908); "Chem. of Chromic Tannage" (*Ib.*, 1908); "Chem. of Liming Process of Hides and Skins" (*Ib.*, 1906); "Formaldehyde on Veg. Tannins" (*Ib.*, 1905).

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Arts.—"Lepidoptera Rhopalv.," in "Genera

Insectorum"; "Heliconiidae," "Brassolidae," and "Amathusiidae" in "Das Tierreich" (ed by Schulze, A. d. Preuss. Akad. Wiss.). *Contrib.*—Numerous on Lepidopt.

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Books.—"Nerv. Syst. of Verteb.," 1868—75; "Archaeol.-Anat. Studies," 1906. *Arts.* on Ger. biogs.

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Contrib.—"Beckmann Rearrangement" (*Amer. Chem. J.*, 1903); "Studies in Catalysis" (*Ib.*, 1907); "Stereoisomeric Nitrogen Derivs." (*Ib.*, 1903); "Theories of Indicators" (*J. Amer. Chem. Soc.*, 1903).

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Publ.—"On shellfish contamin. from sewage-polluted waters" (*Bur. of Chem. Bull.* 136, U.S. Dept. Agric., 1911); "Sewage-polluted oysters as cause of typhoid" (*Ib.*, 156, 1912); "Bact. Study of eggs" (*Ib.*, 153, 1912).

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Books.—"Common Disorders and Dis. of Childhood"; "Dis. of Children" (with Sir J. Goodhart). *Arts.*—"Congenital Hypertrophy of Pylorus" in Allbutt's "Syst. Med."; "Rickets" in Osler's "Modern Med."; several in "Encyc. Med."; etc. *Contrib.*—"Form of Chronic Joint Dis. in Children" (*Med.-Chir. Soc. Trans.*, 1897); "Congenital Cystic Liver with Cystic Kidney" (*Path. Soc. Trans.*, 1898); "Bact. of Simple Posterior Basic Meningitis of Infants" (*J. Path. and Bact.*, 1898); "Some Abnormal Psych. Conditions in Children" (*Lancet*, 1902).

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Contrib. on Mesozoic Age, Tectonics, Hydrol., Salt Deposits, and Geol. Chart of the Teutoburger Wald.

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Contrib. on Operat.-Surg., 1874—96, Fractures and Dislocations, 1885—1913.

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Art.—"Hydatid Dis." (jtly.) in Allbutt's "Syst. Med." *Contrib.*—Descrip. of New Genus and Species of Marsupialia (*Notoryctes typhlops*). (*Trans. Roy. Soc. S. Austral.*); "Fossil Remains of Lake Callabonna" (*Mem. and Trans. Roy. Soc. S. Austral.*, 1900); "New Genus and Species of Fossil Struthious Bird (*Genyornis newtoni*)."

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Books.—Text-bks. in Histol., Physiol.; "Apostles of Physiol." *Contrib.*—Numerous on Physiol. and Histol.

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Book.—"Pract. Bact., Blood Work and Animal Parasitol." 2nd edn.

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Arts.—"Phototropy," and "Polyphenylmethane," etc. in *Handwörterb. d. Naturw. Contrib. to Liebig, Ber. Chem. Ges., J. f. prakt. Chem., Zsch. f. Elektrochem.*, etc.

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Contrib. on inorg. chem., esp. of non-metals.

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Contrib. to *v. Gräfe's Arch., Aug. Klin. Monatbl.*, etc.

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Late Investig., Marine Biol. Lab., Woods Hole; Carnegie Inst., Fortugas, Fla.; Zool. Station, Naples, etc.

Contrib.—Exper. production of monstrosities, such as cyclopean monsters; Infl. of alcohol and anaesthetics on develop. of animals; Studies of tissue-growth; Investig. on biol. of cancers, etc.

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Art.—“Pharmacol.,” in *Encyc. Brit. Contrib.*—Numerous.

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Contrib.—“Water Anal. Interpretation” (*Pract.*, 1893); “Typhoid Bacillus” (*J. Path. and Bact.*, 1897); “Tanking of Sewage” (*J. Prev. Med.*, 1905); “Nitrification” (*Proc. Internat. Cong. App. Chem., Lond.*, 1909).

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Books.—“Anthracite Coal Field”; “Econ. Hist. of Anthracite.” *Contrib.*—“Secondary Min. Educ.” (*Can. Inst. Min. E.*); “Applic. of Elec. in Anthracite Mining” (*Amer. Inst. Min. E.*); “Mine Rescue Serv. of Ill.” (*Ib.*); “Tech. Writing” (*West Va. Min. Inst.*).

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Books.—“Path. and Therap. of Rickets,” 1904; “Oxyopathy,” 1911. *Art. on Children's Dis. in Croxer's “Therap. an d. Berl. Univ. Klin.”*, 1902. *Contrib.*—“Pathog. of Child Tetanus” (*Monatschr. f. Psychiat.*, 1909); “Twofold Signif. of Calcium in Rickets” (*Pfluger's Arch.*, 1908); “Cause of Death in Thyroid Gland of Newly-born,” etc.

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Book.—“Theory of Dairying,” 1911.

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Contrib.—“Motion of a material point carrying a charge of elec. under influence of an electromagnet” (*Vidensk. Selsk. Skr. Christiania* 1904); “Trajectory of electrif. corpuscles in space under action of terrest. magn., with applic. to Aurora Bor.” (*Arch. Sci. phys. et nat. Genève*, 1907, 1911, 1912); “Bossekap Exped. for photog. and altitude of Aurora Bor.” (*Vid. Selsk. Skr.*, 1912).

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Books.—“Wind and Weather, Tides and Tidal Streams in E. Indian Archip.,” 1897; “Studies on Neth. Indies Seasons,” 1891—6; “Climate of S.E. Portion of N. Sea, esp. Dutch Coast,” 1912. *Contrib. to Proc. R. Ac. Amsterdam.*

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Contrib.—“Integ. of Canonic Equations and Principle of Duality” (*Proc. Edin. Math. Soc.*, 1909); “Critical Comparison of Overlapping Section of Oxford and Potsdam Astrographic. Cat.” (*M. Not. R.A.S.*, Dec., 1911); “Anal. Study of Plane Rolling Mechanisms” (*Proc. Edin. Math. Soc.*, 1912).

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Books.—“Pedological Studies,” 1890; “Chem. and Physiol. Studies on Superphosphate,” 1896; “Biochem. Circuln. of Phosphate Ions in Soil,” 1911. *Contrib.*—“Anaerobic metabol. of higher plants and its import on alcoholic fermentn.” (*Zschr. f. d. gesamic Biochem.*, 1903); “Glycolitic enzyme in plant organisms” (*Zschr. f. physiol. Chem.*, 1907); “Assimiln. of elem. nitrogen thro’ azoto.—and radio-bact.” (*Centrabl. f. Bakt.*, 1908); “Root secretion” (*Jahrb. f. wiss. Bot.*, 1908).

Photochem. and Ra-Em. synth. of Sugars; *Infl. of Ra. on Evol. of Plants.*

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Contrib.—“Distrib. of Bact. in River Water” (*N.Y. State Bd. of Health Repts.*, 1892—93); “Organs of Respiration in Oniscidae” (*Zoologica*, 1899); “New Species of Oniscidae” (*State Mus. Rept.*, 1902); “Glac. Geol. of Schenectady Quadrangle” (*State Mus. Rept.*, 1911).

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Contrib. on importance of vacuoles in nuclear division (in Dutch and Ger.).

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Books.—*Publ. of Cincinnati Observ. and Leander McCormick Observ.*

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Books.—“Study of Plant Life”; “Journal for Japan”; “Ancient Plants,” *Contrib.*—“Organs of Cycadeae” (*Flora*, 1904); “Nature and Origin of Coal Balls” (with Watson) (*Phil. Trans.*, 1907); “Plant containing Nodules from Japan” (*Q.J. Geol. Soc.*, 1909); “Studies on Cretaceous Plants” (with Fujii) (*Phil. Trans.*, 1910).

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Books.—“Anal. Psych.,” 1896; “Man. of Psych.,” 1903; “Groundwork of Psych.,” 1903; etc.

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Arts.—"Spinning Animals of S. Africa" (*Ger. S. Polar Exped.*, 1901—03); "Apidae and Araneae" (*Ger. Central African Exped.*, 1907—08), etc. *Contrib.*—"Japanese Spiders" (*Abhandl. Senckenb. Nat. Ges.*, 1906); "Hymenoptera of Paraguay" (*Zool. Jahrb.*, 1910—11); "Fauna of Spiders of Madagascar" (*Nyt Mag.f. Naturv.*, 1908); "Construc. and Develop. of Spiders" (*Z. f. wiss. Zool.*, 1906).

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Books.—"Human Faeces," jtl., 1910; "Intro. to Hydro- and Thermo-therapy," 1910. *Contrib.*—num. on bacteria in faeces, elasticity of arteries, radium emanation, etc.

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Contrib.—"Planetary Inversion" (*M.N.R.A.S.*, LXVI.); "Constants of moon's phys. libration" (*Mem.*, *R.A.S.*, LIX.); "Notes on Spectrum of Nova Geminorum, No. 2" (*M.N.R.A.S.*, LXXXIII.).

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Books.—"Exper. Psych. and its Bearing upon Culture," 1903; "Psych. of Religious Life," 1912. *Arts.* in *Encyc. of Educ.*, etc. *Contrib.*—"Vision without inversion of retinal image" (*Psych. Rev.*, 1896, 1897); "The spatial harmony of touch and sight" (*Mind*, Vol. 8) "Railway Accidents and the colour sense" (*Pop. Sci. Monthly*, 1908).

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Publ.—Numerous.

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Contrib. to *Astron. Nachr.*, *Swed. Acad. Sci.*, *Q.J. Astron.*, *Publ. Copenh. Observ.*

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Blastomycosis of skin; etiol. of trop. splenomegaly in Philippines treatm. of trypanosomiasis; cholera epidemic in Philippines; relation of Bombay spirillum fever to African tick fever; etc.

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Books.—"Pract. Astron.," 1903; "Recent Prog. in Astron.," Ann. Repts. Roy. Belg. Observ., since 1908. *Contrib.*—"Satellite of Venus" (*Mém. Acad. Belg.*, 1887); "Personal Equation" (*Bull. Astron., Paris*, 1892); "Constit. of Ring of Minor Planets" (*Ann. Observ. Belg.*, 1907); "Movement of Sun in Space" (*Bull. Acad. Belg.*, 1910).

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Books.—"Elem. Pract. Phys.;" Jt. Auth. of Supp. to Lord Armstrong's "Elec. Movement in Air and Water." *Contrib.* on Elec. Discharge.

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Books.—"Theophr. Paracelsus," I.—III., 1903—04; "Essays on Hist. of Nat. Sci.," 1909; "Hist. of Nat. Sci. in Middle Ages," 1910; Transl. Berthelot's "Chem. in Ancient and Middle Ages," 1909; "Nature Research in the Past," 1913.

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Arts. in "Internat. Encyc." and "Year Book." *Contrib.*—Ed. *Trans. Amer. Inst. Min. E.*, Vols. 36—41.

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Book.—"Bequerel Rays," 1904. *Art.*—"Helium," in *Encyc. Brit.* *Contrib.*—"Radioactive Minerals" (*Proc. Roy. Soc.*, 1905); "Distrib. of Radium in Earth's Crust, Earth's Internal Heat" (*Id.*, 1906); "Rate at which Helium is produced in Thorianite and Pitchblende, with Minimum Estimate of their Antiq.," (*Id.*, 1910); "A Chem. Active Modific. of Nitrogen produced by Elec. Discharge" (*Id.*, 1911, Bakerian Lect.).

Genetic relation between Uranium and Radium; "Radium clock."

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Art.—Annual Classif. Lists of Explosions of Firedamp or Coaldust in G.B. and I.

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Contrib.—"China clay and fire clay in; Rajmahal hills" (*Rec. Geol. Surv. India*, pt. 1.); "Geol. of W. Prome and Kama" (*Id.*, pt. 4); "Sedimentary deposition of oil" (*Id.*, pt. 4); "Geol. of Herezada district" (*Id.*, pt. 4); etc.

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Contrib. on Anat. and Physiol.

Organised Roy. Soc. Exped. to Funafuti; Public Health Legislation of N.S.W.

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Book.—"Country Reader" (jtly.) 1906. *Arts.*—"Olive in Cal.," "Plums in Cal.," "Tulipa," "Tulip," in *Cyc. Amer. Hort.*, 1900—02; "Handling of Deciduous Fruits on Pacific Coast" (*Yearb. of U.S. Dept. Agric.*, 1909); "Precooling of Fruit" (jtly.) (*Id.*, 1910).

Contrib.—"Fruit transportn. and storage investig." (*Proc. Amer. Pomol. Soc.*, 1911); "Fruit cooling problems" (*Proc. Amer. Soc. Refrig. Engrs.*, 1911).

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Contrib. on Insects, Turbellaria, Piscicult., etc.
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Books.—"Surfaces of Third Order," 1867; "Elem. of Descrip. Geom.," 1874, 2nd edn., 1900; "Line Geom.," 3 vols., 1892—96; "Geom. Affinities," 4 vols., 1908—09; "Maxima and Minima," 1910. *Contrib.* to *Math. Ann.*, *J. f. Math.*, *Arch. f. Math.*, etc.
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Books.—"Rudiments of Latin for Pharm.," 1908, 2nd edn., 1911; "Course in Pharm. Arith.," 1903, 3rd edn., 1906; etc.
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Books.—Ed. new edn. Bernthsen's "Org. Chem.," "Pract. Org. Chem." (with T. C. James). *Arts.*—"Esterific." and "Hydrolysis" in Thorpe's "Dict. App. Chem." *Contrib.*—"Esterific. of Org. Acids" (*J. Chem. Soc.*, 1898—1911); "Additive Compounds of Tri-
- trobenzene" (*Ib.*, 1901—11); "Cinnamic Acid Derivs." (*Ib.*, 1903—09); "Diorthosubstituted Benzoic Acids" (*Ib.*, 1895—1904).
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Books.—"Paracelsus and his Writings," 2 vols.; "Essays on Hist. of Med. and Nat. Sci.," "Iatromathematicians"; "Goethe as Physicist"; "Ger. Med. Incunabulae"; "Hist. of Anat. in Middle Ages"; "Med. in Greek Papyri"; "First Cent. of Leipzig Med. Faculty"; "Origins of Lit. on Syph.," "Early Hist. of Syph.," and numerous others.
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Art.—"Anat. of Thigh" (*Ref. Handb. of Med. Sci.*, 1903). *Contrib.*—"Architecture of gall-bladder" (*Johns Hopkins Hosp. Bull.*, 1900); "Develop. of nose and pharynx" (*Amer. J. Anat.*, 1901); "Human Myasis" (*J. Amer. Med. Assoc.*).
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Books.—"Lects. on Reinforced Concrete"; "Lects. on Structural Materials." *Contrib.*—"Beams for concrete testing" (*Beton u. Eisen*, 1910, 1911); "Influ. of grain of gravel on compress. strength of concrete" (*Ib.*, 1911); "Most econ. depth of concrete beams" (*Ib.*, 1912); "Resist. moments of reinf. concrete slabs" (*Ingeniören*, 1912).
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Books.—"Cloud Measuring at Potsdam," 1896—7; "Weather Observns.," 4 vols., 1898—1907; "Met. Observns. at Potsdam," 5 vols., 1908—12; "Hdb. of Aeronautics," 3rd edn. 1911. *Contrib.* on Aeronautics, Clouds, Optics to *Met. Zsch.*, *Zsch. f. Luftschiff.*, etc.
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Books.—"Face of the Earth," and in Eng. "Origin of the Alps"; etc.
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Contrib.—"Statistics of malig. dis., Mayo Hosp., Lahore," 1892—1903 (*Arch. of Middlesex Hosp.*, Vol. 3); "Path. of Cirrhosis of Liver" (*Indian Med. Gaz.*, Vol. 40); "Differential diag. of Fever" (*Lancet*, 1908).
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Notes on Structures and Hydraulics (for use of Students). *Arts.*—"Civ. Engrng.," in *Encyc. Amer.*; "Water Power of Various Portions of U.S." in *U.S. Census*, 1880. *Contrib.*—"Applic. of Principle of Velocities to Deflection and Stresses in Beams" (*J. Franklin Inst.*, 1883), etc.
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Arts.—"Tuberc. of Ear" in "Buck's Handbk." *Contrib.*—"Nasal and other Polypi" (*N.Y. Med. J.*, 1898); "Lymphatic Syst. and Tonsils" (*Amer. Med. J. Sci.*, 1903); "Arch of Palate" (*Trans. Amer. Laryngol. Assoc.*, 1903); "Facial Asymmetry as Cause of Deformity of Nasal Septum" (1904).
 Suprarenal Gland in nose and throat work.
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Books.—Ed., 6th edn. Greig Smith's "Abdom. Surg.," 2 vols. *Arts.*—"Abdom. Injuries" and "Abdom. Abscess" in *Encyc. Med. Contrib.*—"A Thousand Consec. Abdom. and Pelvic Operations" (*Brit. Med. J.*, 1907); "Surg. of Liver, Gall-Bladder, and Biliary Passages" (*Pract.*, 1900); "Cancer of Rectum" (*Brit. Med. J.*, 1910); "Surg. in Ancient and Mediaeval Times" (*Bristol Med.-Chir. J.*, 1909).

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Contrib.—"Formn. of Allantoin from uric acid in animal body" (*Amer. J. Physiol.*, 1901); "Some notable constituents of urine of coyote" (*Ib.*, 1904); "Excretion" (*Hofmeister's Beitr.*, 1902); "Smelter smoke" (*J. Amer. Chem. Soc.*, 1907).

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Books.—"Manual of Anat." 2 vols., 1898—1900; "Prescription Writing and Formulary," 1910. *Contrib.*—"Mercurial Nephritis" (*Amer. J. Med. Sci.*, 1904); "Dis. of Blood" (*N.Y. Med. J.*, 1906); "Clin. Study of Cammidge Reaction in Urine" (*Ib.*, 1910); "Trop. Dis. and Health in U.S.A." (*Annals Amer. Acad. Polit. and Soc. Sci.*, 1911).

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Inv. Autotype process, electric incandescent lamp, etc.

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Contrib.—"Specific heats of air and carbon-dioxide" (*Phil. Trans., Roy. Soc.*, 1909); "Magnetic field produced by charged condensers moving through space" (*Phil. Mag.*, 1911); "Effects of uniform translatory motion" (*Ib.*, 1912); "Fitzgerald Lorentz contraction" (*Ib.*, 1912).

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Contrib.—Ethnol. of Haida; Skidegate Texts and Myths; Masset Texts; Social Condition, Beliefs and Linguistic Relationship of Tlingit Indians; Indian Tribes of Lower Miss. Valley and Adjacent Coast of Gulf of Mexico.

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Contrib.—"Proposed classification of crystals" (*Bull. Geol. Soc. Amer.*, 1909); "Succession of faunas in Portage of Md." (*J. Geol.*, 1908); "Hancock Folio" (*U.S. Geol. Surv.*, 1912, jty.); "Devon. of Md." (*Id. Geol. Surv.*, 1913).

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Contrib.—"New Process for Generating and Cutting the Teeth of Spur Wheels" (*Amer. Soc. Mech. E.*, 12); "Some Refinements of Mech. Sci." (*Ib.*, 26).

Designed (with Warner) 26-in. Equatorial in U.S. Nav. Observ., Washington, 36-in. in Lick Observ., 40-in. in Yerkes Observ.

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Books.—"Pract. Exercises in Astron.;" "New Elem. Agric.," with Bessey and Bruner.

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Books.—"Mind in the Making," 1908; "Youth and the Race," 1912. *Contrib.*—"Psychol. and physiol. of learning" (*Amer. J. Psych.*, Vol. 14).

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Books.—"Principles and Practice of Elec. Lighting," 1884; "Elem. Principles of Elec. Lighting," 1st edn. 1886, 6th edn. 1905. *Contrib.*—Numerous, to *Procs. Roy. Soc., Roy. Inst., Roy. Soc. Arts, Phys. Soc., Phil. Mag., etc.*

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Books.—"Topog. Anat. of the Child"; "Atlas of Skiagrams of Teeth" (with Rankine); *Jt.-Ed.* of "Quain's Anat." *Contrib.*—Numerous on Human and Comp. Anat., chiefly to *J. Anat. and Physiol.*

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Books.—"Seismograms of Japanese Earthquake, Jan. 21, 1906"; "Enlargement of Seismographs"; "Pulsatory Oscillations"; "Columbian Earthq. of Jan. 31, 1906"; "Types of Seismograms"; "Accuracy of calc.

of earthq." *Contrib. to Beitrage z. Geophysik, Az Időjárás, Nat.-wiss. Wochenschr, Földrajzi Közlemények.*

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Contrib.—"Clin. import. of uneven distrib. of hydrochloric acid in gastric contents" (*Boston Med. and Surg. J.*, 1908); "Visual and aural defects among sch. children of St. Louis Co." (*Psychol. Clin.*, 1909); "Complete heart-block following use of digitalis in auric. fibrilln." (*Proc. Amer. Assoc. Physicians*, 1911).

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Contrib.—"Fauna of Stafford Limestone of N.Y." (*Amer. J. Sci.*, 1903); "Revision of N.Y. Helderbergian Crinoids" (*ib.*, 1905); "Podokesaurus holyokensis" a new triassic dinosaur (*ib.*, 1911).

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Cortical theory of hallucination.
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Contrib.—"Influ. of nutrition on fluctuating variability of some plants" (*Rec. d. Trav. bot. Néerl.*, 1905); "Dipsacae and dipsacotin" (*Ib.*, 1908); "Variation in hybridis." (*Ib.*, 1911); "Static anat. monog. on flax stalk" (*Verh. Maatsch. Wet. Haarlem*, 1907).
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Contrib.—"Import. and Geog. Distrib. of Earthquake of 1903" (*Gerland's Beitr. z. Geophys.*, 1908); "Seismol. Records at Hamburg 1908 and 1909" (*Jahrb. d. Hamb. Wiss. Anstalt.*, 1909); "Progress in Dynam. of Earth's Crust"; etc.
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- Introd. construction of water-power elec. works in Japan.*
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Books.—"In the Torrid Sudan," 1910; etc.
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Contrib.—"Carbolism in Surg." (*Ist. Med., Milan*, 1880); "Isolation of Intestine from Mesentery" (*Ib.*, 1884); "Dissect. of Pylorus for Cancer: Recovery" (*Ib.*, 1887); "Method of Cure (Operative) of Cancer of Breast" (*Rept. Med., Naples*, 1906).
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Books.—"Evolution of Filicenean Vascular Syst.," 1908; Ed. "Types of Brit. Vegetation," 1911. *Art.*—"Plant Anat.," *Encyc. Brit. Ed. of New Phytologist. Contrib.*—Plant Anat. and Ecol. to *Annals of Bot. and New Phytologist.*
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Art.—"Potassium," Mackenzie's "Diet. Chem." *Contrib.*—Numerous, to *Analyst*, *J. Soc. Chem. Ind.*, *Proc. Roy. Phil. Soc.*, Glas., etc. on New Anal. Methods as Applied to Foods, Waters, Oils, Metals, Salts, and other Commerce Products.

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Art.—"Isopoda," Brandt and Apstein's "Nordische Plankton." *Contrib.*—"Arthropoda Schizopoda" (Nat. Antarc. Exped., 1908); "Isopoda of Irel." (Fisheries, Irel.

Soc. Invest., 1904, 2); "Pelagic Amphipoda of Irel." (*Id.*, 1905, 4); "Schizopoda of Irel." (*Id.*, 1910, 2).

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Contrib.—"Flight of Mod. Bullet and the Wound it makes"; "Wireless Teleg., with Relay-Telephone Receiver"; "Determin. of Electrol. Resistance and Capacity"; Transl. O. Külpe's "Theory of Knowledge and Sel."

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Contrib. on Physiol. and Path. Chem.

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Books.—"Docks and Harbours of the World"; "Coal Mines and Ironworks of the World"; "Briquettes and Smokeless Fuel"; "First Trans-Atlantic Steamer"; "India-rubber and Gutta-percha"; "Steering of Ships"; "Steamship Propulsion, Steering and Equipment"; "Smokeless Powder"; "Choice and Use of Motor Cars"; "Motor Car Pocketbk."; "Telescopes and Observational Astron." (in press). *Contrib.*—Numerous on Recoil of Guns, Manuf. of Sporting Guns; "Purcellium," 1893; Principle of Crystallization of Metals, 1905.

Inv. built-up crankshaft for steamers; Chronograph "Zamanap"; New smokeless powder (with R. W. S. Griffiths).

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Book.—"Applied Anat.—Med., Surg. and Gynaec." 1903. *Contrib.*—"Researches in cerebro cranial topog. by means of Röntgen photog.," jly. (*Trans. Roy. Acad. Med. Irel.*, 1900); "Supra-pubic Prostatectomy—Aim and Scope of Operation" (*Id.*, vol. XX.); etc.

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Arts. in Bailey's new. *Cyc.* of Hort. *Contrib.* "N. Amer. Naiadales" (*N. Amer. Flora* 1909); "Native tree of Hudson Valley" (*Bull. N. Y. Bot. Garden*, 1909); "Local flora notes" (*Torreyia*, 1909—12).

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Books.—"Prismoidal Formulas and Earthwork"; "Plane and Spher. Trig." (with Charles Puryear); "Surveyors' Handbk."; and 4 Works on Water of Texas. *Contrib.*—"Silting of Lake McDonald at Austin, Tex." (*Engrng. News*, 1900); "Failure of Austin Dam" (*ib.*, 1900); "Conservation on Colorado River" (*Dallas News*, 1911).

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Contrib.—"Phys. deterioration of Race" *D.G.A.M.S. Rept.*; Rept. on organiz. of Med. Serv. of Japanese Army during Chino-Jap. War.

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Crown Mem., Gen. Med. Council, 1876—1901; Lect. Surg., Leeds Sch. Med.

Books.—"Surg. of Scrofulous Glands"; "Dangers to Health in our own Houses"; "Econ. of Coal in House Fires"; "On Abandonment of Iridectomy in Extract. of Hard Cataract" (Bowman Lect.), 1893. *Contrib.*—"Extract. of Soft Cataract by Suction" (*Ophthalm. Hosp. Repts.*, 1864); "Atropine and Mercury in Acute Iritis" (*ib.*, 1866); "Clin. Essays" (*Lancet*, 1870—71); "Abscess in Lung cured by Incision and Drainage" (*ib.*, 1884).

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Art.—"Math. Theory of Elasticity" and "Statics of Elastic Bodies" in *Encyk. d. Math. Wiss.*

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Chaps. in "Lewandowsky's Handbk."; "Drasche Bibliothek," etc. *Contrib.* on Neurol., Med., etc.

Knee reflex.

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1904 and 1911, Johns Hopkins Univ.; Instr., Mar. Biol. Lab., Woods Hole, 1902—05.

Arts. in "Amer. Year Book," 1912. *Contrib. to Publ. Carneg. Inst. Wash., Q.J. Micr. Sci., J. Exper. Zool., J. Morph.* on Echinoderms, etc.

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Books.—"Textb. of Arith.;" "Textb. of Algebra." *Contrib.* numerous.

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Books.—Eng. Ed., "Ellis's Demonstr. of Anat.," 10th and 11th edns.; Joint Ed., "Quain's Anat.," 9th and 10th edns.

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Contrib. — "Entomophthoraceae" (Mem.

Boston Soc. Nat. Hist. IV.); "Laboulbriaceae" (*Mem. Amer. Acad. Arts and Sci.*, XII, and XIII); "Myxobacteriaceae." (*Bot. Gaz.*, XVII.); etc.

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"Ann. Repts. Govt. Vet. Bact.," 1903—10; "Repts. Div. of Vet. Research," 1911. *Contrib.*—Numerous on Horse Sickness, Rinderpest, East Coast fever, Blue Tongue, Piropalmsoses, Trypanosomiasis, Spirochaetosis, and Anaplasmosis.

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Books.—"The Insect and Allied Pests of Orchard, Bush and Hothouse Fruits," 1909; "Mosquitoes of the World," 5 vols., 1901—11; "Textb. of Agric. Zool.," 2 edns.; "Insect Life," 2 edns.; Yearly Repts. on Econ. Zool., 1903—12; Numerous Memoirs, repts. etc., on Culicidae, Apidae and Econ. Zool. since 1887.

THESING, CURT, Zool.; Ed. *Natur* (Z. d. duet. Naturwiss. Ges.) and *Die Naturwiss.*

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Books.—"Exper. Biol.;" "Reproduc. and Transmission."

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Books.—"Morphol. import. of supernum. elements of Human Carpus and Tarsus," 1896. *Contrib.*—"Ethnogr. results in Melanesia" (*Nova Acta*, Vol. 83).

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Books.—"Course of White Corpuscles," 1874; "Size and Weight of Anat. Consts. in Health and Dis.," 1882; "Histogen. and Histomech. of Vasc. Syst.," 1893; "Textb. of Gen. Path. Anat.," 1894. *Contrib.*—Numerous to *Virchow*, etc., since 1872.

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Contrib.—"On opening the knee-joint" (*Brit. Med. J.*, 1883.).

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Contrib.—"Double Fertiliz. in a Dicotyledon" (*Annals of Bot.*, 1900); "Anat. of Aerosticum Aureum" (*New Phytol.*, 1907); "Phylogenetic Struc. of Vascular Syst. of Spermophytic Hypocotyls" (*Repts. Brit. Assoc.*, 1906); "Theory of Double Leaf Trace founded on Seedling Anat." (*New Phytol.*, 1907).

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Contrib. on geol. and miner. to *Q. J. Geol. Soc.* and *Miner. Mag.*; on S. Wales in *Mem. Geol. Survey, G.B.*

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Book.—Cat. of Marsupials in Brit. Mus. *Contrib.*—Papers on Mammalia in *Proc. Roy. Zool.* and other Soc.

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Contrib.—"Toxicity of fritted-lead Glazes" (*Eng. Cer. Soc.*, 1910); "White-lead and Plumbism" (*Ib.*); "Insol. Lead-glazes" (*J.S.C.I.*, 1904).

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Contrib. to *J. Chem. Soc., Berichte d. Chem. Ges.*

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Books.—"Glossary of Greek Birds," 1895. Ed., Aristotle's "Historia Animalium," 1912; Ed. of various Bluebooks on N. Sea Investig. (Scot.), 1905—12.

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Contrib.—Numerous, on Lead Products, Paints, Oils, etc.

THOMPSON, HENRY DALLAS, Prof. of Maths., Princeton Univ., N.J., U.S.A.

B. 1864, Metuchen, N.J. A.M. 1888, D.Sc. 1889 (Prince.); Ph.D. (Gött.) 1892. *Soc.*—Amer. Assoc.; Amer. Math.

Books.—"Elem. Solid Geom. and Mensuration," 1896; *Jt. Transl.* of "Euclid," 1890; "Co ord. Geom.," 1907, 2nd edn. 1909. *Contrib.*—Numerous.

THOMPSON, J. FORD, Prof. of Surg., George Washington Univ., Washington, D.C., U.S.A.

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B. 1863, Weymouth, Mass. *Educ.* Amherst Coll.; Univ. Strasburg. B.A. (Amherst, 1884; Ph. D. (Strass.) 1891. *Soc.* Amer. Phys.

Contrib.—"Law of Coeff. of Elasticity" (*Wied. Ann.*, 1892).

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B. 1877, Covington, Ky. *Educ.* Mass. Inst. Technol.; Zurich Polytech.; Univ. Basel. S.B. (Mass. Inst. Tech.) 1898; Ph.D. (Basel) 1903. *Soc.*—Amer. Electrochem.; Ger. Bunsen; Amer. Acad. *Late* Ass't in Phys., 1898—1901, Instr. in Electrochem., 1901—07, Ass't. Prof., 1907—13, M.I.T.

Book.—"App. Electrochem.," 1911.

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B. 1871, Earlestown. *Educ.* Owens Coll., Manchester. Ch.B. (Vict.) 1894; M.D. (Gold Med.) 1899. *Soc.*—Hon. Treas., Anat. G.B. and I. *Late* Prof. Anat., King's Coll., Lond.; Lect. Anat., Middlesex Hosp., Lond.; and Vict. Univ., Manchester.

Book.—"Myol of Pelvic Floor." *Art.*—

"Osteol." in *Morris's Anat.*; "Pelvic Outlet" (*Ib.*). *Contrib.*—Various on Anat. and Embryol. to *J. Anat.*, *Lancet*, etc.

THOMPSON, SILVANUS PHILLIPS, F.R.S.; Princ., and Prof. of Elec. Engrng. C. and G. Tech. Coll., Finsbury, London, E.C.

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B. 1851, York. *Educ.* Bootham Sch., York; Flounders Inst., Pontefract; Roy. Sch. Mines. B.A. 1869, D.Sc. 1878 (Lond.); LL.D. (Birm.) 1909; M.D. (Königs.) 1894; D.Sc. (Bristol) 1912. *Soc.*—F.R.A.S.; P.P. of Inst. E.E., Phys. Lond., Optical, Röntgen, S.E. Assoc. Nat. 'Hist., Engrng. Sect., Brit. Assoc., Inst. Jun. Engrs.; Illumin. Engrng. (P.); Hon. Mem. Roy. Micros. and Yorks. Phil.; Hon. Mem. Phys., Frankfurt-on-Main; Mem. Acads. Sci., Stockholm, Bologna; Pres. Optical Conference, 1912. *Late* Sci. Master. Bootham Sch., York; Prof. of Phys., Univ. Coll., Bristol; Examr. in, and Mem. of Senate, Lond. Univ.

Books.—"Elem. Lessons in Elec. and Magnetism"; "Light, Visible and Invisible"; "Dynamo-elec. Machinery"; "Design of Dynamos"; "Electromagnet"; Lect. on Arc Lamps; "Optical Tables"; "Life and Work of Faraday"; "Life of Lord Kelvin"; Notes on De Magnete of Gilbert. *Contrib.*—Numerous, in *Phil. Mag.*, *Proc. Phys. Soc.*, *Proc. and Trans. Roy. Soc.*, *J. Soc. Arts*, *J. Inst. E.E.*, *Nature*, *Trans. Brit. Acad.*, *Electrician*, *Saturday Review*, etc., since 1877, on Physiol. Acoustics; Effect on Vision of an Altern. Magnetic Fluid; Magnetic Double Refraction; New Method of Harmonic Anal.

Inv. permeameter; Improved form of Nicol Prism; Optical rotator; Method of transforming 2-phase currents to 3-phase; Method of compensating retardation in sub-mar. cables.

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B.A. 1892, M.D. 1895 (Dub.); L.R.C.S.I. 1888; F.R.C.P.I. 1902. *Soc.*—Fell. Roy. Acad. Med. Irel.; Brit. Med. Assoc. (Mem. Council. Leinster Branch); Irish Med. Assoc. (Hon. Treas. and Mem. Council.); Dublin San. Assoc. (Mem. Council.); Study of Inebriety (V.-P.). *Late* Physician, Jervis St. Hosp., Dublin; Cons. Physician, Nat. Hosp. Consump., Irel.; Examr. in Med. R.N. Med. Sev.; Mem. Med. Cons. Bd. R.N.; Censor Med. R.C.P.I.; Cons. Vis. in Lunacy under Lord Chancellor.

Contrib.—"Hemi-encephaloid Foetus" (*Trans. Roy. Acad. Med. Irel.*, 1893); "Spina Bifida assoc. with Hydroceph." (*Ib.*, 1895); "Acromegaly" (*Ib.*, 1898); "Aneurysm of Ascending Arch of Aorta implic. entire Upp. Lobe of Right Lung; Aneurysm of Descending Arch of Aorta Perforating Oesoph." (*Ib.*, 1899), etc.

THOMS, HERMANN, Direc. of Pharmaceut. Inst., Berlin Univ.

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B. 1859, Neustrelitz. Prof., Dr.
Books.—"Pharmacy" (with E. Gilg); "Org. Drugs," 2nd edn., 1897; "Chem. of Food," 1899; "Encyc. of Gen. Pharmacy," 2nd edn.,

13 vols., 1903—11 (with J. Moeller); "Work of Berlin Univ. Pharm. Inst.," 8 vols., 1904—11.

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Book.—"Path. Anat. of Fœtus and Newborn in Congen. Syph.," 1912. *Art.*—"Serodiagn. of Syph." in Kraus-Levaditi's Hdb. d. Immun., 2nd edn. *Contrib.*—"Path. anat. changes prod. by syph. in afterbirth" (*Ziegler's Beitr.*, 1905); etc.

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Books.—"Manual of Surg.," "Neuroma and Neurofibromatosis."

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B. 1853, Manchester, Eng. A.M. (Cent. High Sch., Phila.); Hon. A.M. (Yale) 1890; Hon. Ph.D. (Tufts); Hon. Sc.D. (Harv.) 1909. *Soc.*—Hon. Mem. Brit. Inst. E.E.; Fell. Amer. Assoc., etc. *Late* Prof. Chem., Cent. High Sch., Phila., 1870—80.

THOMSON, JAMES ALLAN, Palacont., Geol. Surv. N.Z.

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B. 1881, Dunedin, N.Z. *Educ.* High Sch. and Otago Univ., Dunedin; Oxford Univ. (Rhodes Scholar). M.A. (Oxon.) 1912; D.Sc. (N.Z.) 1912. *Soc.*—F.G.S. *Late* Lect. and Dem. in Geol., Oxford, 1907—09.

Contrib. on rocks of W. Austral., and rocks and fossils of N.Z.

THOMSON, JAMES MILN, Manager, Roy. Gunpowder Factory, Eng.; F.I.C., 1888.

Waltham Abbey, Essex.

THOMSON, JAMES PARK, Founder, P.P., Hon. Sec. and Treas., Roy. Geog. Soc. Australasia, Queensland.

William St., Brisbane, Queensland, Austral. B. 1854, Shetland. *Educ.* Privately. LL.D. (Queen's, Can.). *Soc.*—Hon. F.R.S.G.S. (Edin.). Hon. Corresp. Mem. N.Y. Acad. Sci.; Alzate, Mexico; Commerc. Geog., Paris; Geog., Marseilles, Halle and Manchester.

Books.—"Brit. New Guinea"; "Round the World." *Arts.* on Austral. Place Names, Phys. Geog. of Austral., in "Webster's Internat. Dict." *Contrib.*—Over 100. Hon. Ed. *Queensland Geog. J.*, etc.

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Books.—"Study of Animal Life," 3rd edn., 1896; "Sci. of Life"; "Outlines of Zool.," 5th edn., 1906; "Nat. Hist. of Year"; "Prog. of Sci. in the Century"; "Herbert Spencer"; "Heredit." 1908; "Bible of Nature"; "Darwinism and Human Life"; "Biol. of the Seasons," 1911; "Intro. to Sci.," 1912; "Evol. of Sex" (with P. Geddes), 1889; "Evolution" (with P. Geddes), 1911. *Contrib.* on Zool. of Alcyonaria, etc.

THOMSON, JOHN MILLAR, F.R.S.; Prof. of Chem., King's Coll., Univ. of London.

B. 1849, Coll. of Glasgow. *Educ.* High Sch., Glasgow; Glasgow Univ. LL.D. (Glas.); Hon. Fell. King's Coll. and Queen's Coll., Lond. *Late* Hon. Sec., Chem. Soc., Lond., 1883—97, and V.-P. 1898—1901; Hon. Regist. Inst. Chem., 1894—1900, Pres., 1900.

Book.—Ed. 7th, 8th, and 9th edns. of "Bloxam's Chem." *Arts.*—Various, in diff. Dicts. *Contrib.* to *J. Chem. Soc.*, *J. Roy. Soc. Arts*, etc.

THOMSON, SIR JOSEPH JOHN, O.M., F.R.S.; Nobel Laureate, 1906; Fell. of Trin. Coll. and Cavendish Prof. of Exper. Phys., Cambridge Univ., Eng.

B. 1856. M.A., Sc.D. (Dub.); D.Sc. (Oxon., Columb., Hopkins, Viet.); LL.D. (Glas., Aber., Prince); Ph.D. (Cracow). *Soc.*—Hon. F.R.S.E.; Hon. Mem. Lit. Phil. Manc., Roy. Dublin, Roy. Acad. Sci. Turin, Acad. Sci. Upsala. *Late* Mem. Counc., Roy. Soc., 1889—91, 1898—1900.

Books.—"Treatise on Motion of Vortex Rings"; "Applic. of Dynamics to Phys. and Chem.," "Math. Theory of Elec. and Magn.," "Conduct of Elec. through Gases."

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Books.—"Dis. of Nose and Throat"; "Atlas of Nasal Anat.," "Cerebro-spinal Fluid." *Arts.* in "Encyc. Med." and Burghard's "Operative Surg." *Contrib.*—"Cereb. Complic. of Sphenoidal Sinusitis" (*Trans. Med. Soc. Lond.*, 1906); "Removal through Mouth of Shawl Pin Impacted in Secondary Bronchus" (*Lancet*, 1910); "Treatment of Tuberc. Laryngitis" (*Cong. of Tuberc.*, 1901); "Intrinsic Cancer of Larynx" (*Brit. Med. J.*, 1912).

Micro-organisms of healthy nose; Spontaneous escape of cerebro-spinal fluid from nose.

THOMSON, WILLIAM, Pub. Anal. for Co. Borough of Stockport, Eng.

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B. 1851, Glasgow. *Educ.* Andersonian Univ. *Soc.*—F.I.C.; F.R.S.E.; F.C.S.; F.R.M.S.;

Manc. Lit. and Phil.; Chem. Ind. *Late partner to Crace-Calvert.*

Author.—"Sizing of cotton goods and causes and prevention of mildew." *Contrib.*—Chem. of india-rubber; Microbes which produce putrefaction; Identification of different writing inks; Detection and estimation of minute quantities of arsenic in food, etc.

Invt. calorimeter for burning fuel in oxygen.

THOR, SIG, Lect. on Zool., State Coll. of Drammen, Norway; Ph.D.

Contrib. on Zool.

THORINGTON, JAMES, Prof. of Eye Dis., Polyclin., Philadelphia, Pa., U.S.A.; A.M., M.D.

Books.—"Retinoscopy," 6th edn.; "Refract. and How to Refract," 5th edn. and in Chinese; "The Ophthalmoscope and How to Use It"; "Prisms, their Use and Equivs."

THORNBURG, CHARLES LEWIS, Prof. of Maths. and Astron., Lehigh Univ., S. Bethlehem, Pa., U.S.A.; Direc. Sayre Observ.

B. 1859, Barboursville, W. Va. *Educ.* W. Va. Pub. Schs.; Privately; State Normal Sch.; Marshall Coll., W. Va.; Vanderbilt Univ. B.S. 1881; C.E. 1883; B.E. 1882; Ph.D. 1884 (Van.). *Soc.*—Fell. Amer. Assoc.; Prom. Engrng. *Educ.* *Late Adjunct Prof., Vanderbilt Univ.*

Book.—Calculus Notes.

THORNDIKE, EDWARD LEE, Prof. of *Educ. Psych.*, Teachers Coll., Columbia Univ., New York, U.S.A.

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B. 1874, Williamsburg, Mas. *Educ.* Univs. Columbia, Wesleyan, and Harvard. A.B. (Wesl.) 1895; A.M. (Harv.) 1897; Ph.D. (Colum.) 1898. *Soc.*—Amer. Psych. Assoc. (Pres.); Phil. Assoc.; Anthropol. Assoc.; F.A.A. (V.-P.).

Books.—"Educ. Psych.," 1903; "Mental and Social Measurements," 1905; "Animal Intelligence Exper. Studies," 1911. *Contrib.*—"Measurem. of twins" (*Arch. of Psych.*, 1905); "Empirical Studies in theory of measurem." (*ib.*, 1907); "Elimination of pupils from schools" (*Bull. U.S. Bur. of Educ.*, 1908); "Handwriting" (*Teachers Coll. Record.*, 1910).

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M.B. 1855, B.A. 1854 (Lond.); M.R.C.S. (Eng.) 1855.

Book.—"Memories of Seven Campaigns."

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Contrib.—"Meas. of dielectric constants by oscill. of ellipsoids in field of force" (*Proc. Roy. Soc.*, 1909); "Polaris. of dielectrics in steady field of force" (*Phys. Soc. Lond.*, Vol. 22, and *Phil. Mag.*, 1910); "Ignition of coal-dust by single elec. flashes" (*Trans. Inst. Min. Engrs.*, Vol. 39); "Opposite electric. produced by animal and veg. life" (*Proc. Roy. Soc.*, 1910).

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Eyot Villa, Chiswick Mall, London, S.W.; and Steyne Bembridge, I. of Wight.

B. 1843, Rome. *Educ.* privately; Glasgow Univ. LL.D.; Mem. of Council, Inst. M.E.; Mem. Inst. C.E. *Late* Founded firm of John I. Thornycroft & Co. at Chiswick.

Contrib. to *Inst. C.E.*, I.N.A.

Water-tube Boilers; High speeds at sea; Screw propeller; First torpedo boat in British Navy.

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Books.—"Hist. of Icelandic Geog.," 4 vols., 1897—8; "Iceland, its Geog. and Geol.," 2 vols., 1906; "Phys. Geog. of Iceland," 2 vols., 1911; "Geol. Map of Iceland," 1901, etc.

THORP, FRANK HALL, Assist. Prof. of Indust. Chem., Mass. Inst. Technol., Boston, Mass., U.S.A.

Book.—"Indust. Chem."

THORPE, Sir EDWARD, C.B., F.R.S.; V.-P. Roy. Soc.

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B. 1845, near Manchester. *Educ.* Owens Coll., Manchester; Univs. Heidelberg, Bonn. Ph.D. (Heid.); Hon. D.Sc. (Leeds and Manchester); Hon. Sc.D. (Dubl.); Hon. LL.D. (Glas.); Roy. Medallist; Longstaff Medallist. *Soc.*—F.C.S. (P.P.); Chem. Ind. (P.P.); numerous For. Sci. Soocs. *Late* Princ. Govt. Lab.; Prof., Anderson's Coll., Glasgow; Leeds Univ.; Roy. Coll. Sci.; Prof. of Gen. Chem., Imper. Coll. of Sci. and Technol., S. Kensington.

Books.—"Dict. of App. Chem.," 5 vols.; "Essays on Histor. Chem.," "Life of Priestley"; "Humphry Davy, Poet and Philosopher." *Contrib.*—Numerous, to *Phil. Trans.* and *Proc. Roy. Soc.*, *J. Chem. Soocs.* Lond. and Ber.

Magnetic surv. of Brit. Isles (with Sir A. Rücker).

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B. 1872, London. *Educ.* King's Coll., Lond.; Roy. Coll. Sci.; Heidelberg Univ. Ph.D. (Heid.) 1895; D.Sc. (Man.) 1908; Fell. King's Coll., Lond. *Soc.*—F.I.C.; F.C.S.; Chem. Ind.; Ger. Chem. *Late* Sen. Lect. Chem., Manchester Univ.

Book.—"Synth. Dyestuffs" (with J. C. Cain), 1905, 2nd edn., 1913. *Arts.* in Thorpe's "Dict. App. Chem." *Contrib.*—Numerous, to *J.* and *Proc. Chem. Soc.*, from 1896.

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B. 1861, Preston. *Educ.* Clifton; Gonville and Caius Coll., Camb.; Strassburg Univ. M.A. (Cantab.) 1884. *Soc.*—Numerous, phys.,

chem., and engrng., in Eng. and Amer. *Late Prof. Phys., Sydney Univ., N.S.W.*

Contrib.—Numerous.

THRESH, JOHN CLOUGH, Lect. on Pub. Health, London Hosp. Med. Coll.; M.O.H., Essex Co. Council.

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B. 1850, Wakefield. *Educ. Pub. Sch.*; Owens Coll. D.Sc. (Lond.) 1884; M.D. (Vict.), Gold Med., 1896; D.P.H. (Cantab.); Hon. D.P.H., R.C.P.S.I., 1898. *Soc.*—San. Inst.; F.I.C., etc. *Late Examr. State Med., Lond. Univ.; Examr. Chem., Pharm. Soc. G.B.*

Books.—"Physics, Exper. and Math."; "Water and Water Supplies"; "Water Supplies of Essex"; "Examn. of Water and Water Supplies"; "Preserv. of Foods and Preservatives in Foods" (with A. Porter); "Simple Method of Water Anal." *Contrib.*—"Anal. of the Water, Gases, and Sinter of Buxton Thermal Springs" (*J. Chem. Soc.*, 1882); "Aerial Dissem. of Small-pox" (*Trans. Epidem. Soc.*, 1902); "Bact. Examn. of Water" (*Publ. Health*, 1904); "Signif. of B. Coli in Drinking Water" (*Ib.*, 1909).

Isolation of active principles of cayenne pepper, ginger, etc.; current steam for disinfecting; sterilizing drinking water by chlorine.

THRIFT, WILLIAM EDWARD, Erasmus Smith Prof. of Nat. and Exper. Phil., Univ. Dublin, Irel.; Fell. Trin. Coll. Dublin.

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B. 1863, Tonsberg, Norway. *Educ. Tonsberg; Christiania. Late Lect. Mech., Tech. Sch., Trondhjem.*

Contrib.—"Approx. Values of Algeb. Numbers" (*J. f. d. rune u. angew. Math.*, cxxv.); "Fundamental Theorem on Estim. of Approx. Values" (*Ib.*, cxxxviii.); "Solution of Spec. Case of Gen. Logical Problems" (*Skv. Christiania Vid. Selsk.*, 1910).

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Publ.—Geol. charts of Bavaria and Baden. *Contrib.*—Numerous to Ger. J.

Pat. on boring apparatus.

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B. 1832, Bordeaux. *Educ. Coll. Bordeaux. Soc.*—Fr. Anthrop.; Assoc. Teaching Anthrop.

Books.—"Madness and Law"; "Woman"; "Assisted Children of Seine"; "Educ. of Young Degenerates"; "Mystic Divine, Diabol. and Nat." *Contrib.* to *Rev. d'Anthrop., Rev. Philanthrop., Rev. Politique*, etc.

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Book.—"Expts. with eccentrically loaded Columns of Reinforced Concrete," 1909. *Art.*—"Expts. with Columns" in "Emperger's Handb. f. Eisenbetonbau," 1909. *Contrib.*—Numerous.

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B. 1873, Forsaker. *Educ. Upsala Univ. M.D. (Ups.) 1900. Soc.*—Roy. Physiog., Lund.

Art.—"Physiol. of Skin and Pain Perceptions" in Nagel's "Handbh. d. Physiol." *Contrib.*—Numerous, to *Skand. Arch. f. Physiol.*

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Books.—"Exercises in Phys. Measurement" (jty.); "Elem. Phys." *Contrib.*—"Relat. of dielec. constant to chem. constit. of dielectrics" (*Zeitschr. f. phys.-Chem.*, and *Phys. Rev.*, 1894); "Exper. research on gravitational permeability" (*Phys. Rev.*, 1896); "Meas. of intern. temp. gradient in common materials" (*Ib.*, 1906).

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Book.—"Textb. of Econ. Geod.," 1906.

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Books.—"Hist. of Birds of Kent," 1910; Part-author of "Hand List of Brit. Birds," 1912.

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Books.—"Physiol. of Circulation," 1893; "Text-bk. of Physiol.," 1897—98, 6th edn., 1911, and in Russ. and Eng. *Arts.* in Nagel's "Handb. d. Physiol.," Oppenheimer's "Handb. d. Biochem.," Winterstein's "Handb. d. Comp. Physiol." and in "Ergebn. d. Physiol." *Contrib.*—"Respiration and Metabolism" (*Skand. Arch. f. Physiol.*,

1895) (with K. Sondén); "Estim. of blood quantity driven from heart" (*Skand. Arch. Physiol.*, 1891 and 1907); and numerous others.

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Contrib.—"Rivets in struct. steel-work" (*Harv. Engrng. J.*, 1903); "Kinetic effects of crowds" (*Trans. Amer. Soc. C.E.*, 1913); "Deductions from Marburg's I-beam tests" (*Engrng. News*, 1910); "Stress variation on section of angle in tension" (*Harv. Engrng. J.*, 1910).

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Books.—"Intro. to Chem. Phil."; "Pract. Chem."; "Manual of Chem."; "Hist. of Chem. in our own Times"; "The Elements: their Nature and Origin." *Contrib.*—"Specific Heat of Metals" (*Phil. Trans.*, 1900, 1903—04); "Researches on Terpenes" (*Trans. Chem. Soc.*, 1875).

Conversion of isoprene into india-rubber, 1892.

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Book.—"Textb. of Gen. and Spec. Surg.," 3 vols., 11th edn., 1912; "Erysipelas"; "Dis. of Pelvis." *Contrib.*—Numerous on Surg. of Joints, Nerves, and Gen. Opern. Techn.

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A.B. (Yale) 1897; M.D. (L.I. Coll. Med. Sch.) 1903; Ph.D. (Columbia) 1912.

Contrib. on histol. and develop. of hypophysis.

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Books.—"Training of Perception"; "Math. in Phys. Textb.," etc.

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Books.—"Spectrum Anal. of Chlorophyll," 1871; "Assimilation of Light by Plants," 1875; "Plant Life," 7 edns., 1878—1908, and in Eng., 1912; "Plant and Solar Energy," 1897; "Darwin and his Theory," 5 edns., 1863—1907; "Gen. Problems of Mod. Sci.," 1904, 2nd edn., 1908; "Agric. and Plant Physiol.," 1906. *Contrib.*—"Action of Light on a Grain of Chlorophyll" (*Atti Cong. Internat. Bot.*, Florence, 1874); "Decomp. of Carbonic Acid in Solar Spectrum" (*Ann. de Chem. et de Phys.*, 1877); "Chlorophyll Function" (*Ann. des Sci. Nat.*, 1885); "Cosmical Function of the Green Plant" (Croonian Lect., *Proc. Roy. Soc.*, 1903).

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Contrib.—"Dentition of Canis" (*Anat. Anzeig.*, Bd. 11); "Tooth Genesis in the Canidae" (*J. Zool. Linn. Soc. Lond.*, vol. 25); "Tooth Genesis in the Caviidae" (*ib.*, vol. 28); "Succession and Homologies of Molar and Premolar Teeth in Mammalia" (*J. Anat. and Physiol.*, 1902).

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Contrib. to *Trans. Chem. Soc.*

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Contrib.—More than 20 on cytology, sterility of hybrids and causes of parasitism of fungi to *Arch. f. Zellforsch.*, *Flora*, *Ber. Deut. bot. Ges.*, *Ann. Jardin Buitenzorg*, *Pringsheim's Jahrb.*, etc.

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Books.—"Outline of Psychol.," 1896; "Primer of Psychol.," 1898; "Exper. Psychol." 1901-05; "Feeling and Attention," 1908; "Thought-Processes," 1909; "Textb. of Psychol." 1910; Translms. from German.

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Contrib.—"Surg. Anat. of Female Perineum" (*Internat. Clin.*, 1912); "Surg. Anat. of Abdom. Wall" (*Med. Rec.*, 1911); "Congen. Cystic Kidney" (*Amer. Med.*, 1903).

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Books.—"Stars and Telescopes," 1899; "A New Astron.," 1897, 17th edn. (transl. into Hung. and Turk.). *Art.*—"Amer. Telescopes" in "Amer. Edn. of Britannica," 1888, and "Hamersly's Nav. Cyc." *Contrib.*—"Solar Parallax"; "Trans. Neptunia planet"; "Ecliptic Tables Jupiter's Satellites"; "Automatic photog. of total solar eclipses."

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Books.—"Geol. Atlas of U.S.," folios 96, 97, 99, 100, 156, 165; "Moraines of Missouri Coteau" (*U.S. Geol. Surv., Bull.* 144); "Mor-

aines of S.E. S. Dakota" (*Ib.*, *Bull.* 158). *Contrib.*—"Hydrog. List of S. Dak." (*Bull. Geol. Soc. Amer.*, 1902); "Concretions and their geol. effects" (*Ib.*, 1903); "Origin of Missouri River Loess" (*Proc. Iowa Acad. Sci.*, vol. 13); "Recent alluv. changes in S.W. Iowa" (*Ib.*, vol. 14).

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Books.—"Rocks of Siljan," 1883; "Tri-lobite Fauna of Siljan," 1884; "Siljan Graptolites," I., 1890, II., 1892; "Diplograpt. and Heterograpt. of Scanian Rastrit. Beds," 1899; "Grapt. of Scanian and Vestrogoth Beds," 1901, 1904. *Contrib.* 40.

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Books.—"Allyl Alcohol," 1888, 1895; "Teaching of Chem.," 1878, 1905. *Arts.* in Ladenburg's Diet. of Chem., Wurtz's Diet., Abderhalden's Handb. of Biochem. Pract. *Contrib.* to *Liebigs Ann.*, *Ber. Chem. Ges.*, *Zeitschr. f. Ancew. Chem.*, *J. f. Landwirtsch.*, on allyl alcohol, pentoses, formaldehyde derivs., agric. and med. chem.

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Arts.—"Fruits and Fruit Products" (*Bull.* 66, Bur. Chem., Dept. Agric.); "Olive Oil and its Adulterants" (*Bull.* 77). *Contrib.*—"Changes in Whisky stored in Wood" (*J.A.C.S.*,

1908); "Fatty Acids of Fish Oil" (*J. Ind. and Eng. Chem.*, 1909); "Halogen Absorp. of Oils" (*J. A.C.S.*, 1904); "Exam. of Lard from Cottonseed Meal-fed Hogs" (*Ib.*, 1905).

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Books.—"Manual of Dental Anat.," 6th edn., 1904; Ed. "Tomes' Dental Surg.," later edns. *Art.*—"Ivory," *Encyc. Brit.*, 9th edn.; Chap. in "Health," *Contrib.* on Histol., Embryol., Chem., and Developm. of Teeth, in *Phil. Trans.*, Q.J. *Micros. Sci.*, *Proc. Zool. Soc.*, *Trans. Odont. Soc.*, etc.

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Contrib.—"Influence of Stress and Strain on Phys. Properties of Matter" (*Phil. Trans.*, 1881—89); "Coeff. of Viscosity of Air" (*Phil. Trans.*, 1886); and 40 original researches in Phys.

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Books.—"Trias of Vicenza," 1901; "Geol. Guide to Upp. Italy," 1902; "Geol. E. Prussia," 1910. *Contrib.*—"Mountain Building under the Sea" (*Sitz.-ber. Berlin Akad.*, 1909); and on Trias in Sardinia, Italy, etc.

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Contrib.—"Biol. studies on corymorpha" (*Univ. Calif. Publ. Zool.*, 1907, 1910, and *Biol. Bull.*, 1910); "Differentiation in Hydroid Colonies, II. *Aglaophenia*" (*Biol. Bull.*, 1910).

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Contrib.—"Anal. of Carbolic Acid" (*Zeitschr. f. anal. Chem.*, Vol. 25); "Anal. of Nicotine" (*Chem. Z.*, 1901); "Potable waters of Hungary" (*Communic. Inst. Geol.*), 1911.

Increased luminosity of Auer lamps; industrial applic. of natural waters contg. soda; used secret marks on Govt. cigarettes.

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Contrib. to *Annales Télégraph.*, *J. télégraph. Internat. de Berne*, Amer. *Elec. World*, etc.

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Books.—"Tables of Coal," 1888; "Tech. Problems," 1898; "Theories of Earth's Interior," 1899; "Text-bk. of Geol.," 1900, 2nd edn., 1906; "Balkan Peninsula," 1904; "Fauna of Panama Canal," 1909—11; "Relief of Vienna," 1910; Numerous Geol. Repts. and Travels. *Contrib.*—Numerous on Geol. and Geog., since 1882, and Quick Method of Estim. Thickness of Fixed Bodies, 1907.

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Books.—"Causes of Madness," 1896; "Genius and Neuropath.," "Zola," 1896; "Poincaré," 1910; "Tech. of Exper. Psych.," 2nd edn., 1910 (with H. Piéron); "How to Form a Mind," 1908. *Contrib.*—Numerous on Psychiat. and Psychol., esp. Dechlorin. in Bromide Treatment of Epilepsy (with C. Richet) and Researches on Auto-conduction in Mental Maladies and Psychol. (with Mignard).

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Contrib.—Numerous for 30 years on plant anat. to *Vidensk. Meddelelser f. d. Naturhist. Foren i Copenhagen*.

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Contrib. on surfaces, propulsive screws, volplane, etc.

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Contrib.—Rept. of Statis. Econ. and Tech. Investig. in S. Yenessi Gold-mining Dist., and for Amur and Pacific Gold-mining Dist., 1898—1900; "Gold Mining in W. Siberia" (*Engrn. and Min. J.*, N.Y., 1906); "Dredging for Platinum in the Urals, Russia" (*ib.*, 1908, and *Minerol. Ind.*, 1908).

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Book.—"Qual. Chem. Anal." 2nd edn. 1911.

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Books.—"Lab. Guide to Dissec. of Cat"; "Lab. Course in Chem. Physiol." *Contrib.*—"Produce of Sound in Drum Fishes, Sea Robin, and Toad Fish" (*Annals N.Y. Acad. Sci.*, 1908); "Opening of Brick-red Gland in Limulus" (*Anat. Anzeig.*, 1895); "Function of Swim-Bladder in Fishes" (*Bull. U.S. Fish Comm.*, 1902); "Biliary Calculi in Squetcaque" *ib.*, 1902).

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Books.—"Typhoid Fever," 1895; "Tuberc.," 1907.

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Books.—"1st Course in Calculus" and "Essentials of Calculus," with G. A. Goodenough; Ed. "Amer. Math. Series." *Contrib.* on math and educ.

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Books.—"Meteorology," 3rd edn., 1909; "Met. and Climatol.," 1905; "Text-bk. Cosmic Phys.," 1911.

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Books.—"Flora of N. Africa"; "Bot. app. to Agric.": "Genetic Horticulture."

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Amer. Inst. Min. Engrs., etc. *Late Ed. Western Chem. and Metall.* 1910; P.P. 1905—06; Sec. 1910, Western Assoc. Tech. Chem. and Metall.

Contrib. numerous, on Metall. and Agric. Chem., in *J. Chem. Ind.*, Montana Press, etc.

Relation of mine and smelter wastes to other indust.

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Book.—"Gases of the Atmosphere." Disc. neon, etc. (with Ramsay).

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Arts.—Biol. and Zool., etc., in "New Internat. Year Bk.," 1907—11. *Contrib.*—"Cytogeny of Podarke" (*J. Morphol.*); and Papers on Annulatae, *U.S.F.C. Bull. and Bull. Amer. Mus. Nat. Hist.*

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Books.—"Yuccaeae," 1902; "Variet. in Agaveae," 1909; "Observ. on Furceaeae," 1910; "Desert Group Nolineae," 1911. *Contrib.*—Numerous, on Difficult Groups of Plants, esp. those of Desert Regions.

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Books.—"Outlines of Mining, Dressing and Briquetting," 4th edn. 1907; Co-Ed. "Lexikon d. gesamt. Techn." *Contrib.* on Hist. of mining, etc.

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Books.—"Scrofula and its Gland Dis.," 1882; "Manual of Surg. App. Anat.," 1883; "Intest. Obstruc." (Jacksonian Prize Essay); "Anat. Intest. Canal and Peritoneum in Man" and "in the Mammalia" (Hunt. Lects., 1885, 1886); "Manual of Operat. Surg.," 1903; "Surg. Treatment of Appendicitis," 1888, 1891; "Tale of a Field Hosp.," 1900; "Other Side of the Lantern," 1905. *Arts.*—"Phys. Educ.," in Stevenson and Murphy's "Hyg.," 1892; "Abdom. Viscera," in Morris's "Anat.," 1893, etc.

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Art.—"Chorea," in *Traité "Med. et Therap.,"* 1911—12. *Contrib.*—Various, in *La Clinique*, 1906—11, on Liver and Intestines in Infancy and Childhood, etc.

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Books.—"Intro. to Phys. Anat.," 1902—08, 3 parts; "Anat. Names," 1906, 4th edn., 1912; "Nomina Anatomica," 1910. *Contrib.*—Numerous, to *Anat. Hefte, Arch. f. Entwickl.-mech.*, etc., since 1894, on Mech. Anal. of Histol. Struct., Rotating Cylinder Microtome, etc.

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Imper. Amis. Sci. Nat. Moscow; P.P., S. African Phil., 1883—4.

Books.—"Rhopalocera Africæ Australis," 1862—66; "S. African Butterflies," 1887—89. *Contrib.*—"Remarkable mimetic analogies among African butterflies" (*Trans. Linn. Soc.*, 1869); "Struc. of *Bonatea speciosa* with ref. to fertilis." (*J. Linn. Soc.*, 1865); "Butterflies collected in Trop. S.W. Africa by A. W. Eriksson" (*Proc. Zool. Soc.* 1891).

Extension of Batav. theory of mimicry from the Neotrop. and Oriental regions to Ethiop. region; first to exam. Cape orchids in light of Darwin's work on fertilisation by insect agency.

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Book.—"Man. of Antiseptic Surg." 1888. *Contrib. to Ann. Soc. Med.-Chir. Liège, Bulls. Acad. Med. Belg., Ann. Dermatol. Paris*; etc.

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Books.—"Treatise on Infants' Dis.," 2 vols., 2nd edn., 1908; "Treatise on Infantile Hyg.," 1912. *Contrib.* 140 in Russ and foreign *J.* on pediat., etc.

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Contrib. on rubber and guttapercha to Year Books of Dept. of Agric., Dutch E. Indies.

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Book.—"Illumination: its Distrib. and Measurement." *Contrib.*—"Illumination" (*Proc. Inst. C.E.*, 1892); "Overhead Elec. Lines" (*Ib.*, 1907); "Light of Elec. Arc" (*J. Inst. E.E.*, 1892); "Disturb. of Sub-mar. Cables by Elec. Tramways" (*Ib.*, 1897).

Dioptic shades; wire-gauze dynamo brush; anal. of polar curve of arc lamp; illumination and other photometers.

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Books.—"Cat. of Living and Fossil Mammals"; "Mammals of Europe"; Collab. in "La Grande Encyc.," "La Géog. Zool.," etc. *Contrib. to Rev. Sci., La Nature*, etc., since 1878, on Mar. and Parasite Acariens, Geog. Distrib. of Animals, Mammals, etc.

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Books.—"Indian Forest Utiliz.," 1907; "Manual of Forest Mensur.," 1911. *Contrib.*—"Indian Woods and their Uses" (*Indian Forest Mem.*), 1909; "Prospects of Match Ind. in Indian Empire" (*Ib.*, 1910); "Note on Feasibility of some Indian Woods" (*Ind. Forest Records*, 1910); "Teak Forests of Burma" (*Ib.*, 1911).

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Contrib.—"Toxic action of dissolved salts and their electrolytic dissoen." (jtl.) (*Bot. Gaz.*, 1896); "Poisonous effect on living plants by Phenols" (jtl.) (*Bot. Centralbl.*, 1898); "Toxic action of acids and their sodium salts on *Lupinus albus*" (*Amer. J. Sci.*,

1900); "Effect of presence of insol. substances on toxic action of poisons" (jtlly.) (*Bot. Gaz.*, 1905).

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Books.—"Accommodation of Eye," 1900; "Physiol. of Brain," 1905. *Contrib.* to *Pflüger's Arch.*, *Arch. f. Ophthalm.*, *Tierärztl. Zentrbl.*

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Books.—"Text-bk. of Miner., 6th edn., 1905; "Anst. Porphyries," 1869; "Microsc. Nature of Meteorites," 1883; Repts. on Miner. and Petrog., since 1871. *Contrib.*—"Felspars" (*Sitz.-ber. Vienna Acad.*, 1864); "Micas" (*Ib.*, 1877); "Chlorites" (*Ib.*, 1891); "Pyroxenes and Amphiboles" (*Miner. Mitt.*, 1871).

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Books.—"Ophthalm. works of Th. Young," 1894; "Physiol. Optics," 1898 (Eng. transl. by Weiland, 1900); "Helmholtz and Theory of Accommodation," 1909. *Art.*—"Ocular dioptries," in French Encyc. of Ophthalm., 1904.

Orthoscopic glasses.

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Books.—"Outlines of Pharmacogn." (jtlly.), 1885; "Chlorophyll," 1884; "App. Anat. of Plants," 1884; "Indian Medic. and Useful Plants," 1892; "Copper in Forens. Chem.," 1893; "Anat. Atlas of Pharmacogn. and Food Sci." (jtlly.), 1893—1900; "Resins," 1900, 2nd edn., 1906; "Chem. and Biol. of Plant Secretions," 1908; "Handb. of Pharmacogn.," 1908—12; "Sci. of Med." (Rect. Address), 1909; Ed. "Pharmacopœia Helvetica," IV. *Contrib.*—150 on Chem., Bot., Pharm., Med.

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Contrib.—"Tetanus spores in gelatine" (*J. Path. and Bact.*, 1903); "Worms in aorta of bullocks" (*Studies Med. Res. Inst. Selangor*, 1905).

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Contrib. on Food and Drug Adulteration, Water Anal., etc.

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Books.—"Morison Lects.," 1874; "Insan. of Over-Exertion of Brain" (Morison Lects.), 1894. *Arts.*—"Insanity," "Hysteria," etc. in *Encyc. Brit.*, 9th edn.; *Contrib.*—"Insan. of Pregcy., Puerp. Insan., and Insan. of Lactation" (*Edin. Med. J.*, 1865—66); "Morbid Appearances in Brains of 30 Insane Persons" (with Ruthetford) (*Id.*, 1869); "Morbid Histol. Brain and Spinal Cord as Observed in Insane" (*Brit. and For. Med. Chir. Rev.*, 1873).

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Books.—"Metall. of Iron," 3rd edn.; "Ironfounding," 2nd edn.; "Pract. Metall." *Con-*

trib.—Nearly 100, in *J. Chem. Soc.*, *J. Iron and Steel Inst.*, *J. Inst. Metals*, *J. Soc. Chem. Ind.*, *J. Staffs. Iron and Steel Inst.*, etc., on Silicon in Cast Iron, Properties of Steel, Hardness of Metals, Volume Changes in Metals, Transparent Metallic Films, Chem. of Puddling Process, Treatment of Waste Pickle, Properties of Slags, Metals in Vacuo, etc.

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Contrib. to *Trans. and Proc. Roy. Soc.*, Lond. and Edin.; *Challenger Repts.*, *J. Anat. and Physiol.*, etc., on Human and Comp. Anat., Anthrop.

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Book.—"Chem. and Industry," 1909. *Contrib.*—"Molec. Assoc. in Relation to Electrolytic Dissoc." (*Trans. Chem. Soc.*, 1911), etc.

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Books.—"Wireless Teleg.," 1908; "Exper. Researches on Elec. Waves," 1899; "Telephony," 1909; "Teleg.," 1910; "Elem. Phys.," 6 vols.; "Indust. Cold," 1907; "Elec. Lighting and Heating," 1912. *Contrib.*—Numerous to *Rev. gen. des sci.*, *Comptes Rendus*, *Radium*, *J. de Phys.*, *La Nature*.

Wireless teleg., 1894; Microammperemeter; Wireless Writing at 300 Kilom.

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Books.—"Intro. to Study of Bacteria," 1893; "Principles of Histol.," 1898. *Contrib.*—"Mitosis in Oedogonium" (*J. Exp. Zool.*, 1910), and numerous others.

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Books.—"Crystallog. and Pract. Crystal Measurement," 1911; "Crystals," 1911; "Cryst. Struct. and Chem. Constitution," 1910. *Contrib.*—Over 40 Memoirs on Crystallog. and Fine Measurement, in *Phil. Trans. and Proc. Roy. Soc., Trans. Chem. Soc., Zeits. f. Krystallographie.*

Inv. comparator in wave-lengths for Standards Dept. of Board of Trade.

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Books.—"Image and Concept," 1898; "Logic and Didactic," 1901; "Hist. of Mediaev. Phil.," 1910; "Method of Psychol.," 1910; etc.; Ed. of Polish Review on Progr. in Phil.

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Author "Hunterian Oration, R.C.S.," 1905. *Arts.*—"Eyelids," "Cornea," and "Sclerotic," in Heath's "Dict. Pract. Surg.," "Cateract," "Hemeralopia," "Nyctalopia," "Pupil," in Quain's "Dict. of Med." *Contrib.*—"Visible Striation of Normal and Cataractous Cryst. Lens" (*Ophthalm. Hosp. Repts.*, 1874); "Phys. Factor in Conical Cornea" (*Trans. Ophthalm. Soc.*); "Treatment of Hardness of Eyeball by Mydriatics and Myotics" (*Pract.*, 1883); "Etiol. of Constit. Dis. of Eye" (*Lancet*, 1887).

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Books.—"Mexico and the Mexicans"; "Early Hist. of Mankind"; "Primitive Culture"; "Anthropology."

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Contrib.—"Discharge of elec. from points" (*Phil. Mag.*, 1908—10, 1911—12).

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Books.—"Hist. of Bridge Engrng.," "Artistic Bridge Design"; "Concrete Bridges and Culverts"; "Movable Bridges"; etc. *Contrib.*—Numerous.

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Books.—"Bright's Dis. and Diabetes," 1881, 2 edns.; "Handb. of Phys. Diagn.," 1894; "Pract. of Med.," 5th edn.; "Pract. Exam. of Urine," 1895.

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Books.—"Chem. and Technol. of Fats and Waxes," 4 vols., 1908—12; "Tables for Engler Viscosimeter," 1907. *Art.*—"Phys. of Petroleum" in Engler-Höfer's *Petroleum*, 1910. *Contrib.*—"Elec. Lab. Oven" (*Chem.-Zeit.*, 1911); "Drop-point apparatus" (*Mitt. Kgl. Mat.-prof.-amt Berlin*, 1904); "Theory of friction" (*Zsch. Petroleum*, 1912); etc.

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Books.—"Deaf-mutes in Norway," 2 vols., 1892, 1897, and in Fr.; "Adenoid Growths," 1885; "Beri-beri on Norweg. Ships," 1901, Govt. Rept.; "Cremation," 1888; "Med. Guide for Seamen," 7th edn., 1906. *Contrib.*—"Surg. Treatment of Laryng. Tuberc.," 1889; "Acute Rheumatic Nodal Laryngitis," 1897; and on Consanguinity, Heredity, etc.

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Books.—Transl., Frölicher's "Gen. Surg.,"

"Vet. Handb. of Mat. Med. and Therap.," 1912.

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Contrib. to *Bot. Centralbl.*, *Biblioth. Bot.*, *Centralbl. f. Bakteriol.*, etc.; *Ed. Centralblatt d. Bakteriol.*

Type-casting machine, 1905.

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Books.—"Textb. of Geog. for High Schs.," 8th edn. 1911; "Outlines of Gen. Geog.," 1900; "Hydrog. of Saale," 1896; "Geog. of Mecklenburg, 1909"; etc.

Inv.—Curvimeter; Linnol. instruments.

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Books.—"Comp. Odontol.," 1903; "Notes on Anaesthetics," *Contrib.*—"Bact. Cause of Caries" (*Trans. Gen. Med. Cong.*, 1881); "Enquiry into Anat. and Path. of Maxillary Sinus" (*J. Anat. and Phys.*, 1910).

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Books.—"Wrought Iron Bridges and Roofs"; "Machine Design"; "Testing of Materials of Construc.," "Develop. and Transmiss. of Power from Cent. Stations"; "Treatise on Hydraulics," *Contrib.*—Numerous.

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Book.—"Star Atlas," *Contrib.*—"Observns. Total Solar Eclipse, 1883" (*Memoir Nat. Acad. Sci.*, 1883); "Storm of March 11—14, 1888" (*Amer. Met. J.*, 1888); "Characterist. of New Eng. Climate" (*Ann. Harv. Coll. Observ.*, 1889); "Geog. Position of Arequipa Sta." (*ib.*, 1903).

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Books.—"Spectroscopy," etc.

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Books.—"Monog. of Medicago," 1873; "Turneraceae," 1883; "Loasaceae," 1900 (with E. Gilg); "Addit. to Flora of W. Indies," 1892—97; "Symbolae Antillanae," 6 vols., 1898—12; Finished "Martii Flora Brasil.," 40 vols., 1840—1906; "Hist. Berlin Bot. Gards. and Mus.," 1881, 1891. *Contrib.*—Numerous on Morph., Biol., Syst., Hist. of Bot., to *Bot. Ges.*, etc.

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Books.—"Elements of Surg. Path. of Domest. Animals," 1877; "Special Surg. of Domest. Animals," 2nd edn., 1898; "Vet. Ophthalm.," 2nd edn., 1892; "Pract. Illus. Dict. of Vet.," 1910. *Contrib.* 100 on Path., Histol. and Bact., Surg. Obstet. and Podol.

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Books.—"Abstract Geom.," 1905; "Construc. and Approxim.," 1911. *Contrib.*—"Theory of Additive Series" (*Crelles J.*, 1893); "Fundamental Syst. for Symmet. Funct." (*Acta Math.*, 1899); "Theory of Forms" (*Encyc. d. Math.*, 1900); "Transcendence of e and π " (*Math. Ann.*, 1900).

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Books.—"Cuban Diptera"; "Coll. Works"; "Psychol. for Schools"; "Continental Cuba"; *Ed. Cronica Med.-Quirurg.* and "Annals of Havana Inst." *Contrib. to Patria.*

Luminous insects.

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Books.—"Pastes and Agglutinants," 1884; "Photog. in Nat. Colours," 1894; "Photog. with Röntgen Rays," 1896 (with I. M. Eder); "Photog. Chem.," 1898, 2 vols.; "Photog. Chem. and Spectral Anal.," 1904 (with Eder); "Raw Materials of Photog. Ind.," 2 vols., 1904, 1908; "Chemicals and Prep. for Photog.," 1910; "Atlas of Typ. Spectra," 1911 (with Eder); "Photog. in nat. colours," 1912; etc. *Contrib.*—Numerous to Vienna Acad., etc., on Fat, Paper, Photog. Chem., Spectrosc., etc.

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Books.—"Compend. of Human Anat.," 2 vols.; "Embryol." *Contrib.*—Numerous.

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Book.—Transl. and ed., Lorenz's Sci. Works, 1899—1903. *Contrib.*—"Theory of Limit Groups of Transformn." (*Vid. Selsk. Skr.*, 1899); "Theory of Space Curves" (*Acta Math.*, 1883).

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Books.—"Theory of Potential," 1900; "Electromagn. Rotatn. and Unipolar Induction," 1904; "Vector Anal.," 1907, 2nd edn.

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Book.—"Reptiles of Pacific Coast and Great Basin." *Contrib.* in *Proc. Cal. Acad. Sci.*, *Proc. Phila. Acad. Sci.*, *Proc. and Trans. Amer. Phil. Soc.*, *Amer. J. Physiol.*, and *Herpetol.*

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Book.—"Hist. of Ophthalm. in Belg. in 19th Cent.," 1912. *Art.*—"Embryol. and Teratol. of Eye" (*Fr. Encyc. Ophthalm.*, 1905). *Contrib.*—100 on Onkol. of Lachrymal Gland and other Eye Dis. in *Ann. d'ocul.*, *Arch. d'ophthalm.*, etc.

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Books.—"Lect. Notes on System. Zool.;" "Lect. Notes on Miner." *Contrib.*—"Rocks of Italy" (*Tschermak Miner. Mitteil.*, 1897); "Andesitic Rocks nr. Silverton, Colo." (*Bull. Amer. Geol. Soc.*, 1906); "A New Occurrence of Pearceite" (*Amer. J. Sci.*, 1911); "Discussion of Formulae of Pearceite and Polybasite" (*Ib.*, 1911).

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Books.—"Balkan Geol. and Petrog.," 1892; "Coal of Central Balkans," 1898; "Geol. Chart of Bulgaria, 1: 750,000."

Contrib. on hot water springs, iron ores, and geol. of Bulg.

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Book.—"First Lessons in Dairying." *Art.*—"Ice Cream" (*Cyc. Amer. Agric.*). *Contrib.*—"Bull. Ind. Exper. Sta., Bull. Penna. Exper. Sta., on Purdue Alkali Test for Acidity of Cream; Computation of Dairy Rations; and Educ. Work.

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Contrib. on chem. of proteins to *J. Biol. Chem.*, etc.

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Books.—"Modern Meth. of Testing Milk and Milk Products"; "Sci. and Pract. of Cheese-making"; "Fertilizers and Crops." *Contrib.*—"Casein and Paracasein in relat. to bases and acids" (*Amer. Chem. J.*, 1905); "Action of dilute acids upon casein" (*Ib.*, 1907);

"Unsaturated or acid caseinates and paracaseinates" (*J. Biol. Chem.*, 1913).

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Contrib.—Various on Bot.

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Book.—"Physiol. Chem.;" "Ptomaines and Leucomaines and Cellular Toxin" (with Novy). *Contrib.*—Over 100, on Poison in Cheese; Poisonous Group in Protein Molecules, etc.

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Books.—"Infinitesimal Anal.," jtly., 1907; "Projective Geom.," jtly., 1911. *Arts.*—"Theory of functions of real variables," *Encyc. Amer.*; "Foundations of Geom.,"

in *Monog. on Mod. Math. Contrib.*—"Syst. of axioms for geom." (*Trans. Amer. Math. Soc.*, Vol. 5); "Theory of plane curves in non-metrical anal." (*ib.*, Vol. 6); "Continuous increasing functions of finite and trans-finite ordinals" (*ib.*, Vol. 9); "Finite projective geom." jtlv. (*ib.*, Vol. 7).

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Books.—"Tubal Pregncy," 1884; "Handbk. Gynaec.," 2 edns.; "Text-bk. of Midwif.," 5 edns.; "Gynaec. Therap.," 1911. *Contrib. to Jahresher. and Fortschr. Geb.-Gynaec.*, etc.

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Books.—"Chem. Compos. of Md. Soils" (*Bull.* 70, Md. Exper. Sta.); "Chem. Methods of Utilizing Wood" (*Circ.* 36, Bur. Chem.); "Fertilizers"; "Commerc. Sicilian Sumac" (*Bull.* 107, Bur. Chem.); "Commerc. Turpentine" (*Bull.* 135, Bur. Chem.); "Paper Specifications," (*Rept.* 89, Off. Sec. Agric.). *Arts.*—"Suitable Papers for Permanent Records" (*Yearbk. Dept. Agric.*, 1908); "Paper-making Plants" and "Tanning Plants" in "Bailey's Cyc. Agric." *Contrib.*—"Colorimetric Determ. of Small Quant. of Phosphoric Acid and of Silica" (*J. Amer. Chem. Soc.*, 1903); "Soil Acidity and Lime Requirements" (*ib.*, 1903); "Anal. of Tanning Materials" (*ib.*), etc.

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Books.—"Handbk. of Polariscopes"; "Micro-organisms of Faulty Rum." *Contrib.*—Numerous to *Phil. Trans.* and *Proc. Roy. Soc.*, *J. Chem. Soc.*, *Phil. Mag.*, 1880—1911.

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Books (in Czech).—"Bridge-Building," parts I. and II., 1896, pt. III., 1911—12; "Hist. Bohem. Tech. Hochsch.," Prague," pts. I. and II., 1906—12; "Miscellanies."

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Books.—"Logic of Chance," 3rd edn., 1889; "Symbolic Logic," 2nd edn., 1894; "Empirical Logic," 2nd edn., 1907; "Biog. Hist. of Caius Coll.," 1901; etc.

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Books.—"Handb. of Dis. of Domest. Animals"; "Gen. Vet. Surg.," "Theory of Vet. Operns.," "Spec. Oper. Surg. of Horse"; "Dis. of Female Sexual Organs of Domest. Animals." *Contrib.*—Numerous.

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F.R.C.S. (Eng.) 1867; L.R.C.P. (Lond.) 1862. *Soc.*—Fell. Roy. Med. P.V.-P. Roy. Med. Chir. Soc.; Med. Soc. Lond.

Contrib.—"Infecting and Non-infecting Chancres" ("St. Geo. Hosp. Repts.," Vol. 2); "Mod. Treatm. of Syph." (*ib.*, Vol. 5); "Case of Cancer of Upper Lip" (*ib.*, Vol. 6); "Case of Secondary Syph." (*Clin. Soc. Trans.*, Vol. 8).

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Contrib.—"Apparat. for Estim. of Thermal Cond. of badly-conducting Subs." (*Gött. Nachr.*, 1891); "Theory of Curves whose curvature is a Funct. of Length of Arc" (*Sitz-ber. Berlin Akad.*, 1903); "Estim. of Inclination by Inductions-inclinatorium" (*Gött. Nachr.*, 1909); "Magn. Observ. at Potsdam," 1906.

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Contrib.—"Right Motions of Stars in Space" (*Monthly Notices R.A.S.*, Vol. 38); and on Calc. of Astron. Refraction by Logarithms, Dimensions of Venus, etc.

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Books.—"Motion of Earth on its Axis"; "Perturb. Motion of Comets, and of Asteroids"; "Dynamics of the Sky"; etc. *Contrib.*—"Orbit of Comet Zona"; "Determin. of Local Deviation at Palermo"; "Gen. Integral of Motion of Double Pendulum"; "Image of Sun's Reflection on Sea"; and numerous others.

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Art.—"Hydatid Dis." (with Sterling), *Allbutt's "Syst. Med."* *Contrib.*—Various in *Austral. Med. Gaz.*; "Mar. Mollusca of S. Austral." (13 papers), *Trans. Roy. Soc. S. Austral.*, for last 10 years.

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Books.—"Sillimanite Group and Role of Alumina in Silicates," 1891; "Stress Phenom. in Crystals," 1897; "Treatise on Crystallog.," 1903; "Descript. Miner.," 1908—12; "Lects. on Miner.," 3rd edn., 1912; "Russian Radio-active Minerals," 2nd edn., 1911 (all in Russ.). *Contrib.*—"Theory of Silicates" (*Z. f. Kryst.*, 1901); "Phase Rule and Crystallog." (*Bull. Soc. Nat., Moscow*, 1904); "Cryst. Energy" (*Bull. Acad. Sci.*, 1909); "Distrib. of Chem. Elements in Earth's Crust" (*Ib.*, 1909—12).

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Books.—"Variation in Animals and Plants,"

1903; "Intracellular Enzymes," 1908; "Hist. of Oxford Mus." (with K. D. Vernon), 1909. *Art.*—"Intracellular Enzymes" (*Ergebn. d. Physiol.*, 1910). *Contrib.*—"Relations between Hybrid and Parent Forms of Echinoid Larvae" (*Phil. Trans.*, 1898); "Ereptic Power of Tissues as Measure of Functional Capacity" (*J. Physiol.*, 1905); "Rate of Tissue Disinteg., and its Relation to Chem. Constit. of Protoplasm" (*Z. f. Allgem. Physiol.*, 1907); "Mode of Union of certain Poisons with Cardiac Muscle" (*J. Physiol.*, 1910).

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Books.—"Exercises in Pract. Chem."; "Pentane Standard and Pentane Lamp." *Contrib.*—"Peroxides of Potassium and Sodium" (*J. Chem. Soc.*, 1861); "Laws of Connect. between Conditions of a Chem. Change and its Amount" (3 papers) (*Phil. Trans.*, 1865, 1866, 1884).

Aerothermometer; Table photometer; Standards of light, one-candle, ten candles; $\frac{1}{2}$ cubic foot measure (for adjusting exper. gas meters); Apparatus for estimat. sulphur in coal gas; Inhaler for chloroform.

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Contrib. to *Comm. Phys. Lab. Leyden*, *Arch. Néerl. d. Sci. Exactes et Nat.*, *Bull. Acad. Roy. Belg.*

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Contrib.—"Singularities of Surface of Third order engendered by System of Rays" (*Mem. de Liège*, 1898); "Focals of Smooth and Twisted Curves" (*Trans. Acad. Amsterdam*, 1903); "Singular Points on Twisted Curves given by [certain] Eqns." (*Arch. Teyler*, 1906).

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Books.—"Psycho-Physiol. Studies," 1889; "Gen. Physiol.," 1895, 5th edn., 1909; "Psychol. of Prim. Art.," 1907; "Evol. of Human Spirit," 1910; and numerous others.
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Contrib.—"Chem. Studies on Dolomite and Magnesite"; "Vol. Estim. of Carbon Dioxide," etc., to *Ber. f. Chem. Ges., Fresenius' Z. f. Anal. Chem., Z. f. Phys. Chem.*
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Books.—"Resin Oil Industry," 1903. *Art.*—"Osmium" in *Encyc. chem. de Fremy*, 1900. *Contrib.* on new comps. of Platinum group (halogen nitrites, oxalo-nitrites, etc.); and on Resin and Oil of Turpentine.
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Books.—"Précis of Histol. and Embryol. Technic.," 1909, 2nd edn.; "A Problem of Evol.," 1908; "Elements of Verteb. Morph.," 1911. *Contrib.*—"Studies on Heart of Lamprey" (*Arch. d'Anat. microsc.*, 1903); "Viscera and other Topog. Rôle" (*ib.*, 1908).
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Books.—"Struct. of Nerv. Centres of Plagiostomes," 1877; "Wolf Bodies," 1880; "Human Physiol." (with Jolyet), 1880, 5th edn., 1907; "Struggle for Oxygen at High Levels" (in press). *Contrib.*—"Rapid Increase of Red Corpuscle on the Plateaux of S. America" (*Comptes Rendus*, 1890); and ditto on Pic du Midi, 1891.
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Contrib.—Numerous.
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Books.—"Percussion and Auscultation," 11th edn., 1912; "Exudative Peritonitis," 1884; "Measurement of Intensity of Heart Sounds," 1885; "Anat., Physiol. and Phys. Tables," 3rd edn., 1906; "Medicals in Hist.," 3rd edn., 1910; "Congenit. Heart Dis.," 1898, and numerous arts. in *Drasche, Neuburger-Pagel, Schnirer-Vierordt*, and other *Encycs.* and *J.*
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Books.—"Expression of Anger in Literature," 1909; "Subcutaneous muscles of head in poor Portuguese," 1911. *Contrib.*—"Anat. Observns." (*Arch. Anat. Anthropol.*); and to *Rev. d'Histoire*.
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Contrib.—"Resistance of Fluids" (*Ann. Sci. Ec. Norm. Sup.*, 1911); "Movement of a solid in a fluid bounded by a fixed side" (*J. de Math. pures et app.*, 1911); "Derichlet's Prob. on an Annular Surface" (*Rendic. Circ. Mat. Palermo*, 1912).
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Books.—"Man. of Palaeont.," 1902; "Field Geol.," 1906.

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Book.—"Intern. Secretion," 1912. *Contrib.* since 1896.

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Books.—"Lect. on Physiol. of Plants," 1886; "Student's Text-bk. of Bot.," 1896. *Arts.*—"Reproduc. of Plants," etc., in *Encyc. Brit. Contrib.*—Series of papers on "Proteases of Plants," *Annals of Bot.*, 1896—1910.

Disc. Albumoses among reserve proteids of seeds; gen. distrib. of proteolytic enzymes in plant tissues.

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Publ.—Numerous on Maths.

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Soc.—Amer. Pharmacol. and Exper. Therap.; Amer. Physiol.; Amer. Biol. Chem.; Amer. Med. Assoc.

Contrib.—"Path. and Therapy of Parathyroidtetany" (*J. Exper. Med.*, 1908—11); "Researches in Metabolism"; "Functions of the liver"; "Anaphylaxis."

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Book.—"Improvement of Indian Agric." *Arts.*—"Manures," in *Encyc. Brit.*; numerous *Arts.* in "Standard Cyc. Agric." *Contrib.*—Numerous, in *J. Roy. Agric. Soc.*, since 1885.

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Books.—"Embryol. of Reptiles"; "Sci. Results of Journey in Madagascar and E. Africa," 3 vols., 1889—95; "Travels in E. Africa, 1903—05."

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Book.—Transl. R. Schmidt's "Pain, its Causation and Diagnostic Signif." 1911. *Art.*—"Tumours" (*Encyc. Amer.*). *Contrib.*—"Clin. Analyt. Methods" (*St. Luke's Hosp. Repts.*, 1911); "Case of Paget's dis." (*Med. Record*, 1911); "Purin content of Foods" (*Münchener Med. Woch.*, 1911); "Chloride and Water Tolerance in Nephritis" (*Arch. of Int. Med.*, 1911).

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Books.—"Impossibility of 3 Solutions, etc." (*Astron. Nacht.*, No. 4495); "Manual of Spherical Astron.," 1910; "Determin. of Orbits from 3 Observations," 1891; "Determin. of Orbits with a Small Inclination," 1895; "Theorem of Lambert," 1889.

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Books.—"Aims and Aids to Geom. Precision Surv.," 1873; "Outlines of Geod.," 1883; "Graph. Barom. Tables," jtly., 1880; "Geod. Practice," 3rd. edn., 2 vols., 1910, 1913.
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Publ.—Numerous, some jtly. with wife, Dr. Cécile V., on brain anat. and physiol., psychol., psychotherap., hypnotism, olfactory regions, etc.
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Contrib.—"Embolism of Bi-Monthly Function" (*Anat. Hefte*, 1906); and numerous others.
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Books.—"Elem. Mech.," "Theor. Phys.," "Text-bk. of Crystal.," "Phys.," "Thermodyn.," "Mag. and Elec.-optics." *Contrib.* to *Ann. f. Phys., Göttingen Sci. Soc.*, etc., on Elasticity of Crystals, Crystal Optics, Piezoelec., Magneto-optics.
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Contrib. on Physiol. of Nutrition, etc., to *Ber. Sachs. Ges. d. Wiss., Z. f. Biol., Ges. f. Morph. u. Physiol., Munich*, and *Bayer. Akad. Wiss.*
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Books.—"Introduct. to Study of Theor. Phys., esp. Anal. Mech.," 2nd edn. 1913; "Phil. of Sci. in Relat. to Spiritual Life of To-day," 2nd edn. 1910; "Sch. Teaching of Phys.," 1913; "Nature and Monism," 1910; "Sci. and Monism of To-day," 1909; "Materialism of XIX. Cent. and Monism of To-day," 1909.
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Books.—"Lectures at Stockholm on Integ. of Differentl. Eqns.," 1906 (Fr.); "Lect. delivered at Clark Univ.," 1912 (Eng.); "Equilib. of Elastic Bodies multiply connected," 1907 (Fr.).
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Books.—"Synth. and Decomp. of Hydroresoreins," 1896; "Nature of Radicals," 1900; "Addition Processes," 1904; "Liquid Crystals," 1908; "Polymorphism of Fluidity," 1909.
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Book.—"Imperfect transversely striated Muscles of Arthropods," 1891. *Art.*—"Amphipoda" in Results of Plankton Exped., 1901. *Contrib.*—"Biol. of Algerian and Tunisian Orthoptera" (*Zool. Jahrb.*, 1902); numerous on Ger. E. African pract. Entomol.

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Books.—"Guide to Use of Spectacles"; "Textb. of Ophthalm.,"; Ed. "Repts. on Ophthalm.," *Contrib. to Arch. f. Ophth.*, *Zeitschr. f. Augenheilk.*, *Deutschmann's Beitr. z. Augenheilk.*, *Berliner Klin. Woch.*, *Centralbl. f. Augenheilk.*, *Sitz.-ber. d. Heidelb. Ophth. Ges.*

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Books.—"Value of Anat. Characters for Classif. of Vegetables," 1884; "Vegetable Biol.," 1888; "Subordination of Characters of Leaf in Phylum of Anthyllis," 1895; "Actual bases of syst. in Mycol.," 1907; "Mushrooms," 1912; "Dis. of Vegetables," 1895; "Veg. Path.," 1912.

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Books.—"Arith. of Chem.,"; "A School Chemistry,"; "Quant. Anal. in Practice," *Contrib.*—"Atomic weight of Tungsten" (*Trans. Roy. Soc. Edin.*), etc.

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Contrib.—"Puerperal Infection" (*Amer. J. Obstet.*, 1901); "Etiol. of acute Pneumonitis" (*Ann. J. Med. Sci.*, 1904); "Mouth disinfect. in Pneumonia" (*J. Infect. Dis.*, 1906); "Pneumococcus infect. in animals" (*J. Exper. Med.*, 1912).

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Books.—"Misc. Sci. Papers of Allegheny Observ.," 1910; "A B C of Prism Lighting," 1904. *Contrib.*—"Fixed-arm spectrosc." (*Phil. Mag.*, 1894); "Max. eff. in use of spectrograph" (*Astrophys. J.*, 1906); "Resolving power for lines of finite width" (*Phil. Mag.*, 1897); "Optical condns. for max. accuracy with telescope" (*Astrophys. J.*, 1902, 1903).

Inv. optic. instruments; curved plate astron. cameras; pressed prism plate glass.

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- Books*.—"Leithol. Studies," 1884; "Crystallog.," 1909; and Survey Repts. *Contrib.* 150. Pioneer in Microsc. Petrog. in U.S.A.
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- Books*.—"Peoples of the Earth," 8 vols., 1872—91; "Textb. of Gen. Geog.," 1890; "Atlas," 1880, 15th edn. 1912. *Contrib.*—"Tosanelli charts" (*Nacht. Ges. Wiss. Göttingen*, 1874); "Compass boxes" (*Verh. Geog. Tages*, 1905); etc.
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- Contrib.* on thermom., pyrom., optical pyrom., standard temp. scales, etc., in *Bull. Nat. Bur. Standards*, etc.
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- Contrib.*—"Disinfection of Rooms" (*Med. News*, 1898); "Pyocyanus Infections" (*J. Infect. Dis.*, 1908); "Bone Infections" (*West. Med. Rev.*, 1910); "Soil Bacteria" (*Neb. Exper. Sta. Rept.*, 1911).
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- 1898, (Chic.) 1901, (Hopkins) 1902, (Penna.) 1903, (Yale) 1910, (St. And.) 1911, (Pittsb.) 1912; Hon. Sc.D. (Cantab.) 1909; Ph. D. (Chris.) 1911. *Soc.*—Fell. Amer. Assoc.; Amer. Acad.; Fell. Christiania Sci.; Amer. Nat.; Amer. Geol.; F.G.S.; Wash. Acad. Sci. (P.-P.); Amer. Phil.; *Corresp.*, Phila. Acad. Nat. Sci.; Hon. Mem. Astron. Mexico. *Late* Assist. U.S. Geol. Surv., 1879; Paleont., 1888—93; Geol., 1893—94; Direc., 1894—1907, U.S. Geol. Surv.; Hon. Cur., Paleont. Dept., U.S. Nat. Mus.; Sec., Carnegie Inst., 1902—05.
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- Books.*—“Intro. to Study of Phys.” (with J. J. Manley); “Anal. Chem.” (with B. Lambert).
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- Books.*—“Handb. of Stereochem.” jty., 1893—4; “Life of Wilh. Ostwald,” 1903; “Theories of Solutions,” 1910. *Contrib.*—“Elec. conductiv. of aq. soins.” (*Zeits. Phys. Chem.*, 1887—91); “Optical rotatory power” (*ib.*, 1894—1906); “Walden Inversion” (*Berlin Ber.*, 1895—99, *J. Chim. Phys.*, 1911); “Conductiv., dielectric constants and capill. of non-aq. solvents” (*Zeits. Phys. Chem.* and *Bull. Acad. Sci., Peters.*, 1899—1912).
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- Books.*—“Notes on Mech.”; “Sewage Disposal on Farm, Metrop. and Rural Home,”
1907. *Contrib.*—“Constr. of concrete floors” (*Bull. Engrng. Expt. Station, Penna. State Coll.*).
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- Contrib.* on optics and electro-magnet., in *Phil. Trans.* and *Phil. Mag.*
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- Books.*—“Aberration and the Electromag. Field” (Adams Prize Essay); “Theory of Electromagnetism.” *Art.* on “Spiel and Sport,” in Ger. Encyc. Math. *Contrib.*—“Boomerangs” (*Phil. Trans.*, A., 1897); “Correlation in seasonal Variations of Weather” (*Mem. Indian Met. Dept. Simla*, 1909, 1910).
- Extension of Lorentz's eqns. of electromag. field to cases of arbitrary motion; applic. of statistical methods to seasonal forecasting.
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- Book.*—“Sugar Indust. in Is. of Negros,” 1910. *Contrib.*—“Cocoanut and its Oil” (*Philippine Sci. J.*, 1906); “Keeping Qualities of Cocoanut Oil and Causes of Rancidity” (*ib.*, 1906); “Notes on Sprouting Cocoanut, Copra, and Cocoanut Oil” (*ib.*, 1908).
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- Contrib.*—“Some Tech. Methods of Testing Miscellaneous Supplies” (*Bull.* 109, *Bur. of Chem.*); also various papers in *J. Amer. Chem.*

Soc., Proc. Assoc. Off. Agric. Chem., Proc. 6th and 7th Cong. of App. Chem., etc.

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Books.—“Tungsten Ores of Canada”; “Molybdenum Ores of Canada”; “Rept. on Geol. of Sudbury Dist., Ont.” *Contrib.* on geol. and miner., to *Zeits. f. Krystall., Econ. Geol., Q. J. Geol. Soc., Amer. J. Sci.*

Geol. explorations in Eastern Ghâts, Himalayas and Tibet.

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Arts.—Bronchitis, etc., *Index of Treatment. Contrib.*—“Cause of Inequality of the Pupils in cases of Thoracic Aneurysm” (*Lancet*, 1902); “Acute Cerebro-Spinal Meningitis” (*Roy. Med.-Chir. Trans.*, 1903); “Case of Syphilitic Gumma of the Mediastinum” (*Trans. Med. Soc.*, 1908); “Intra-Thoracic New Growths” (*ib.*, 1909).

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Contrib. to *Inst. E.E., Brit. Assoc.* 1911, *Electrician.*

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Books.—“Travels on Amazon,” 1853; “Malay Archipel,” 1869; “Natural Selection,” 1870; “Geog. Distrib. of Animals,” 1876; “Tropical Nature,” 1878; “Island Life,” 1880; “Darwinism,” 1889; “World of Life,” 1910; “Social Environment and Moral Progress,” 1912; “My Life” 1905, 1908; and numerous others.

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Books.—“Brit. Breeds of Live Stock,” 1911; “Farm Live Stock of G.B.,” 4th edn., 1907; “Indian Agric.,” 1888; “Agric. and Rural Econ. of Austral. and N.Z.,” 1891; “Farming Indust. of Cape Col.,” 1896; “Argentine Shows and Live Stock,” 1904. *Contrib.*—“Educ. in Agric.” (*National Rev.*, 1888); “Cent. Normal Sch. of Agric.” (*Times*, 1890); “S. Africa: A Land of Opportunities” (*Engng. Mag.*, 1897); “Govt. Grass Farm and Health of our Troops in India” (*Blackwood's Mag.*).

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Contrib.—“Binary Syst. of Sod. Silicates” (*Z. Anorg. Chem.*, 1909); “Dimorphism of Ammonium Halides” (*Centrabl. f. Mineral.*, 1910); “High Temper. Work on Silicates” (*Trans. Eng. Ceram. Soc.*, 1909—10); “Isomorphic Indium and Thallium” (*Z. f. Krystall.*, 1911).

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Contrib. to *Ann. d. Chem.*

Terpene and Camphor, 1909.

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Books.—“Ideas on Pract. Phil.,” 1886; “Aesthetics of Music,” 1886; “Primitive Music,” 1893, in Eng., 1903 in Ger.; “Psychol. and Pathol. of Aesthetic Representations,” 1905. *Contrib.*—Numerous.

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Books.—“Human Physiol.,” “Animal Elec.,” “Signs of Life,” “Physiol.—the Servant of Med.” *Contrib.*—“Influence of

Galvanic Current on Motor Nerves of Man" (*Phil. Trans.*, 1882); "Electromotive Changes Human Heart" (*ib.*, 1889); "Observns. on Isolated Nerve" (*Croon. Lect., Roy. Soc.*, 1896); "Blaze Currents of Frog's Eyeball" (*Phil. Trans.*, 1901).

Disc. Elec. Variations of Human Heart; publ. first human Electrocardiogram; inv. Chloroform Balance.

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Book.—Ed. of 3 edns., "Cairn's Quant. Anal.," 1880, 1882, 1896. *Arts.*—"Hydrometer," in Johnson's *Cyc.*, 1876; "Water," in Buck's *Hyg.*, 1879. *Contrib.*—"Water-supply of N.Y. City" (*J. Amer. Chem. Soc.*, IV.); "Purif. of Alcohol" (*ib.*, XI.); "Determin. of Lithia in mineral waters" (*ib.*, XII.); "Determin. of acetanilide in Hydrogen Peroxide" (*J. Ind. Engrng. Chem.*, I.).

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Books.—"Geog. of Switz.," 1908; "Swiss Commentary to Wall Charts," 3rd edn., 1908, and in Fr. and Ital. *Contrib.*—"Geog. of political boundaries" (*Mitt. Österr. Geog. Kommerz. Ges.*, 1909); etc.

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Books.—"Sugar Indust. of Mauritius: Insur. of crops against Cyclones," 1910; "Influ. of Forests on Rainfall," 1908. *Contrib.*—"Errors of certain types of minimum spirit thermom." (*Trans. S. African Phil. Soc.*, 1907); "Errors of estim. in thermom. observ." (*Q. J. Roy. Met. Soc.*, 1909).

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Books.—"Genetics"; "Wild Birds in City

Parks." *Contrib.*—"Behaviour of Lymnaeus" (*Cold Spring Harbour Monog.* 6); "React. of Planarians to light" (*J. Exper. Zool.*, Vol. 5); "Variation in Urosalpinx" (*Amer. Nat.*, Vol. 44).

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Books.—Revis. Deinhardt-Schlomann Tech. Dict., vols. "Elec. Engrng.," "Steam Engines," "Gas Engines"; Indexer in Phys. and Mech. (G.B.) for *Internat. Cat. of Sci. Lit. Contrib.*—"New meth. of detecting elec. oscillations" with Prof. J. A. Ewing (*Proc. Roy. Soc.*, 1904); "Tantalum wave detector" (*ib.*, 1908); "Metal Tungsten as valve electrode" (*J. Inst. Elec. Engrs.*, 1909); "Radiation of directive aerials in wireless telegr." (*Electrician*, 1910).

Inv.—Detectors of elec. oscillations, etc.; disc. increase of hysteresis loss caused by elec. oscillations (John Scott Legacy Medal and Premium, 1907); etc.

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Arts.—"Bact. of Puerp. Dis.," etc., in Winkel's Hdb. f. Geburtsh.; and numerous in Veit's *Ergebn. d. Geburtsh. u. Gyn.*, 1911, and Menge and Opitz's Hdb. d. Gyn., 1913.

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Books.—"Guide to Geol. as a Hist. Sci.," "Intro. to Geol.," "Hist. of Earth and Life," "Geol. of Ger.," "Law of Desert Formn.," "Fauna of Soluhofener Plattenkalke." *Contrib.* to *Z. Geol. Ges.*, on Life Processes of Fossil Animals, etc.

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Contrib.—"Cataloguing Mus. Specs." (*Amer. Nat.*, 1907); "Naididae of Cedar Point, O." (*ib.*, 1906); "Land Planarians in O." (*O. Nat.*, 1904); "Zygospores of Spirogyra and Variability" (*Rhodora*, 1908).

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Books.—"Results of Internat. Lat. Service" (with Albrecht, 1906, 1909, 1911). *Contrib.* to *Astron. Nachr., Zschr. f. Instrumentk., Zschr. f. Sinnesphysiol., Berliner Entom. Zschr.*

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Book.—"Text-bk. of Exper. Phys.," 13th edn. *Contrib.*—Numerous to *Ann. d. Phys., Verh. d. Phys. Ges.*

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Books.—"Monog. on Myciaticac., 1897"; "Rubber Plants and their Cultiv.," 1900; "Plant culture and World commerce," 1908; "Plant World," 1913. *Arts.*—Foreign Plants in Brockhaus' Lex. *Contrib.*—Numerous.

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Books.—"Parasites of Man and Domestic Animals," 1895; "Parasites of Sebago Salmon," 1910; "Biol. Exam. of Lake Mich.," 1896; "Biol. of Elevated Lakes in Rockies and Sierras," 1904. *Art.*—"Parasitol.," in *Encyc. Amer. Contrib.*—"Data for Determ. of Human

Entozoa" (*Trans. Amer. Micr. Soc.*, 1903, 1908, 1911, 1912); and on plankton and parasitic dis. of Man and other animals.

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B. 1863, York, N.Y. *Educ.* Public Schs. and Rochester Univ. *Soc.*—Amer. Assoc.; Amer. Ornith. U.; Wisc. Acad.; Wisc. Archaeol.; Wisc. Nat. Hist. (P.V.-P.); Amer. Mus. *Late Osteol. Geog. Explor. Comm.*, Mexican Repub., 1887—91; Assoc. Mem., Mexican Comm. to Internat. Exp., Paris, 1889 (silver and bronze medals in collab. in nat. hist.); V.-P. and Dept. Manager, Ward's Nat. Sci. Estab., Rochester, N.Y., 1891—1902.

Contrib.—"Notes on Life-Hist. of Monachus Tropicalis" (*Amer. Nat.*, 1887); "Two New Species of Rodents and Three of Bats from Mexico" (*ib.*, 1891); "Three New Meteorites" (*Amer. J. Sci.*, 1899); "Variations of Proportions in Bats" (*Trans. Wisc. Acad. Sci.*, 1903).

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Books.—"Pract. Ex. in Elem. Met.," 1899; "Climate," 1908; Transl. Hann's "Handb. d. Klimat.," 2nd edn., vol. I., 1903. *Art.*—"Climate and Climatol." in *Encyc. Brit. Contrib.* to *Bull. Amer. Geog. Soc., Science, Pop. Sci. Monthly, Ann. Observ. Harvard, etc.*

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Books.—"Ecology of Plants," 1895, Eng. transl., 1909; "Gen. Bot.," and in Ger.: "Handb. of Syst. Bot.," and in Ger. and Eng. *Contrib.*—"Lagoa Santa" (*Dan. Acad.*); "Halophyte Studies" (*ib.*); and on Pollen Ovules, etc.

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Books.—Ed. "Frome's Outlines of Trig. Survey"; "Underground Jerusalem"; "Ancient Cubit"; "Early Weights and Measures"; etc.

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Contrib. on crystall. miner. and petrog.

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Contrib.—"Variability of Human Skeleton" (*Trans. Roy. Soc., Lond.*, 1897); "Anat. and Developm. of Distomum Cirrigerum" (*Q. J. Micros. Sci., Lond.*, Vol. 47); "Inheritance in Parthenogenetic Generations of Aphid" (*Biometrika, Lond.*, 1901); "Collec. of Hydroids from Natal" (*Annals Natal Mus.*, 1908); *Ed. Annals of Natal Mus.*

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Books.—"Lab. Exercises in Farm Management"; "Elements of Agric."; "Apple Orchard Surv. Wayne Co., N.Y.," and of "Orleans Co., N.Y."; "Agric. Surv. of Tompkins Co., N.Y." *Contrib.*—About 100 on Agric. and Educ.

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Books.—"Psychol. Index," since 1894; Transl. "Tardc's Social Laws." *Arts.* in *Johnson's Encyc., Baldwin's Dict. of Phil. and Psychol.* *Contrib.*—"Sensations of rotation" (*Psychol. Rev.*, 1895); "Reaction time of counting" (*Ib.*, 1897); "Fundamental functions of consciousness" (*Psychol. Bull.*, 1906); "House of childhood" (*J. Educ. Psychol.*, 1912).

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(McGill) 1911; Hon. F.R.C.S. (Eng.) 1900 (Edin.) 1905. *Soc.*—Amer. Surg. Assoc. (P.P.); Amer. Med. Assoc.; Mass. Med.; Phila. Coll. Physicians; Mass. Hist. *Late* Instr., 1871—72, Instr. in Surg., 1872—82, Assist. Prof., 1882—87, Assoc. Prof., 1887—93, Prof., 1893—1907, Harvard Med. Sch.; Pres., Mass. Char. Eye and Ear Infirmary, 1886—99.

Books.—"Healing of Arteries in Man and Animals after Ligation," 1886; Ed. and Part Author. "Internat. Textb. on Surg.," 2 vols., 1900; "Surg. Path. and Therap.," 1895. *Arts.*—"Rodent Ulcer" Boylston Prize Essay, 1872; Columnae Adiposae, and Carbuncle, 1882. *Contrib.*—"Dis. of Mammary Gland" (*J. Amer. Med. Assoc.*, 1905).

Classif. Tumours of Breast.

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Book.—"Engrng. Construc. in Steel and Timber." *Contrib.*—"Investig. on Phys. Properties of N.S.W. Hardwood Timber."

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Books on Ethics. *Contrib.*—"Action of Acetyl Chloride on Aldoximes" (*J. Chem. Soc.*); "Hydrometers of Total Immersion" (*Phil. Mag.*).

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Books.—"Pract. Path.," 1897, 2nd edn. 1911; Amer. Edn. "Ziegler's Gen. Path.," 10th and 11th edns., 1904, 1908. *Arts.*—"Path." in Ref. Handb. of Med. Sci., 2nd edn.; "Thymus" and "Lymph-nodes" in Osler's *Mod. Med.*, 1907—09. *Contrib.* on Path. of Pernicious Anaemia, Banti's Dis., Leukaemia, Anat. and Path. of human Haemolymph Nodes, etc.

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Amer. Geol.; Amer. Archaeol. Inst.; Fell. Conn. Acad.; N.Y. Acad.; Wash. Acad.; For. Corresp. Geol., Lond.; Span. Nat. Hist.; etc.

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Books.—"Theory of Infect. Dis."; "Influenza"; "Handb. of Path. Micro-org."

Serodiagn. of Syphilis.

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Contrib.—"Water purification" (*Trans. Roy. Soc. N.S.W.*); numerous with J. Loeb in *Zeits. f. Bio-Chem.*

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Books.—"Rept. on Cartographic Applns. of Photog.," 1870; "Rept. on U.S. Surv.," 1905; "Preparation of Drawings for Photog. Reprod.," 1890. *Arts.*—"Camera Obscura," "Photog. Apparatus," in *Encyc. Brit.*, 10th and 11th edns. *Contrib.*—"Reversal of Infra-Red Spectrum on Collodion Plate" (*Proc. Roy. Soc.*, 1876); Sensitiveness of Silver and some other Metals to Light" (*ib.*, 1900); "Teachings of Daguerreotype" (*Photog. J.*, 1899); "Beginnings of Photog." *ib.*, 1903).

Disc. use of Eosin in Orthochromatic photog., 1875; Waxed sand process of photo-engraving, 1880.

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Book.—"Lab. Expts. in Phys.," 1892. *Contrib.*—"An improved calorimeter" (*Phil. Mag.*, 1895); "Specific heats of metals" (*Phys. Rev.*, 1896).

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Book.—Ed. "Edinburgh Stereosc. Atlas of Anat." *Contrib.*—Numerous, on anat., anthrop., embryol., etc., to *Roy. Soc. Edin., J. Anat. and Physiol.*, etc.

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Book.—"Profit of Syst. of Farming," *Contrib.*—"Rept. on Methods of Farming" (*Landw. Jahrb.*, 1904); "Law of Soil Produce," 1906; etc.

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B. 1866, Providence, R.I. *Educ.* Prep. Sch. Waltham; Mass. High Sch.; Brown Univ. A.M. 1898, Ph.D. 1905 (Brown). *Soc.*—Amer. Inst. E.E.; Amer. Assoc. *Late Engrn.*, Thomson-Houston and Gen. Elec. Cos., 1888—97.

Books.—"How to Make Dynamo Elec. Machinery"; "Storage Batteries." *Contrib.* to *Electrician and Mechanic*.

WATSON, SIR CHARLES MOORE, K.C.M.G., Col.; Pres. (Geog.) Sect. E., Brit. Assoc., 1912.

B. 1844, Dublin. *Educ.* T.C.D.; R.M.A. Woolwich. *Late* numerous military posts; Brit. Govt. Deleg. to Internat. Navign. Cong. at Düsseldorf, Milan, St. Petersburg.

Books.—"Life of Sir C. M. Wilson"; "Brit. Weights and Measures."

WATSON, JOHN BROADUS, Prof. of Exper. Psychol. and Direc. of Lab., Johns Hopkins Univ., Baltimore, Md., U.S.A.; Joint Ed., *J. Animal Behaviour*; Ed., *Psychol. Rev.*; Collab. Ed., *J. Educ. Psychol.*

B. 1878, Greenville, S.C. *Educ.* Furman Coll. Greenville; Univ. Chicago. A.M. (Furman) 1899; Ph.D. (Chic.) 1903. *Late* Fell., Assist. and Assist. Prof., Chicago Univ.

Book.—"Animal Educ.," 1903; Ed. "Behaviour Monogs." *Arts.*—"Darwin," "Habit," and "Instinct," in *Cyc. of Educ. Contrib.*—"Kinaesthetic and org. sensations in white rat" (*Psychol. Monog.* 33); "Behaviour of nobby and sooty Terns" (*Publ.* 193, *Carnegie Inst.*); "Vision in animals" with R. M. Yerkes (*Behaviour Monog.*, 2).

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Books.—"Text-bk. of Phys.," etc.
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Books.—"Dict. of Econ. Products of India"; "Indian Art at Delhi in 1903"; "Pests and Blights of Tea Plant"; "Wild and Cultiva. Cotton Plants of the World"; "Commerc. Products of India"; etc. *Contrib.*—"Indian Primulas"; "Tea Plant" (*Roy. Hort. Soc. J.*, 1905, 1906); and numerous papers to Linn. Soc., etc.
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Book.—"Econ. and Training of Memory," 1909; "Psychol.," 1913. *Contrib.*—"Exper. Contrib. to a Theory of Thought" (*Arch. f. d. ges. Psych.*, 1905); "Problems of sensory integration" (*Brit. J. of Psych.*, 1910); "Elements of experience and their integration: or modalism" (*ib.*, 1911); "Psychol. of visual motion" (*ib.*, 1913).
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Contrib.—"Gas evolved during churning" (*J. Agric. Sci.*, Vol. 2); "Hints on feeding of farm animals" (*Transvaal Agric. J.*, 1909); "Food of plants" (*ib.*, 1909); "Conserv. of soil moisture" (*Agric. Gaz. N.S.W.*, 1911).
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Books.—"Introd. Manual for Sugar-Growers"; "Nature Teaching."
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Books.—"Geol. for Beginners"; "Brit. Geol. Photog."; "Guide to Rocks and Fossils of Irel." *Art.* in "Book of Nature Study." *Contrib.* on Geol. of Shropshire, Birmingham Dist., Charnwood Forest, Isle of Man, etc.
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Book.—"Resarches," 1910, 1913. *Art.* in Gutermuth's "Steam Engines." *Contrib.* to *Zeitschr. d. Ver. Deut. Ing., Tekn. Ugeblad., Elektrotekn. Tidssk.*
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Books.—"Eton Nature Notebk.," 1903; "Eton Nature Study and Observational Lessons" (with M. D. Hill), 1903—04; "Brit. Woodlice" (with C. Sille), 1906; "Principles of Hortic.," 1907; "Brent Valley Bird Sanctuary." *Contrib.*—"Nature Study, its Prog. and Interpret." (*Record. Tech. and Second. Educ.*, 1904); "Brit. Species of Testacella" *J. Malacol.*, 1896); "Non-Marine Molluscs of Essex" (*Essex Nat.*, 1897); "Anat. and Synonymy of Genus Mariaella" (*Proc. Malacol. Soc.*, 1898).
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Contrib.—"Effect of Food Preserv. on Digestion and Health" (*Bull. Bur. of Chem.*); "Determin. of Water in Foods" (*ib.*); "Investig. in Cold Storage and Deterioration of Foods in Cold Storage" (*ib.*); "Incipient Deterioration of Foods" (*ib.*).

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Books.—"Rotation Inductor," 1882; "Electrodynamics and Thermochem.," 1889; "Life of Wilhelm Weber," 1892; "Five Pop. Sci. Essays." *Contrib.*—"Estim. of galv. resist. of metal wires by absolute mass" (*Diss.*, 1863); various to *Ann. f. Phys. u. Chem.*

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Books.—"Climatotherapy and Balneotherapy" (jtl.), 3rd edn., 1907; "Notes on Climate of Swiss Alps," 1864; "Hygienic and Climatic Treatm. of Phthisis" (Croon. Lect., 1885); "Means for Prolong. of Life" (Lect. deliv. before R.C.P.), 3rd edn., 1908. *Arts.* in Quain's "Dict. Med.," and Allbutt's "Syst. Med." *Contrib.*—"Treatm. of Phthisis by Residence in Elevated Regions" (*Med.-Chir. Trans.*, Vol. 52); "Climate and Sea Voyages in Treatm. of Tuberc." (*Berlin Anti-Tuberc. Cong.*, 1899); and various to *Trans. Path. and Clin. Soc.*, etc.

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Books.—"Lightning Shocks in Holstein"; "Galileo's Princip.," "Exper. Phys.," "The Weather." *Contrib.* to *Fortschr. d. Phys. Schr. d. nat.-wiss. Ver. Schles.-Holst.*, etc.

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Books.—"Crystal Optics," and numerous others on Geol. and Miner.

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Gynaec., McGill. *Books.*—"Researches in Female Pelvic Anat.," 1892; "Ectopic Gestation," 1895;

"Textb. of Obstet.," 1903; "Textb. of Dis. of Women," 1907.

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Book.—"Diag. Methods, Chem., Bact. and Micros.," 2nd edn.

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Books.—"Life Hist. of Amer. Insects"; "Wild Flower Families."

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Books.—"Location of Rys.," 1912; "Hdb. of Engrng." Chaps. on Rys. and Tunneling in Lehrb. d. Tiefb.

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Chapters on Alkali Carbonates, Doelter's "Handbk. of Miner. Chem." *Contrib.*—Numerous on Elec. Conduct. and Esterific of Bibasic Acids; Chem. Dynamics; Pseudocsters, etc.

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Books.—"Leucocytes and Allied Cell Forms," 1911; "Blood Corpuscles and Circulating Cells," 1911. *Contrib.*—"Studies on Blood and Blood-Forming Organs" (*Arch. f. mikr. Anat.*, 1902—10); and on Brains, Skin, Milk, Lymph, etc.

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Books.—"Molecular Phys.," 1903; "Gen. Course of Phys.," 2 vols., 1908—09; "Snow, Frost, Hail, Ice and Glaciers," 1909. *Contrib.*—"Solar parallax, constant of aberration, equation of time, and velocity of light in ether" (*Astron. Nachr.* 1900, 1903, 1904); "Intern. friction of ice" (*J. Russ. Phys. Chem. Soc.*, 1906; *Ann. d. Phys.*, 1905—07) (Lomonossov's premium); "Conservn. of hailstones and their microstructure" (*Bull. Acad. St. Petersburg*, 1910; *Sci.*, 1910, etc.); "Viscosity of solids and influence of temperature" (*Proc. Phys. Soc. Lond.*, 1905, etc.).

Stereocinematograph; Elec. ice-bore; Movement without friction.

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Books.—"Magn. and Met. Observ. at Prague," 29 vols., since 1884; "Astron. Observ. at Prague," 8 vols., since 1884; "Photog. Atlas of Moon," 1897—1900; "Artific. Chronometers at Prague," 1908. *Contrib.* on Rotating Star-Map, Repts. of World's Time, Magnific. of Photog. on Glass.

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Book.—"Guide to Pract. of Quant. Anal.," 3rd edn., 1911. *Arts.*—As, Sb, Bi, Te, Ge in Gmelin-Kraut's Inorg. Chem., 6th edn. *Contrib.*—70 on comps. of As, Sb, Sm, S, Se, Te, I, Cl, F, Mo, Cr, Fe, Mn in *Zschr. f. Anorg. Chem.* and *Ber. Chem. Ges.* since 1896.

Patents for Methyl Iodide and Acetyl Iodide.

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Books.—"Bacteria" (with Johs. Schmidt) 1901, and in Ger.; "Studies of Proteolytic Enzymes in Germinat. Barley," 1902, and in Ger. and Fr.; "General Biol.," 1911, and in Swed. 1912. *Contrib.*—"Relation between Luminous Intensity and Assimilative Energy of Plants" (*Comptes Rendus*, 1903); "Influence of Calcium on Humic Soil of Beech Forest" (with P. E. Müller) (*Nat. Z. f. Land-u.-Forstw.*, 1907); "Product and Occurrence of Nitric Acid in Soil" (*Centrallbl. f. Bakt.*, 1911); and on Microbiol. of Forest and Heath Soils.

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Books.—"Evol. of Diptera," 1863; "Studies in Theory of Descent," 1874; "Keimplasma, a Theory of Transmission," 1892; "Evol. Theory," 1902; "Charles Darwin and his Life-work," 1909; "Theory of Selection," 1909.

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Contrib.—Various, on Fossil Plants, to *Annals of Bot.*, *New Phytol.*, and *Manchester Memoirs*.

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Books.—"Outlines of Bot.," 1895, 6th edn., 1907; "Flora of Ger.," 1894; "Flora of Bavaria," 1894; "Textb. of Dis. of Cultiv. Plants." *Contrib.*—On Piperaceae, Anat. and Physiol. of Roots, Vascular Syst., Cork formn., etc. to *Flora*, *Bot. Centrallbl.*, *Ber. K. Bot. Ges. Regensburg*.

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Contrib. to *J. Phys.*, *Arch. Sci. Phys. et Nat.*, etc. on magnetic props. of magnetite, pyrrhotine; molec. field, etc.

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Books.—"Textb. of Nav. Archit.," 1907. *Arts.*—On "Design and Constr. of Ships" in Nelson's Encyc. of Ships and Shipping. *Contrib.*—"Problem of size in battleships" (*Trans. I.N.A.*, 1911).

Designed high-speed war and mercantile vessels; etc.

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Books.—"Short Course on Theory of Determinants"; "Determinants." *Art.*—"Determinants," in *Encyc. Amer. Contrib.*—"Determinants of Constants of Diffus. in Solution by a New and Improved Method."

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Contrib.—"Paleozoic Palaeont. of N.J." (*Geol. Surv. N.J.*, 1903); "Cretac. Palaeont. of N.J." (*Id.*, 1907).

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Books.—"Anticipations"; "Disc. of Future"; "Mankind in the Making"; "Future in America"; "A Modern Utopia"; and numerous in fiction, sympathetic to, and often based on, sci. research.

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Book.—"Thesaurus of Med. Words and Phrases" (jtly. with Barton). *Contrib.* on Laryng., Rhinol. and Otol.

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Contrib.—"Parathyroid Glands" (*J. Anat.*, 1897); "Precipitin Reaction" (*Proc. Roy. Soc.*, 1906—10); "Hydatid Dis." (*Austral. Med. Gaz.*, 1906—10); "Haemogregarines of Marsupials" (*J. Path. and Bact.*, 1910).

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Book.—"Sugar Cultiv. in Java" (with J. H. Wakkler), 1898. *Contrib. to Ann. des Jard. Bot. de Buitenzorg, Jahrb. d. wiss. Bot., and Verh. Akad., Amsterdam.*, on Dis. of Sugar Cane and Cacao; Chem. Physiol. of Sugar Cane and Fungi; Embryo-Sac.

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Contrib.—"Kidneys in blackwater fever" (*Arch. f. Schiffs-u.-Tropenhyg.*, 1907); "Pathogen. amoebae" (*Id.*, 1908); "Salvarsan in malaria" (*Deut. Med. Woch.*, 1910); "Anthrop. Observns." (*Zsch. f. Ethnol.*, 1906).

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Books.—"Path. of Neuritis," 1911; "Neurones," 1900. *Arts.* about 150.

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Books.—"Text-bk. on Chem.;" Ed., Series Text-bk. of Technol.; etc. *Arts. in Nature*, etc. Sounding coils; Water finders.

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Books.—"Irrigation and Drainage," (with E. Risler); Ed., *Encyc. Agric.* (Paris), 60 vols.

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Contrib.—"Study of Cholera toxins" (*Ann. Inst. Pasteur, Paris*, 1894); "Varieties of *B. diptheriae*," jty. (*Trans. Assoc. Amer. Physicians*, 1900); also numerous on pub. health, med. teaching, immunity, typhoid fever, etc.

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Book.—"Plankton of Danish Lakes," 2 vols., 1904, 1908. *Contrib.* numerous, especially to *Internat. Rev. d. gesamm. Hydrobiol.*

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Books.—"Treatise on Brit. Freshwater Algae," 1904; "Monog. of Brit. Desmidiaceae" (with W. West), 1904—11. *Art.*—"Diatoms," in *Encyc. Brit.* *Contrib.*—Over 40, on "Freshwater Algae and Phytoplankton," in *J. Linn. Soc., Proc. Roy. Soc., J. Roy. Micr. Soc., J. Bot.*, etc.; also on Oecol., Sulphur Bacteria, etc.; and on Rhizopods, Heliozoa, and Poisonous Viperine and Colubrine Snakes."

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Book.—"Birth with Narrow Pelvis." *Contrib.*—"Excis. of Fallopian Tubes" (*Nord.*

Med. Arch., 1887); "Influence of Chloroform on Labour" (*Arch. f. Gyn.*, 1900); etc.

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Crystalline rocks and phys. geog.

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Books.—"Strength of Materials" with "Theory of Friction"; "Water Motors." *Contrib.* on limits of Galileo's Law of Inertia and Newton's Law of Acceleratn., etc.

Heating and ventilating of buildings.

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Contrib.—"A Class of equations of transformation" (*Amer. J. Math.*, 1900); "Class number of the cyclotomic number field $k\left(\frac{e^{2\pi i}}{p^n}\right)$ " (*Trans. Amer. Math. Soc.*, 1903);

"Fundamental numbers of algebraic number field $k(p\sqrt{m})$ " (*ib.*, 1910); "Primitive roots of ideals in algebraic number fields" (*Math. Ann.*, 1911).

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Books.—"Flora of Albania"; "Euphrasia"; "Syst. Bot.," 2nd edn.; "Text-bk. of Bot.," 4th edn.; "Vegetation of S. Brazil"; "Neolamarckism and Darwinism"; etc. *Contrib.*—Numerous to *Vienna Acad.*, *Zool.-Bot. Soc.*, *Vienna*, etc.

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Books.—"Dreams," 1893; "Treatm. of Imbecile Children," 1900; "Cretinism," 1904; "Atlas and Outlines of Psychiatry," 1902 (and in Fr. and Ital.); "Psychical Epidemics," 1905; "Forensic Psych.," 1908; "Abnorm. Charact. of Ibsen," 1906; "Abnorm. Charac. in Drama," 1910; etc.

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Books.—"Elastic Arches in Reinforced Concrete, etc.," 3rd edn., 1911; "Heat," 2 vols., 1905 and 1907; "Writings of Robt. Mayer, with Essay on his Life," 1893; "Strength and Dimension Calc. of Iron and Steel Struc.," 2nd edn. 1889; "Statics of Bridges and Roofs," 1887; "Theory of Elastic Bodies," 1884; and numerous others since 1868. *Arts.* in Lueger's *Lex.* *Contrib.*—Numerous.

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Books.—"Hydraulic Calens.," 2nd edn., 1912; "Munic. Water-supply," 1910; etc.

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Books.—"Epitome of Human Histol.," "Synoptic Text-bk. of Zool.," Transl. and enlarged Thoinot's "Med.-legal Moral Offences." *Contrib.*—"Blastodermic Vesicle of *Sus scrofula*" *Proc. Amer. Acad.*, (1894); "Perforation of a Vein by an Artery" (*Amer. Nat.*, 1903); "Histogenesis of Retina" (*Ib.*, 1906); "Chest Pantograph" (*Basel* 1907).

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Book.—"Ants," *Arts.* on Insect, Vermian and Verteb. Embryol., Taxonomy of Insects.

Disc. protandric hermaphroditism in Myzostomes; Temporary social parasitism and origin of slavery in ants.

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Books.—"Clin. Notes on Nerve Disorders"; "Alpine Notes and the Climbing Foot," "Notes from a Knapsack." *Contrib.* to *Brit. Med. J.*, *Practitioner*, *Field*, *Nature*, etc.

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Books.—"Theory of Solution and Electrol.," "Recent Develop. of Phys. Sci.," "Theory of Exper. Elec.," "Studies in Nature and Country Life," "Family and the Nation," "Hereditry and Society." *Arts.* in *Encyc. Brit.*, "Cambridge Mod. Hist.," etc. *Contrib.*—"Velocities of Ions" (*Phil. Trans.*, 1903, 1905); and other papers on Electrol.

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(Wabash) 1906. *Soc.*—Amer. Assoc.; Amer. Phytopathol.

Contrib.—"Onion Mildew" (*N. Y. Cor. Bull.* 218, 1904); "Blight Cankers of Apple" (*Ib.*, 236, 1906); "Bean Dis." (*Ib.*, 255 and 239, 1906 and 1908); "Ginseng Dis." (*U.S. Dept. Agric. Bur. Pl. Ind.*, *Bull.* 250, 1912).

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Contrib.—"Prac. Pyrometry" (*J. Western Soc. Engrs.*, *Chic.*, 1907); "Record Advances in Pyrometry" (*Proc. Birm. Metall. Soc.*, 1910).

Temp. indicator for resistance thermom., and modified form of Féry radiation pyrometer for determ. casting temps.

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Books.—"Geol. of London Basin, of London and Thames Valley"; "Water Supply of Hants, Kent, Suffolk, Surrey, Sussex"; "Geol. of Southwold, of Country round Ipswich"; and many others (*Geol. Mag.*, 1907, 52—58, for Bibliog.).

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Contrib. on Manufac. of Illum. Gas. to various Gas J. 1902—11; "Free Lime in Portland Cement" (*J. Ind. and Engrng. Chem.*, 1909); "Destruct. of Portland Cement" (*Proc. Amer. Soc. Test. Mat.*, 1911).

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Books.—"Developm. of Africa," 1890; "Expansion of Egypt," 1899; and other works, mainly geog.

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Book.—"Lect. on Path. of Cancer." *Art.*—"Tuberc." in Bain's "Text-bk. of Med. Pract."

Contrib.—"Erasmus Wilson Lect. on Gen. Path. of Tumours" (*Lancet*, 1902); "Cholesterol, Fluid Crystals, etc." (*Med. Chron.*, 1908); "Pathogenesis of Tumours" (*J. Path. and Bact.*, 1901); "Cell Proliferation and Metaplasia" (*Ib.*, 1910).

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Late Geog. and Chief Draughtsman, Geol. Surv. Canada, 1893; Chief Geog., Dept. of Interior, 1899.

Books.—"Altitudes in Canada"; "Dict. of Altitudes"; "Atlas of Canada," 1906; "Place-Names in Quebec"; "Place-Names in N. Canada"; "Place-Names in Thousand Is." *Arts.* on Ontario, Quebec, Manitoba and N.W. Territories, and Cities and Towns in these Provinces (*Encyc. Brit.*, 10th edn.). *Contrib.*—"Ashburton Treaty" (*Univ. Mag.*, 1907);

"Oregon and San Juan Boundaries" (*Ib.*, 1908); "Labrador Boundary" (*Ib.*, 1909); "Place-Names in Georgian Bay" (*Ont. Hist. Soc.*, 1911).

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Books.—"Outlines of Psychiatry"; "Mental Mech." *Arts.*—"Alcohol" and "Drug Intox. and Habituation," in "Ref. Handb. of Med. Sci.," "Dis. of Mind" in "Butler's Diagn. of Intern. Med." *Contrib.*—"The Criminal: His social and legal status in the phil. of reformation" (*Trans. N.Y. Med. Assoc.*, 1895); "Geog. distrib. of insanity in U.S." (*J. Nerv. and Mental Dis.*, 1908); "Hallucinations" (*Proc. Amer. Med.-Psych. Assoc.*, 1904); "New functional psychiatry" (*Arch. Diag.*, 1910) etc.

Introduct. milit. psychiatry in U.S.

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Books.—"Universal Algebra," 1898; "Axioms of Projective Geom.," 1906; "Axioms of Descrip. Geom.," 1907; "Principia Mathematica" (jtl.), 1910. *Arts.*—"Maths.," "Non-Euclidean Geom.," "Axioms of Geom.," in *Encyc. Brit.* *Contrib.*—"Memoirs on Symbolic Logic" (*Amer. J. Maths.*, Vols. 23—25); "Math. Concepts of Material World" (*Phil. Trans.*, 1906).

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Book.—"Anat. of Brain," 1890. *Contrib.*—"Developm. of Adrenal" (*Amer. J. Anat.*, 1903); "Developm. of Interstitial Cells of Testis" (*Ib.*, 1904); "Histol. of Interstitial Cells of Testis" (*Anat. Record*, 1908); "Early Developm. of Mammalian Sternum" (*Amer. J. Anat.*, 1911).

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Books.—"Manual of Hyg. and Pub. Health"; "Changes of Type in Epidemic Dis." (Milroy Lect. R.C.P.) 1893.

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Books.—"Dermatol.," in Bain's "Text-bk. Med.," "Handbk. of Skin Dis. and their Treatm." *Arts.*, in Clifford Allbutt's "Syst. Med.," and "Encyc. Med." *Contrib.*—Many on Relationship of Ringworm to Eczema of Palms and Soles; Classific. of Two Forms of Erythema Induratum; Acne, etc.

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Books.—"Materia Medica," 9 edns.; "Dict. of Treatm.," 5 edns., and 4 Chinese edns.; "Pract. of Med.," 2 vols.; "Cavendish Lect.," 1908; "Univ. Educ.," etc. *Contrib.*—Numerous.

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Contrib.—Various.

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Contrib.—"Tubercle on Malar Bone" (*J. Anat. and Physiol.*, 1911).

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Contrib.—"Long. of Smith Coll. Observ." (*Harv. Observ. Ann.*, Vol. 28); and on "Observ. of Variable Stars, Asteroids and Comets" "Disc. of New Variable *Sx Draconis*"; etc. to *Astron. J.*, *Astron. Nachr.*, etc.

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Books.—"Soils of U.S."; "Use of Soils E. of Great Plains Region"; etc.

Organis. and developm. of U.S. Soil Surv. and its investig.

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Books.—"Course of Mod. Anal.," 1902; "Treatise on Anal. Dynamics," 1904; "Theory of Optical Instruments," 1907; "Hist. of Theories of Ether and Elec.," 1910. *Contrib.* to *Phil. Trans.*, *Proc. Roy. Soc.*, *Monthly Notices, Roy. Astron. Soc.*, *Proc. Lond. Math. Soc.*, *Math. Annalen*, etc.

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Contrib.—"Emergence of Pronuba from *Yuca* Capsules" (*Rept. Mo. Bot. Gard.*, 1893); "Relation of Color to Dormant Period of Peach-Buds" (*Mo. Exper. Sta., Bull. No. 38*).

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Books.—"Econ. Import. of Chem. Indust.," "Lessons on Chem. Technol.," "Alkali Fusion of Sulphonic Salts"; "Org. Dye-Stuffs." *Art.*—"Chem. Indust.," *Lexis' Lexik. d. Staatswiss.* *Contrib.*—"Meteorite Iron" (*Poggendorff's Ann.*, 1863); "Aconitic Acid" (*Liebigs Ann.*, 1864); "Sugar Refining" (*Verein f. Chem. Gewerbfleiss*, 1879); "Sulphur Dyes" (*Ber. Chem. Ges.*, 1910).

Ind. alkaline fusion of sulphonic acids, 1869; Isomerism of succinic acids, 1867; Naphthalene indigo, 1893.

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Contrib.—Over 300, on Ophthalm., Hyg., etc., to *Rev. gen. d'ophth.*, *Klin. Monatsbl. Aertzl. Posen*, etc.

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Books.—"Rocks of Timor Is," 1882—87; "Evol. Hist. of New Guinea," 2 vols., 1909, 1910—12; "Dirck Gerritz," 1899. *Contrib.*—90 since 1874.

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Contrib.—"Colcoptera found with ants" (*Psyche*, 1892—1900); "Coleopt. of Colo." (*Bull. Lab. Nat. Hist., Univ. Ia.*, 1902); "Coleopt. of Ia." (*ib.*, 1909); "Repts., on Miocene Coleopt. from shales of Florissant" (*Amer. J. Sci.*, 1908—10, *Bull. Amer. Mus. Nat. Hist.*, 1911, 1912, *Bull. Lab. Nat. Hist., Univ. Ia.*, 1912, 1913).

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Books.—"Cal. Fruits and How to Grow Them"; "Cal. Vegetables in Garden and Field." *Contrib.*—Numerous. Ed., *Pacific Rural Press of San Francisco*, since 1875.

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Books.—"Dry Farming," 1911. *Contrib.*—Numerous on Lucerne, Chem. Compos. of Plants under Arid Conditions, Irrigation, etc.

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Books.—"Sugar Anal.," "Lect. Notes on Theor. Chem.," "Notes on Electrochem.," "Chem., its Evol. and Achievement"

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Books.—"Comp. Anat. of Verteb., 7th edn., 1909; and Numerous on Comp. Anat. and Embryol. of Fishes, Amphibians, Reptiles, etc.

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Books.—"Text-bk. of Hydrodynamics," 1900; "Electro-Magnetic Theory of Light," and "Radiation Theory" in "Encyc. d. Math., Wiss." *Contrib.* on Energy of Röntgen's Rays, Positive Rays, Hydrodyn., etc., to *Ann. d. Phys.*, since 1892.

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Books.—"Extension of Our Senses," 1900; "Colour Photog.," 1909; "Aviation and the Future," 1911. *Contrib.*—"Stationary Light Waves" (*Ann. d. Phys. u. Chem.*, 1890; "Refract. Light Rays" (*ib.*, 1893); "Colour Photog." (*ib.*, 1895); "Theory of Refract. Constant" (*Leipziger Ber.*, 1910).

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Book.—"Lab. Notebk. of Pract. Phys." (with T. C. Fitzpatrick). *Art.*—"Wilberforce Spring," *Harmonic Vibrations*, by various authors; "Developm. of Teaching of Phys. in Cambridge," *Hist. of Cavendish Lab.*, by various authors. *Contrib.*—Various, to *Phil. Mag.*

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Contrib.—"Acidosis" (*J. Amer. Med. Assoc.*, 1904); "Relations of Nervous Mech. of Heart to Drug Effects" (*J. Amer. Med. Assoc.*, 1911); "Urobilin" (*ib.*, 1912).

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Books.—"Farm Animals"; "Farmer's Cyc. of Agric."; "Farmer's Cyc. of Live Stock"; "Ostertag's Handbk. of Meat Inspection"; "Guide for Meat Inspectors." *Art.*—"Vet. Sci.," in "Internat. Encyc.," numerous bulls. and pamphlets. *Contrib.*—"Sheep and the Forests" (*Forum*, 1901); "Preserv. of Large Game" (*ib.*, 1902); "Spermatogenesis of Insects" (*Harv. Bull.*, 1895).

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Books.—Bulls. and ann. reps. of the Alabama, Okla. and Neb. Exper. Stations.

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Books.—"Hydrodynam. Studies on Theory of Sun's Rotation," 1897; "Project. Diffil. Geom. of Curves and Ruled Surfaces," 1906; "New Haven Math. Colloquium" (jty.), 1910. *Art.*—"Diffil. eqns." (*Encyc. Amer.*, 1905).

Contrib.—Numerous to *Astrophys. J.*, *Astron. J.*, *Astron. Nachr.*, *Amer. J. Math.*, *Trans. Amer. Math. Soc.*, *Math. Assoc. Ger.*

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Arts. in *Text-bk. of Pharmacol. and Therap.*, 1899; "Charcoal as a Therap. Agent," Parkin Prize Essay, 1896; Ed. of "Nitrites and Allied Compounds," by late Prof. D. J. Lecch. *Contrib.*—"Pharmacol. of the Ipecacuanha Alkaloids" (*Lancet*, 1895); "Path. of Coronary Arteries" (*Med. Chron.*, 1892); "Epithelioma and Lupus Vulgaris" (*ib.*, 1908); "Action and Uses of Sulphur and Its Compounds" (*Trans. Roy. Soc. Med.*, 1910).

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Books.—"Principles and Pract. of Agric.

Anal., "3 vols.; "Foods and Their Adulterans." 2nd edn. 1912. *Contrib.*—"Repts. on Sugar Beet Investig.," U.S. Dept. Agric., *Bull.* 29, 34, 37, 40, 64, 74, 78, 95—96, 1891—94, 1900—05; "Effect of Preservatives on Health and Digestion," U.S. Dept. Agric. Chem., *Bull.* 84, Parts 1—5, 1904—08.

Effect of preservatives on health; Results on effect of environment on chem. compos. of plants, esp. sugar-bearing plants.

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Book.—"Yosemite, Alaska and Yellowstone." *Contrib. to Engrng.*, of London.

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Art.—"Sugar Making," in *Encyc. Amer. Contrib.*—"Iodonium bases" (*Berlin Berichte*); "Determ. of Iron and Alumina in Nat. Phosphates" (*Offic. Methods*); "Determ. of Sugar Cane after being cut" (*La. Sugar Planter*).

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Book.—"Pocket Guide to Common Land Birds of New Eng." *Contrib.*—"Anat. of *Acmæa fragilis* Chemnitz" (*Jena Z. f. Naturwiss.*, 1898); "Some Disputed Points in Anat. of Limpets" (*Zool. Anzeiger*, 1901); "Biol. and Anat. of *Acmæa testud. Müller*" (*Amer. Nat.*, 1905, 1906).

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Arts.—"Ptomaine Poisoning," in "Accidents (Med.-Leg.)," 1908; "Toxicol. and Urine Anal.," in "Pye's Surg. Handicraft," 1909; "Poisons and Antidotes," "Food Poisoning," "Asthma," in "Syst. of Treatm." *Contrib.*—"Import. and Signif. of Chem. Exam. of Gastric Contents, with a New Method for Estim. the Ferment Activity" (*Lancet*, 1908); "Treatm. of Pneumonia by Inoculation," (*Brit. Med. J.*, 1909); "Therapeut. Use of Alcohol Vapour Mixed with Oxygen" (*ib.*, 1910); "Toxicol. Detection of Arsenic and the Infl. of Selenium on its Tests" (*Lancet*, 1910).

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Books.—"Physiol. Anat. of Laminariaceae," 1899; "Sohriophyc. of Plankton Exped.," 1904. *Contrib.*—"Anat. Struc. of Himanthalia Lorea" (*Jahrb. f. wiss. Bot.*, 1910); etc.

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Books.—"Amphioxus and the Ancestry of Vertebs.," 1894; "Zool. Results," 1902; "Convergence in Evolution," 1911. *Arts.*—"Amphioxus" and "Balanoglossus," in *Encyc. Brit. Contrib.*—"Later Larval Develop. of Amphioxus" (*Q. J. M. S.*, 1891); "Studies on the Protochordata" (*ib.*, 1893); "Ctenoplana" (*ib.*, 1896); "Trophoblast and Serosa" (*ib.*, 1899); "Focal Membranes of Amer. Beaver" (*Spengel's Festschr.*, 1912).

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Books.—"Climate of S. of France"; "Pulmon. Consump.," 2 edns.; "Aero-therapeutics"; etc. *Contrib.*—Numerous, to *Med.-Chir. Trans.*, etc.

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Book.—"Geol.-Hist. Organisms." *Arts.* on "Paleont.," etc., "Johnson's Cyc." *Contrib.*—Numerous, on "Geol. and Paleont.," in *U.S. Geol. Surv.*; *Chic. J. of Geol.*; *Bull., Geol. Soc. Amer.*; *Amer. J. Sci.*, etc., on Evol., Hist. and Distrib. of Faunas (Paleozoic); and on descrip. paleont.

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Book.—"Manual of Bact." *Art.*—"Plasma Cells," in "Reference Handbk. Med. Sci." *Contrib.*—"Fat Necrosis," *Rept. Lab. Univ. Buffalo*, No. 1, 1900; "Pancreatitis" (*J. Med. Research*, 1907); "Frequency of Trichinosis in U.S." (*Ib.*, 1901); "Sweat Glands in Nephritis" (*Arch. Internat. Med.*, 1910); "Cultiv. of Frog Trypanosome" (with J. Lewis).

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Book.—"Struct. of Mucous Membrane of Uterus, and its Periodical Changes"; "Cancer of Uterus." *Arts.*—"Growths in the Uterus"; "Tumours of the Ovary," "Ovarian Inflammation," in Reynolds's "Syst. Med." *Contrib.*—"Discharge of Ova" (*Proc. Roy. Soc.*).

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Contrib.—"Insulation of elec. appliances" (*Electrician*, 1907); "Distrib. of dielec. stress in 3-phase cables" (*Jtly.*) (*Ib.*, 1909).

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Art.—"Open-Air Schs.," in Kelynack's "Med. Exam. of Schs. and Scholars." *Contrib.*—"Feeble-Minded Children" (*Brit. Med. J.*, 1907); "Med. Inspection of Sch. Children" (*Practitioner*, 1907); "Sheffield Open-Air Recovery Sch." (*Proc. 3rd Internat. Cong. on Sch. Hyg., Paris*, 1910); "Sheffield Sch. Tuberc. Dispensary," *Jtly.* (*J. Roy. San. Inst.*, 1912).

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Books.—"Surg. and Obstet. Operations"; "Vet. Obstet." *Contrib.*—"Invasion of Mesenteric arteries of horse by *Strongylus Armatus*" (*Vet. J.*, Vol. 24); "Clin. study of Odontomes" (*Amer. Vet. Rev.*, Vol. 15); "Abortion and sterility in cattle," *Jtly.* (*Rept. N.Y. State Vet. Coll.*, 1911—12); "Surg. relief for roving" (*Proc. Amer. Vet. Med. Assoc.*, 1911).

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Buffalo Nat. Hist. *Late Direc.*, Roy. Bot. Gard., Ceylon, 1896—1911.

Books.—"Manual and Dict. of Flowering Plants and Ferns," 3rd edn., 1908; "Rubber in the East" (with M. K. Bamber and E. K. Denham), 1906; "Ceylon: A Handbk. for Resident and Traveller," 1908; "Agric. in the Tropics," 1909; "Literature of Trop. Econ. Bot., 1907, 1911. *Contrib.*—"Revision of Podostemaceae of India and Ceylon" (*Annals Roy. Bot. Gard., Ceylon*, 1902); "Morph. and Ecol. of Podostemaceae" (*Ib.*, 1902); "Flora of Ritigala, A Study in Endemism" (*Ib.*, 1906); "Evidence against Origin of Species by Nat. Selection" (*Ib.*, 1907). Rubber cultiv. in Ceylon; Rep. on Agric. of Malay States, 1904.

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Books.—"Manual N. Amer. Diptera," 1908; "Biol. Cent. Amer. Diptera III. and Supplm., Vol. 1"; "Amer. Permian Vertebs.," 1911. *Contrib.*—About 250, on Entomol., Zool., Paleont., Geol., etc.

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Books.—"Building Construc.," 1882, 4th edn. 1900; "Road Making," 1895; "Stone Cutting for Engineers," 1907; Ed. "Hdb. of Engrng.,"; Co-Ed. "Zueger's Lexik. of Gen. Tech.," *Arts.* in Escoborn's Textb. of Tunneling. *Contrib.*—Various.

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Book.—"Across the Everglades (of Florida)."
Contrib.—Numerous.

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Corresp. Mem., Roy. Sci., Göttingen; Roy. Acad. Sci., Turin; Senckenberg Nat., Frankfurt; Hon. Mem., Chem. London and Frankfurt Phys.; Swiss Nat.; etc. *Late Extraord. Prof.*, Munich Univ.; Ord. Prof., Zurich Fed. Polytech.

Contrib.—"Atropine and Cocaine" (*Ber. Chem. Ges.*, 1895—1902); "Quinine and Aniline Black" (*Ib.*, 1904—11); "Cyclic Hydrocarbons" (*Ib.*, 1905—12); "Chlorophyll" (*Liebigs Ann.*, 1906—12).

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Books.—"Intestinal Obstruc.," "Textb. of Surg."

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Book.—"Annual Tables of Constants and Numerical Data," Vol. I., Sect. on E.M.F. *Contrib.*—"Electrode Potentials" (*Z. f. Phys. Chem.*, 1900); "Electrode Potentials in Liquid Ammonia" (with F. M. G. Johnson) (*Trans. Faraday Soc.*, 1907); "Keten" (*J. Chem. Soc.*, 1907).

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Books.—"Excavat. and Researches at Milet, Asia Minor," 1906; "Topog. Surv. of Thera in 1896," 1899; "Transparency of Atmosph. of Aegean Sea and Distance Observns. of Thera," 1902; "Shaft Plumbing," 1913. *Contrib.*, since 1892 to *Zsch. f. Vermessungswesen, Mitt. aus d. Murksch.*

Wilski prism; Meas. of clearness in meteorol.

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Book.—"Myxoedema; and the Effects of Climate on the Dis." *Contrib.*—"Case of ruptured heart" (*Lancet*, 1908); "Two cases of obscure aortic aneurysms" (*Brit. Med. J.*, 1908); "Nutmeg poisoning" (*Trans. Roy. Soc. S.A.*, 1910); "The Nymphæe (Anthrop.)" (*Trans. S.A. Med. Cong.*, 1910); "Treatment of Malaria" (*Transvaal Med. J.*, 1912).

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Contrib.—"Condens. of Water Vapour, etc." *Trans. Roy. Soc.*, 1897; "Condens. Nuclei Produced in Gases by Action of Röntgen Rays, etc." (*ib.*, 1899); "Measurement of Atmos. Elec. Potential Gradient and Earth-Air Current" (*Proc. Roy. Soc.*, 1908); "Method of making Visible Paths of Ionising Particles through a Gas" (*ib.*, 1911).

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Books.—"Vector Analysis," 1901; "Adv. Calculus" 1912. *Art.*—"Projective Geom.," in "Encyc. Amer." *Contrib.* on math. and math. phys. since 1899.

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Contrib.—"Kelvin Electrometer as a Wattmeter and Voltmeter" (*Proc. Roy. Soc.*, Vol. 62); "Magn. Properties of almost pure Iron" (*ibid.*); "Expos. Tests of light Aluminium Alloys" (*Electrician*, 1912); "Altern. Current Magnets" (*Phys. Soc.*, 1913).

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Contrib. on embryol.

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Book.—"Elec. Properties of Flames and Incandes. Solids." *Contrib.*—Numerous, to *Phil. Trans.*, etc., on Velocity of Ions in Flames; Laws of Electrol. of Salt Vapours; Discharge of Elec. from Hot Bodies, etc.; Elec. Effect of Motion of Insulators in a Magnetic Field; New Method of Measuring Ionic Charge

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Contrib.—"Develop. of Manicina Areolata" (*J. Morph.*, 1888); "Embryol. of Sea Bass" (*Bull. U.S. Fish Comm.*, 1891); "Observ. on Egg Develop. of Mar. Sponges" (*J. Morph.*, 1894); "Rept. on Albatross, 1891 Sponges" (*Mem. Mus. Comp. Zool.*, 1904).

Regenerat. power of disacc. cells in sponges and hydroids.

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Books.—"Gaz. of Sirsa and Shahpur districts in Punjab"; "Gram. of Western Punjab."

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Books.—"Med. Diagnosis"; Ed. "Amer. Text-bk. of App. Therap."; "Treatise on Continued Fevers." *Contrib.*—"Disinfect. of Stools in Enteric Fevers" (*Amer. J. Med. Sci. Phila.*, 1883); "Diagn. of Tumours of Anterior Mediastinum" (*J. Amer. Med. Assoc.*, 1884); "Pulsating Empyema" (*Trans. Phila. Co. Med. Soc.*, 1889); "Nerv. Deafness in Diphtheria" (*Trans. Assoc. Amer. Physicians*, 1897).

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Contrib.—"Myol. of Notoryctes Typhlops" (*Trans. Roy. Soc. S. Austral.*, 1894); "Anat. of Calamus Region in Human Bulb" (*J. Anat. and Phys.*, 1906); "Develop. and Succession of Teeth in Perameles" (*Q.J.M.S.*, 1896); "Observ. on Develop. of Ornithorhynchus" (*Phil. Trans.*, 1906, with J. P. Hill).

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Contrib.—"Nerves of Atrio-ventric. bundle" (*Proc. Roy. Soc.*, 1909); "Comp. anat. of larynx in Anthropoida" (*Trans. Amer. Laryng. Assoc.*, 1910); "Nerves and nerve endings in Membrana Tympani of Man" (*Amer. J. Anat.*, 1911); "Effects of stimulat. and extirp. of labyrinth and their relat. to motor system" (*Phil. Trans.*, 1912).

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Contrib.—"Spermatogen. in Bryophyta" (*ib.*, 1911); "Plant distrib. in woods of N.E. Kent" (*ib.*, 1911).

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Books.—"Text-bk. of Optical Miner." (with N. H. Winchell) 1900; "Mining Dist. of Dillon Quadrangle, Montana," 1912. *Contrib.*—"Gabbroid Rocks of Minnesota" (*Amer. Geol.*, 1900); "Theory for Origin of Graphite" (*Econ. Geol.*, 1911); "Oxidation of Pyrite" (*ib.*, 1906); "Review of Nomenclature of Keweenawan Igneous Rocks" (*J. Geol.*, 1909).

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Books.—"Manual of Anat."; "Proportions of Human Body"; "Life in Early Britain"; "Remains of Pre-hist. Age in Eng."; "What is Life? A Study of Vitalism and Neo-Vitalism." *Contrib.*—Numerous, to *Proc-Zool. Soc.*, *Linn. Soc.*, *J. Anat. and Physiol.*, *Anat. Anz.*, *Dublin Review*, etc.

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Book.—"Indian Toxicol." 1906.

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Book.—"Bridge Drafting," jty. *Contrib.* to *Trans. Amer. Soc. C.E.*

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Books.—"Milk and Its Products," 1897. *Arts.* in "Johnson's Cyc.," Bailey's "Cyc. Agric." *Contrib.* to *Bull., Cornell Univ. Agric. Exper. Sta.*, since 1888.

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Books.—"Birds of Greenland," 1898; "Mammals of Greenland," 1902; "Verteb. Remains" in "Refuse-heaps from Stone-Age in Denmark," 1900; "Mammals of Denmark," 1908; "E. Museo Lundis," 1888—1906. *Contrib.*—"Birds at Dan. Lighthouses" (*Vid. Medl. Nt. Hist. Foren.*, 1887—1910).

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Books.—"Norweg. Mental Dis.," 1901; "Lunacy in Norway," 1908; "Hist. of Administ. of Norweg. Lunacy Laws," 1911.

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Books.—"Statistics of Carcinoma," 1878; "Surg. Dis. of Skin," 1892; "Textb. of Surg. Operations," 1895; Ed. 9-16 edn. of Bolkott's *Allgem. Chirurg.*, 1888—1906. *Art.*—"Tumours" in Kocher and Quervain's *Encyc. d. Chirurg.*

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Book.—Ed. "Euler's Turbine Theory."

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Books.—"Parthenogen. and Apogamy in Plants," 1908; "Expts. on Embolic Hybridis.," 1912.

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Contrib.—Numerous on obstet.

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Books.—"Elements of App. Microscopy," 1905; "Elements of Water Bact.," (with S. C. Prescott) 1904; "Syst. Relationships of Coccaceae" (with A. R. Winslow) 1908; "Sewage Disposal" (with L. P. Kinnicutt and R. H. Pratt) 1910.

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Chapters on Elec. in Collieries, etc., in Percy's—"Mech. Equipment of Collieries." *Contrib.*—"Accidents in Winding" (*Trans. Fed. Inst. Min. Engrs.*, 1908); "Safety lamp for Detect. of Fire-Damp" (*Ib.*, 1910).

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Books.—"Choetopodes," 1883; "Elements of Zool.," 1897—1902; "Zool. of Upsala," 1882—1907; "Maecliephala violacea," 1907; etc. *Contrib.*—"Circulation and Digest. Organs of Annelids" (*Stockholm Acad. Handl.*, 1885); "Anat. of Annelids" (*ib.*, 1887); "Studies on Solensgastres" (*ib.*, 1892); etc.

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Books.—"Theta Functions," 1895; Supp. to Riemann's Works; "Algeb. Functions," in "Encyc. d. Math. Wiss." *Contrib.*—"Multiple Periodic Functions" (*Monatsh. Wien*, 1895—96); "Abelian Functions, $p=3$ " (*Math. Ann.*, 1892); "Partial Differential Equations and Vibrations" (*ib.*, 1895); "Conform. Representn. by Abelian Integrals" (*Wiener Denkschr.*, 1909).

Theta functions; hypergeometric functions.

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Contrib.—Numerous on Smoke Prev., Wood Distill., and Pure and Anal. Chem.

Trellis-stone.

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Contrib. numerous.

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Contrib.—Correlation of mental and phys. tests; Morph. of hard palate in norm. and feeble-minded individuals; Decorative art and symbolism among the Amer. Indians; Ethnol. of Blackfoot and Dakota Indians.

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Book.—"Handlist of Brit. Birds" (jtl.). *Contrib.*—Numerous, to *Ibis*, *Knowledge*, *Brit. Birds*.

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Arts.—"Messel Lignite and its Fauna" in *Darmstadt Geol. Surv. Rep.*, 1898. *Contrib.*—"Humboldt's Travels in Mexico" (*Humboldt Festschr.*, 1910); "Origin of Mining in Mexico" (*ib.*, 1910); "Geol. of Cape Region of Lower Cal." (*Zeitschr. deut. geol. Ges.*, 1911); "Mineral species of Guanajuato" (*Soc. Geol. Mex.*, 1909.)

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Books.—Numerous on Algae, Scand. Des-

midac., Pithophoraceae, Spore formn. of Mesocarpeae, Ferns, Violas, Linnæa borealis, etc., since 1866.

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Arts.—"Nitrogen," in Muspratt's Chem.; "Inorg. Chem.," Kult. d. Gegenw., 1913; "Explosives" in Herzog's Org. Technol., 1912. *Contrib.* on Inorg. and Phys. Chem., to *Ber. d. Chem. Ges., Zschr. phys. Chem., Zschr. anorg. Chem., Z. Elektrochem. u. angew. Chem.*, since 1900.

Improvements in detonators.

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Books.—"Org. Chem. and Life," 1910. *Contrib.* since 1886 to *Ber. Chem. Ges.* on revision of sugars, neutral reduct. of nitrocomps., synth. of lower sugars, aldehydes, etc. *Pat.* on manuf. of invert sugar.

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Books.—"Handb. of Trop. Agric.," "Repts of Bonn-Poppelsdorf Agric. Inst.," 1895—1905.

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Contrib. on Ornithol., Entomol., Faunal Work, Mites, esp. in Plains Region and Sandhill Lakes of W. Neb.

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Books.—Publ. of Konigstuhl Astrophys. Inst., 1—3, and of Heidelb. Observ. *Contrib.*—Many, to *Monthly Notices, Nature, Astron. Nachr.*, etc., since 1879, on Astrophys., Photog. Astron., Met., Spectrum Anal., New Planets, Comets, Nebulae, and Instruments.

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Books.—"Railway Appliances"; "Lects. on Rys. and Locomotives"; "Tower Bridge."

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Contrib.—87, to *Z. f. Allgem. Physiol., Anat. Zeitsig., Internat. Rev. Hydrobiol., Mikrokosmos*, etc.

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Books.—"Kidney Resection and its Conseq.," 1900; "Transmiss. of Infect. Dis.," 1888. *Contrib.*—"Vaccin. of new-born" (*Virchow's Arch.*, 1889); "Pure Cult. of Actinomyc. and Conveyance to Animals" (*Ib.*, 1891); "Cattle Murrain and Human Tuberc." (*Deut. Med. Woch.*, 1902); "Röntgen Examn. and Early Diagn. of Lung Tuberc." (*Fortschr. a. d. Gebiete d. Röntgenstrahlen*, 1908).

WOLL, FRITZ WILHELM, Prof. of Agric. Chem., Wisconsin Univ., Madison, Wis., U.S.A.; Chem., Wis. Agric. Exper. Sta.

B. 1865, Bergen, Norway. *Educ.* Univs. Christiania, Wisconsin, Göttingen, Leipzig. M.Sc. 1886, Ph.D. 1904 (Wis.). *Soc.*—Amer. Assoc.; Amer. Chem.; Wis. Acad.; Prom. Agric. Sci.; Assoc. Offic. Agric. Chemists (P.P.).

Books.—Grottenfelt's "Principles of Mod. Dairy Pract." (Amer. edn.); "Handbk. for Farmers and Dairymen," 5 edns.; "Decker's Cheese Making" (5th rev. edn.); "Book on Silage," rev. edn.; "Testing Milk and its Products" (with E. H. Farrington), 21 edns. *Arts.*—in Bailey's "Cyc. Amer. Agric." and Halligan's "Fundamentals of Agric." *Contrib. to Repts. and Bulls.*, Wis. Exper. Sta., 1886—1911; and to *Agric. Sci.*, etc., on Ensilage, Fat Globules of Cow's Milk, Nutrition of Dairy Cows.

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Books.—"From Ruwenzori to the Congo," 1908; "Pygmies and Papuans," 1912.

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Publ. on Trochophora, Velella, Polygord., Hyperid., Daphnid., Suspended apophysis of Cladoc., etc.

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Books.—"Fossil Batrachians," 1886; "Reptiles and Amphibia of N.W. Ger.," 1893; "Lower Carbonif. of Magdeburg," 1899; "Neustadt and its Fauna," 1899; etc.

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B. 1845, London. *Educ.* Harrow; Clare Coll., Cambridge. M.A.; Off. Leg. Hon. Fr. *Soc.*—Phys.; Photog.; Zool.; Brit. Assoc. *Late* Comm., Paris Exhib., 1889; Sec., Roy. Comm., Chicago Exhib., 1893; P.P., Roy. Photog. *Soc.*

Books.—"Indust. Eng. in 18th Cent.;"

"Light"; "Treatise on Optics"; "Mod. Methods of Illustrating Books." *Arts.* in "Diet. Nat. Biog.;" "Encyc. Brit." *Contrib.*—Various.

WOOD, H. E., Chief Assist., Union Observ., Johannesburg, S.A.; Hon. Sec., S.A. Assoc. Adv. Sci.

B. 1881, Manchester. M.Sc. (Manc.).

Disc. Some minor planets.

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B. 1841, Phila. M.D. (Penna.) 1862; LL.D. (Lafayette and Yale). *Soc.*—Amer. Physicians; Amer. Assoc.; etc. *Late* Prof. Bot., 1866—76; Clin. Prof. Dis. of Nerv. Syst., Penna. Univ.

Ed., "New Remedies," 1870—73; *Phila. Med. Times*, 1873—80; *Therap. Gaz.*, 1884—90.

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Arts.—"Border Leicester Sheep" and "Agric. Educ. in Irel." in Mod. Cyc. of Agric.

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Book.—"Puering, Dating, and Drenching of Skins," 1912. *Contrib.*—Various on Constit. of Dung Bate in Leather Manufac., Bacteriol. of Leather Indust., in *J. Soc. Chem. Ind.*; on Bates and Bran Dren; Bact. Bate "Eroding" (with Popp and Beeker of Frankfurt).

WOOD, ROBERT WILLIAMS, Mem. Nat. Acad. Sci.; Prof. of Exper. Phys., since 1901, Johns Hopkins Univ., Baltimore, U.S.A.

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Book.—"Phys. Optics," 1905, 2nd edn. revised, 1911. *Contrib.*—"Fluorescence, absorption, anomalous dispersion and magnetic rotation of mercury vapor" (*Phil. Mag.*, 1909); "Determin. of stellar velocities with objective prism" (*Astrophys. J.*, 1910); "Destruction of resonance spectrum of iodine by gases of helium group" (*Phil. Mag.*, 1911); "Focal isolation of long heat-waves" (*ib.*, 1911).

Meth. of thawing frozen pipes by elec.

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B. 1869, M.A. (Cantab.). *Soc.*—Brit. Assoc. (Pres., Agric. Scot., 1913).

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Contrib.—"Action of Norm. and Acid Salts upon Ammonium Salts" (*J. Chem. Soc.*, 1870); "Gelatin Jelly as a Dialyser" (*Chem. News*, 1882); "Calculation of Results obtained from Anal. of Superphosphates, Manures, etc." (*ib.*, 1876); etc.

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Books.—"Manual of Pract. Path.," 4th edn., 1910; "Path. Mycol., Sect. I.—Methods" (with A. W. Hare), 1886; "Bacteria and their Products," 1891, and various Repts.; Ed. *J. of Path.*

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Book.—"Hints for Improving Condition of Working Man's Life."

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B. 1857, Westport, N.Y. A.B. (Yale) 1880; Ph.D. (Columbia) 1899. *Soc.*—F.A.A.; N.Y. Acad. Sci.; N.Y. Phys. Club (P.P.). *Late* Prof. of Nat. Sci., N.Y. State Norm. Sch., 1887.

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B. 1879. D.Sc. (Lond.); Fell. Univ. Coll. London. *Late* Lect. on Zool., King's Coll.; Assist. Prof. Univ. Coll., Sci. Assist. Univ., London.

Contrib.—"Transposition Mammal Testes" (*Proc. Zool. Soc. Lond.*, 1903); "Studies (I.—VIII.) Spicule Formation" (*Q. J. Micr. Sci.*, 1905—08); "Renal Portal Syst." (*Proc. Zool. Soc. Lond.*, 1907); "Gas glands of fish" (*ib.*, and *Anat. Anzeig.*, 1911).

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B. 1873, Kingston, Mass. *Educ.* Mass Inst.

Techn. S.B. (M.I.T.) 1897. *Soc.*—Amer. Chem.; Amer. Assoc.; Assoc. Offic. Agric. Chem.

Book.—"Air, Water and Food."

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B. 1866, Belvidere, Ill. B.S. 1890, A.M. 1892 (Neb.). *Soc.*—Fell. Amer. Assoc.; Amer. Bot.; Ger. Bot.; Wash. Acad.; Wash. Bot.; etc. *Late* Assist. Bot., Neb. Univ., 1890—93; Assist. Chief, 1893—1900; Chief, 1900—10, Div. of Veg. Physiol. and Path., U.S. Dept. of Agric.

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Book.—"Mental and Moral Heredity in Royalty," 1906. *Contrib.*—"Birthplaces of leading Americans and Question of Heredity" (*Science*, 1909); "Amer. men of sci. and Heredity" (*ib.*, 1909); "Laws of diminishing environmental influences" (*Pop. Sci. Monthly*, 1910); "Historiometry as an exact sci." (*Science*, 1911).

Historiometry (i.e., test of hist. validity by maths.). *Disc.* germinal continuity and migration of germ-cells in Drosophila.

WOODS, FREDERICK SHENSTONE, Prof. of Math., Mass. Inst. Technol., U.S.A., since 1906.

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Educ. St. John's Coll., Cambridge. M.A. (Cantab.). *Sec.*—F.G.S.; Paleontog.; Geol. Assoc. *Late* Demonstr. Paleont., Cambridge Univ., 1892—99; Exam. Geol., Cambridge Univ.; Mem. Counc., Geol. Soc., 1907—11; Mem. Counc. Paleontog. Soc.; Lyell Fund, Geol. Soc., 1898.

Books.—"Monog. of Cretaceous Lamellibranchia of Eng.," 2 vols., 1899—1912; "Cat. of Type Fossils in Woodwardian Mus., Cambridge," 1891; "Palaeont. Inverteb.," 4th edn., 1909; "Cretaceous Fauna of Pondoland," 1906. *Arts.* in "Camb. Nat. Hist.," 1909. *Contrib.*—"Mollusca of Chalk Rock" (*Q. J. Geol. Soc.*, 1896, 1897); "Evol. of Inoceramus in Cretac. Period" (*ib.*, 1912) "Echinoidea, Brachiopoda, and Lamellibranchia from Upp. Cretaceous Limestone of Need's Camp, Buffalo River" (*Annals of S. African Mus.*, 1908).

WOODWARD, ARTHUR SMITH, F.R.S.; Keeper of Geol., Brit. Mus. (Nat. Hist.), S. Kensington, London; Sec. of Palaeont. and Geol. Socs.

B. 1864, Macclesfield. *Educ.* Macclesfield Gram. Sch.; Owens Coll., Manchester. Hon. LL.D. (St. And. and Glas.); F.L.S. (V.-P.); F.G.S.; F.Z.S.; F.R.G.S.

Books.—"Cat. of Fossil Fishes in Brit. Mus.," 4 vols., 1889—1901; "Outlines of Verteb. Palaeont.," 1898. *Contrib.*—Numerous in *Proc. Zool. Soc.*, *Q. J. Geol. Soc.*, etc., on Extinct Verteb., chiefly Fishes.

WOODWARD, BERNARD HENRY, Dirce. of W. Australian Mus. and Art Gallery, Perth, W. Australia.

B. London, Eng. Soc.—F.G.S.; Corresp. Zool. London. *Late Pres.*, W. Austr. Nat. Hist. Soc., 1908.

Books.—Guide Books and Records of W. Austr. Mus.

WOODWARD, HENRY, F.R.S.; Pres. of Paleont. Soc.

13, Arundel Gardens, Notting Hill, London, W. B. 1832, Norwich. *Educ.* Norwich Gram. Sch.; Roy. Agric. Coll., Cirencester. LL.D. (St. And.) 1878; Murchison Medal, 1884; Wollaston Gold Med., Geol. Soc., 1906. *Soc.*—F.G.S. (P.P.); F.Z.S. (V.-P.); F.R.M.S. (P.P.); Geol. Assoc. (P.P.); Malacol. (P.P.); Hon. M.I.M.M. *Late Keeper Geol.*, Brit. Mus., 1880—1901; Pres., Sect. C. Geol. Brit. Assoc., 1887; Mus. Assoc., 1900.

Books.—“Merostomata”; “Carbonif. Trilobites”; “Fossil Phyllopora”; Brit. Mus. “Guides” to Geol. Dept., since 1880. *Arts.*—“Crustacea” in *Encyc. Brit.*; “Mollusca, Crustacea” in Cassell’s “Nat. Hist.” *Contrib.* on Fossil Crustacea, Insects, Myriopods, etc.; *Ed. Geol. Mag.*, since 1864.

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Books.—“Geol. of Eng. and Wales,” 1876, 2nd edn., 1887; “Jurassic Rocks of Britain,” 3 vols., 1893—95; “Hist. Geol. Soc., Lond.,” 1907; “Geol. of Water Supply,” 1910; “Hist. Geol.,” 1911; “Geol. Soils and Substrata,” 1912.

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Columbia; Wash. Acad. Sci. *Late Prof.* of State Med. and Med. Jurispr., Univ. Georgetown; *Prof.* of Med. Juris., Geo. Washington Univ.

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Book.—“Wing Veins of Insects.”

WOODWORTH, JAY BACKUS, Assist. Prof. of Geol., Harvard Univ., Cambridge, Mass., U.S.A.

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Books.—“Le Mouvement,” 1903; “Elements of Physiol. Psychol.,” *jtly.*, 1911; “Care of Body,” 1912. *Contrib.*—Numerous.

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Contrib.—“Temps. of Healthy and Tuberc. Cattle” (*Proc. Roy. Dublin Soc.*, 1905); “Piroplasmosis in Cattle” (*Proc. Nat. Veter. Assoc.*, 1904); “Actinomyces and Botoiomyces” (*Ib.*, 1907); “Contag. Abortion” (*Agric. Students’ Gaz.*, 1903); *Joint Ed.*, *Veterinary J.*

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Book.—“Rept., Internat. Fire Prev. Cong.,” 1903. *Contrib.*—“Rept., Investig. of Heat upon Strength and Thermal Conductivity of Concrete” (*Trans. Amer. Soc. Testing Materials*, 1905—07); numerous on Fire Tests of Structural Materials, 1902—09.

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Book.—"Central Elec. Stations." *Contrib.*—Numerous.

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Books.—"Geom. Investig. of Euler Case of Rotation of Fixed Bodies," 1898; "Equations of Motion of Fixed Bodies," 1903; "Transform. of Dynamic Equations by Linear Integrals," 1906. *Contrib.*—"Equations of Motion of Abnorm. Sys'ts." (*Moscow Math.*, 1901); "Motion of 4 Mass-points under Influence of Internal Energy" (*Math. Ann.*, 1906); "Rolling Motion of Circular Disc on Attractive Surface" (*ib.*, 1909); "Motion of Fixed Body Rolling on Smooth Surface without Skid" (*ib.*, 1911).

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Contrib.—"Essay and Chart repres. population and races in U.S." (*Castel Howel Sch Record*, 1883); "Compound locomotives in Eng., Ger., S. Amer., France, India and U.S.A." (*Inst. C.E.* 1888); "Heilmann Loco." (*Manc. Assoc. Engrs.*).

Design of locomotives; ventil. of tunnels in Japan; etc.

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Books.—"Treatise on Antityphoid Inocul.,"

1904; "Principles of Microscopy," 1906; "Studies in Immunis.," 1909; "Techn. of Teat and Capill. Glass Tube," 1912; "Unexpurgat. Case against Woman Suffrage," 1913. *Contrib.*—"Path. and Therap. of Scurvy" (*Army Med. Rept.*, 1895); "Treatment of Urticaria by Calcium Chloride" (*Brit. J. Dermat.*, 1896); "Serum Test of Malta Fever" (*Lancet*, 1897); "Caution and Treatment of Thrombosis in Connect. with Typhoid Fever" (*Trans. Med.-Chir. Soc.*, 1886).

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Bulls.—Numerous on Briquetting Tests. *Contrib.*—"Fuel-Briquetting Indust." (*Engrng. Mag. N.Y.*, 1910); "Heat from Dust" (*Sci. Amer. Mag.*, 1911); "Briquetting of Fuels" (*Trans. Amer. Chem. Soc.*, 1910).

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Books.—"Methods of Petrog.-microsc. Research," (Carnegie Inst. Publ. 158, 1911); "Ketchikan and Wrangell Mining Distr., Alaska" (U.S. Geol. Surv. Bull. 347, 1908). *Contrib.* on Petr. and Geol. to *Tscherm. Mineral. Petr. Mitt.*, *Neues Jahrb. f. Mineral., Geol. and Palaeont.*, *Amer. J. Sci.*, *J. Geol.*, etc.

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Books.—"Dis. of Children" (with Ashby); "Hip Dis. in Children"; "Surg. Anat."; (with Preston). *Arts.* on Tuberc., etc. *Contrib.*—Numerous to *Lancet*, *Brit. Med. J.* etc.

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Books.—“Pyroxenes,” 1891; “Tabular Synopsis of Forms of 32 Cryst. Symmet. Groups,” 1895; “Constit. of Tourmalines and their Dependence on Chem. Comp.,” 1900; Rosenbusch’s “Physiol.,” 4th edn., 1904. *Contrib.*—Numerous to *Neuen Jahrb. f. Miner., Z. f. Krystallog., Tschermak’s Mitt.*, etc.

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Books.—“Org. Chem. for Pharmacists”; “Evolution of Bot.”; “Course in Law for Pharmacists”; “Med. and Pharm. Chem.,” 2 edns.

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Books.—“Syst. of Phil.,” 1889; “Princip. of Physiol. Psychol.,” 5th Ger. edn. trans. in Eng. by Titchener, 1904; “Hypnotism and Suggestion”; “Science and Psychol.”; and numerous others.

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Contrib.—“Thio-derivs. of Camphor” (*Ber. deut. Chem. Ges.*, 1903); “Action of Sulphur on Magnesium Org. Comps.” (*Bull. Soc. Chim. Paris*, 1906 and 1909); “Formn. of Peroxides in oxidn. of Mg.-Org. Comps.” (*Comptes rendus, Paris*, 1909); “Dehydrn. of Alcohols by Sulphonic Acids” (*Bull. Soc. Chim. Belg.*, 1912).

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Books.—“Textb. on Surg.”; etc.

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Contrib.—Ann. Repts., Pub. Health and Mar. Hosp. Serv. for 20 years; Over 600 Arts. in J. and Mag.

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Books.—"The Dancing Mouse: a study of Animal Behav.," 1907; "Intro. to Psych.," 1911; "Meth. of Studying Vision in Animals," jtl., 1911; Ed. "Animal Behav. Series." *Contrib.* on physiol. of nerv. syst., animal behav. and comp. psych.

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Books.—"Lects. on Astron.;" "Outline of Geol.;" etc.

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Contrib.—"Investig. into Mech. of Produc. of Blackwater" (jtl.) (*Annals Trop. Med. and Parasitol.*, 1909); "Method of Estim. Total Vol. of Blood in Living Body" (jtl.) (*Proc. Roy.*

Soc., 1909); "Auto-Agglutin. of Red Blood Cells in Trypanosomiasis" (*ib.*, 1911).

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Contrib.—"Elliptic Elements of Comet G," 1896 (*Astron. J.*, 1897); "Density of Solar Nebula" (*Astrophys. J.*, 1901); "Reduct. of Measures of Photog. of H and K Persei" (*Contribs. Columb. Univ. Observ.*, 1906).

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Contrib.—"Alkylation of Rhamnose," jtl. (*Trans. Chem. Soc.*, 1906); "Optically active derivs. of *l*-methoxy- and *d*-dimethoxy-succinic acids," jtl. (*ib.*, 1910).

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Books.—"Projective Geom." (with Veblen) 1910; "Fundamental Concepts of Algebra and Geom.," 1911; "Elem. Geom." (with Schwartz), 1913. *Contrib.* on theory of groups, functions, geom.

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Contrib.—"Histogen of *Cysticereus pisi-formis*" (*Zool. Jahrb.*, Vol. 26); "Histogen of reproductive organs of *Faenia serrata*" (*ib.*, Vol. 35); "Somatry nuclei of cestodes" (*Arch. Zellforsch.*, Vol. 6); "Epithelium of *Turbellaria*" (*J. Morph.*, Vol. 23).

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Books.—"Fract. Distillation," 1903; "Stoichiometry," 1908. *Arts.* on "Distillation," "Sublimation, and "Thermometers," in Thorpe's "Diet. App. Chem." *Contrib.*—"Relations of Van der Waals" (*Phil. Mag.*, 1892 and 1894); "Relative Effic., etc., of Still-heads" (*Trans. Chem. Soc.*, 1899); "Law of Cailetet and Mathias, and Crit. Density" (*Phil. Mag.*, 1900); "Vapour Pressures, etc., of 30 Substances" (*Sci. Proc. Roy. Dub. Soc.*, 1910); and more than 100 other Papers.

Disc. laws relating to volatilis. of solids, boiling points of liquids under equal pressures, and of homologous compounds, densities of substances at crit. points, fract. distill., properties of mixed liquids, etc.; *Inv.* apparatus for determ. of saturated vapour, still-heads, etc.

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Books.—"Theory of Sets of Points" ("First Book of Geom." (Ger. and Ital. transl.); "Fundamental Theorems of Diff. Calculus," *Contrib.* over 100.

Theory of Fourier Series; *Applic.* of theory of sets of points to theory of functions of real variable; reform of math. exams.

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Books.—"Baby Incubators," 1905; "Golden Rules of Pediatrics," 1909; *Transl. jtly.*, Pfaundler and Schlossman's "Children's Dis." *Contrib.*—"Cold as an etiol. factor in dis." (*St. Louis Courier of Med.*, 1900); "Mortality of diphtheria" (*Med. News*, 1903); "Serum treatm. of summer Diarrhoea" (*St. Louis Courier of Med.*, 1906); "Energy-quotient as basis for infant feeding" (*Interstate Med. J.*, 1906).

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Books.—"Theory of Whole Numbers," 1907; "Determinants and Linear Eqns.," 1909; "Treatise on Theory of Arith." (in press). *Contrib.*—"Numerical calc. of functions in Diréclot's problem and the hydrodynamic problem" (*Bull. Acad. Cracow*, 1909); "Sol. of Diréclot's Problem" (*ib.*); "Principle of Minimum" (*ib.*); "Bi-harmonic re-entrant prob." (*Ann. d'Ec. norm. sup.*, 1909).

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Books.—"Repts. on Field Expts.," "Ont. Agric. Coll. Repts.," "Repts. Ont. Agric. and Exper. Union," *Art.*—"Agric. Features of Ont.," (*Cyc. Amer. Agric.*). *Contrib.*—Bulls. "Alfalfa"; "Peas and the Pea Weevil"; "Wheats."

New varieties of barley, oats, rye, etc.

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Art.—"Fats and Oils" in Encyk. d. Landw., 1896. *Contrib.*—"V.P. of binary mixtures" (*Zsch. f. Phys. Chem.*, 1900); "Comp. of over-surface layers" (*ib.*, 1900); "Partial and total V.P. curves" (*ib.*, 1909); "Amphoteric character of cacodyl acid" (*Ber. Chem. Ges.*).

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Contrib.—"Influence of Magnetism on Nature of Light Emitted by a Substance" (*Acad. Proc. Amsterdam*, 1896, *Phil. Mag.*, 1897); "Doubles and Triplets in Spectrum by External Magnetic Forces" (*Phil. Mag.*, 1897); "Rotation Plane of Polariz. in Absorp. Band" (*Acad. Amsterdam Proc.*, 1902); "Magnetic Separation Absorp. Lines in Sunspot Spectra" (*ib.*, 1910).

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B. 1852, Santiago, Chili. B. Math., B. Min. E. (Chili) 1873; Off. Pub. Instr. Fr. *Soc.*—Fr. Phys.; Fr. Astron. *Late Sec.*, Internat. Exhib. Minerals and Metall., Santiago, 1894; Prof. of Chem., Agric. Inst., Chili; Prof. of Elec., Nat. Inst., Chili; Sec. and Dean, Fac. Phys. Sci., Univ. Chili; Ed., *Bolatin d. Min.*, 5 years.

Books.—"Transit of Venus across the Sun"; "Treatise on Phys. Sci."; "Transport of Mech. Energy by Means of Elec." *Contrib.*—Numerous.

Disc. Lithium in mineral waters of Chili; reversibility of electrostatic machines (1877); installed dynamo elec. machine, arc lamp regulators, telephone syst., in Chili.

ZEHENDER, C. W. v., Ober-Med. Rat; Prof., Rostock, Ger.; Mem. Leop. Carol. Acad. (Zool.-Anat. Sect.).

ZEILLER, CHARLES RENÉ, Mem. Inst. Fr.; Prof. of Plant Paleont., Nat. Superior Sch. of Mines, Paris.

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Book.—"Man. of Phys. Measurements," 1908. *Contrib.*—"Capacity of mica condensers" (*Phys. Rev.*, 1906); "Precision meas. with moving coil Ballistic Galv." (*ib.*, 1906); "Elec. method for meas. of amount of moisture in grain and other materials" (*Minn. Engrn.*, 1909); "Temp. Co-eff. of free and absorbed charges in elec. condensers" (*ib.*, 1911).

Inv. Galvanometer (1902); *Elec. Thermometers* (1902).

ZELENY, CHARLES, Assoc. Prof. of Zool., Illinois Univ., Urbana, Ill., U.S.A.

B. 1878, Hutchinson, Minn. *Educ.* Minnesota, Columbia, Naples Zool. Station, Chicago. M.S. (Minn.) 1901; Ph.D. (Chic.) 1904. *Soc.*—Amer. Zool.; F.A.A. *Late Assoc. Prof.* of Zool., Indiana Univ., till 1909.

Contrib. on regeneration and exper. embryol. to *J. Exper. Zool.*, *Arch. f. Entwickl.-mech.*, etc.

ZELENY, JOHN, Head Prof. of Phys., Minnesota Univ., Minneapolis, Minn., U.S.A.

B. 1872, Racine, Wis. *Educ.* Univs. Minnesota, Berlin, Cambridge (Eng.). B.S. 1892, Ph.D. 1905 (Minn.); B.A. (Cantab.) 1899. *Soc.*—Fell. Amer. Assoc.; Amer. Phys.

Contrib.—"Ratio of Velocities of Ions" (*Phil. Mag.*, 1898); "Velocities of Ions" (*Lond. Phil. Trans.*, 1900); "Discharge from Points" (*Phys. Review*, 1907); "Fall of Small Spheres in Air" (*ib.* 1910).

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B. 1870, Athens, D.Sc. (Athens) 1890. *Soc.*—Numerous Chem. *Late Priv. Doz.* in Chem., Univ. Athens, 1906; Ord. Prof. of Inorg. Chem. and Metall., Polytech. Athens, 1907.

Books.—"Stoic Metallurgy," 1902; "Inorg. Chem.," 2nd edn. 1909. *Contrib.*—"Elec. strength of insol. and complex salts" (*Zsch. f. phys. Chem.*, 1893); "Chem. reactions at extreme high temps." (*ib.*, 1903); "Non-evaporat. bodies at gen. temp." (*ib.*, 1905); "Permeabil. of glass by steam" (*ib.*, 1910).

ZENNECK, JONATHAN, Prof. of Phys., Tech. H. Sch., Danzig-Langfuhr, Ger.

B. 1871, Ruppertshofen, Württ. *Educ.* Univ. Tübingen. D.Sc. 1894; Prof. 1894. *Late Priv. Doz.*, Univ. Strassburg; Doz. and Prof., Tech. H. Sch. Danzig, 1905; Ord. Prof. of Phys., Tech. H. Sch., Braunschweig, 1906; at Badische Anilin Werks, 1909—11.

Books.—"Electromagn. Writing and Wireless Teleg.," 1905; "Wireless Teleg.," 1909, 2nd edn., 1912. *Art.*—"Gravitation" in Encyc. d. math. Wiss.

ZEPPELIN, FERDINAND Graf v., Designer of Zeppelin Aircraft.

66, Herdweg, Stuttgart, Ger. B. 1838, Constance. *Educ.* Polytech. Stuttgart; Milit. Sch., Ludwigsburg; Univ. Tübingen. Hon. Dr. Ing.; Hon. Ph.D.; Pruss. Order of Merit. *Late Service* in Amer War of Secession and Franco-German War.

- ZERMELO, E.**, Prof. of Pure Maths., Zurich, Switz.
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- B. 1839, Jutland. *Educ.* Copenhagen Univ. Ph.D. (Copen.) 1865; D.Sc. (Christiania) 1902. *Soc.*—Hon. Mem. Math., London; Corresp. Acad. Sci. Paris; Acad. Lincei, Rome. *Late Prof.* of Maths., Copenhagen Univ.
- Books.*—"Conic Sections in Olden Times," 1886; "Hist. of Maths." 1883, and in Ger. 1896, and Fr. 1902; "Hist. of Maths. in 16th and 17th centuries," 1903, and in Ger. 1903.
- ZEYNEK, RICHARD Ritter v.**, Ord. Prof. of Med. Chem., Ger. Univ., Prague, Bohemia.
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- B. 1860, Karlsbad. *Educ.* Realsch. Komotan; Ger. Tech. H. Sch. Prague. *Late Assist.* Constructor and Priv. Doz., Electrotech. Inst., Tech. H. Sch. Vienna, 1884—91.
- Book.*—"Textb. of Gen. Electrotech.," 2 vols. 1906, 1910. *Contrib.*—Numerous on teleg., alternating current transformers, etc.
- ZIEGLER, HEINRICH ERNST**, Ord. Prof. of Zool., Tech. Sch., Stuttgart, Ger.
- Ameisenbergstr., Stuttgart.
- B. 1858, Freiburg. *Educ.* Gymn. and Univ. Freiburg; Univ. Lausanne. Ph.D. *Late Extraord. Prof.*, Freiburg and Jena.
- Books.*—"Textb. of Embryol. of Lower Verteb.," 1902; "Transmission in Biol.," 1905; "Instinct," 1910; "Zool. Dic.," 2nd edn., 1912. *Arts.*—"Amphioxus," etc. in Handwörterb. d. Naturw., 1912.
- ZIEHEN, THEODOR**, Geh.-Med. Rat; Prof. of Psych. and Nerv. Dis., Berlin Univ. Kurfürstendamm 241, Berlin, W. 50, Ger.
- ZIEMANN, HANS**, Prof. of Trop. Hyg., Berlin, Ger.; M.D.
- ZIMMER, WILLIAM H.**, Manager, Johann Haviland Porcelain Factory, Waldershof i. Fichtelgebirge, Ger.; Ph.D.; For. Mem. Amer. Ceram. Soc.
- ZIMMERMANN, ALBRECHT WILHELM PHILIPP**, Direc. of Roy. Biol. and Agric. Insts., Amani.
- Hafen Tanza, Amani, Ger. E. Africa.
- B. 1860, Braunschweig. *Educ.* Wolfenbüttel, Tübingen, Berlin, Würzburg, Leipzig. Ph.D. (Leip.).
- Contrib.* on Plant-raising, Microtech. Microscopy, Bot. Morph. and Physiol., Coffee, etc.
- ZIMMERMANN, ERNST H.**, Geh. Bergrat; State Geol., Berlin.
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- Book.*—"Geol. of Duchy of Meiningen."
- ZIMMERMANN, HERMANN**, Wirkl. Geh. Oberbergrat; Fell. Acad. Sci. Berlin; Expert in Ministry of Pub. Works, Berlin, Ger. Calvinstr. 4, Berlin, N.W. 52, Ger.
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- Books.*—"Engnrg. Tables of Moments of Inertia and Resistance," 1881, 3rd edn. 1893; "Calc. of Permanent Way," 1888; "Calc. Tables," 1889, 6th edn. 1910; "Vibrations under a Live Load," 1896; "Handb. of Engnrg.," 5 vols. 1897, 2nd edn. 1905; "Framework," 1901; "Resist. to Crushing of Slab with Elastic Transverse Supports," 1906; "Resist. to Crushing of Open Bridges," 1910.
- Inv.* Framework in dome of Reichstag House, Berlin.
- ZINCKE, THEODOR**, Geh. Reg. Rat; Prof. of Chem. and Direc. of Inst., Marburg Univ., Ger.; Mem. Leop. Carol. Acad.
- ZINDLER, KONRAD**, Prof. of Maths., Innsbruck Univ.
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- B. 1866, Laibach.
- Book.*—"Linear Geom., with Applications," 2 vols., 1902, 1906.
- ZINGERLE, HERMANN**, Extraord. Prof. of Psychiat. and Nerv. Path., Graz Univ., Austria.
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- B. 1878, A.M., M.D. (Colum.) 1903. *Late Bact.*, Roosevelt Hosp., N.Y., 1904, St. Luke's Hosp., N.Y., 1905; Prof. of Bact., Stanford Univ., 1910.
- ŽIVNA, BOHUMIL**, Ord. Prof. of Machine Constr., Bohem. Tech. Hochsch., Prague, Bohemia.
- ZIWET, ALEXANDER**, Prof. of Math., Michigan Univ.; Co-Ed., *Bull. Amer. Math. Soc.* 644, S. Ingall's St., Ann Arbor, Mich., U.S.A.
- B. 1853, Breslau, Ger. C.E. (Polytech. Karlsruhe) 1880. *Soc.*—Amer. Math., etc.
- ZOEGE v. MANTEUFFEL, WERNER**, Hon. Surg. to Czar of Russia; Ord. Prof. of Surg. and Direc. of Surg. Clin., Univ. Dorpat. Wallgraben 18, Dorpat, Russia.
- B. 1857. *Educ.* Ritter and Domsch.; Univ. Dorpat. M.D. 1886. *Soc.*—Surg. Russ.; Surg. Ger.; etc.
- Books.*—"Arteriosclerosis"; "Mil. Surg." *Contrib.*—"Surg. of Knee-Joint" (*Zsch. f. Chirurg.*, 1889).
- ZORAWSKI, K.**, Prof. of Maths., Cracow Univ., Aust.
- ZOTH, OSKAR**, Prof. of Univ., Direc. of Physiol. Inst., Graz Univ.
- Harrachgasse 21, Graz III., Aust.
- B. 1864, Padua. *Educ.* Graz. M.D. (Graz, 1888. *Soc.*—Leop.-Karol. Acad., Halle. *Late Prof.*, Innsbruck Univ., 1902—04.
- Contrib.* to Nagel's "Handbk. of Physiol.," *Encyc. d. mikr. Tech.*, *Encyc. of Blindness*, *Pflüger's Arch. f. Physiol.*, etc.
- ZSCHOKKE, FRIEDRICH**, Prof. of Zool. and Comp. Anat., Basle Univ.; M.D.; Ph.D. Missionsstr. 13, Basle, Switz.
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- B. 1865, Vienna. *Educ.* Vienna, Munich. Ph.D. 1889.
- Books.*—"Colloids and the Ultra-microscope," 1905, in Eng. 1909; "Textb. of Colloidal Chem.," 1912.
- Inv.* Ultra-microscope, jly.; Jena milk-glass.

ZUBEL, RUDOLF, Prof. of Geol. and Direc. of Geol. Inst., Lemberg Univ., Aust.
B. 1858, Orloth. *Educ.* Lemberg and Vienna.
Ph.D. (Lemb.) 1880.

Books.—"Geol. of Petroliferous Formations," etc.

ZUEBLIN, E., Prof. since 1912, of Med., Univ. of Maryland, Baltimore, Md., U.S.A.; late Prof. of Med., Univ. Pittsburgh.

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Books.—"Metabolism of Horse" (jtly.) 1897; "Physiol. of Marsh" (jtly.); "High Climate and Mountain Variation" (jtly.); "Textb. of Physiol." (jtly.); "Physiol. and Hyg. of Aviation." *Arts.*—"Respiration" in *Himmann's Hab. d. Physiol.*

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B. 1857, Haarlem. *Educ.* Deventer; Amsterdam. M.D. (Amst.) 1883. *Soc.*—Corresp. Mem. Roy. Acad. Med., Turin.

Books.—"Treatise on Otol.," 1905; "Treatise on Physiol.," 1910; "Olfactology," 1895, etc. *Contrib.* on Olfactometry, Exper. Phonetics, Camera Silenta, Physiol. Energetics, etc.

Olfactometer, 1888; Aerodromograph, 1900.

ZWEIFEL, PAUL, Geh.-Rat; Prof. of Obstet. and Gynaec.; Direc., Univ. Hosp. for Women, Leipzig.

Stephanstr. 7, Leipzig, Ger.

B. 1848, Hönngg, near Zurich. *Educ.* Zurich. Ph.D.; Prof. *Soc.*—Gynaec. of Belgium, Hungary, Bavaria, Saxony, England, Scotland. *Late Priv.-Doz.*, Strassburg, 1872; Prof., Erlangen, 1876—87.

Books—Numerous.

ZWICKY, C., Prof. of Culture Tech., Polytech. Zurich.

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B. 1861.

BARGER, GEORGE, Prof. of Chem., Roy. Holloway Coll. (Univ. London) Englefield Green. Malahide, Englefield Green, nr. Egham, Surrey, Eng.

B. 1878, Manchester. *Educ.* Holland; Univ. Coll. London; King's Coll. Cambridge. M.A. (Cantab.) 1904; D.Sc. (Lond.) 1904. *Soc.*—F.C.S.; Eng. Physiol.; Eng. Biochem.; Ger. Chem. *Late Assist.*, Bot. Inst., Univ. Brussels, 1901—03; Research Chem., Wellcome Physiol. Res. Lab., Herne Hill, 1903—09; Head, Chem. Dept., Goldsmiths' Coll., New Cross, 1909—13; Fell. King's Coll. Cambridge, 1904—10.

Book.—"Simple Nat. Bases." *Art.*—"Veg. Alkaloids and Ptomaines" in "Allen's Commerce. Org. Anal.," Vol. VII. *Contrib.*—"Microse. meth. of determ. molec. wts." (*J. Chem. Soc.*, 1904); "Alkaloids of Ergot" jtly. (*ib.*, 1907); "Aminoethyl glyoxaline and other active princip. of Ergot" jtly. (*ib.*, 1910); "Blue adsorption compounds of Iodine," pt. I., jtly. (*ib.*, 1912).

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B. 1842. Ph.D.

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vard, Yale. B.S. (Harv.) 1905; Ph.D. (Yale) 1909. *Late Leader* of Yale S. Amer. Exped., 1907; Geog.-Geol., Peruvian Exped., 1911; Leader, Exped. to Central Andes.

Book.—"Forest Physiography," 1911. *Contrib.*—"Physiogr. of C. Andes" (*Am. J. Sci.*, 1909); "Trade routes of Bolivia" (*Bull. Am. Geog. Soc.*, 1910); "Regional population Groups of Atacama" (*ib.*, 1909).

BRADLEY, J(AMES) CHESTER, Assist. Prof. of Syst. Entom., Cornell Univ., Ithaca, N.Y., U.S.A.; Spec. Assist. Entom. to State of Georgia.

B. 1884. *Educ.* Philadelphia Centr. High Sch.; Cornell Univ. A.B., Ph.D. (Corn.); M.S. (Cal.). *Contrib.* on Hymenoptera.

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Contrib.—Numerous on circulat. of blood in brain (Bourceret Prize, Paris); etc.

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(Brown); M.Sc. (New Mex.) 1899. *Late* Prof. of Biol., Pacific Univ., 1902—06, Willamette Univ., 1906—07; Prof. of Zool., Univ. Denison, 1906—13.

Contrib.—"Cranial nerves of *Amblystoma tigrinum*" (*J. Comp. Neurol.*, 1902); "Cranial nerves of *Triton taeniatus*" (*ib.*, 1906); "React. to tactile stimuli and developm. of swimming movement in embryos of *Diemyctylus torosus*" (*J. Comp. Neurol. and Psych.* 1909); "Primary ventral roots and somatic motor column in *Amblystoma*" (*J. Comp. Neurol.*, Vol. 23).

COPELAND, EDWIN BINGHAM, Prof. of Plant Physiol., Dean of Coll. of Agric., Univ. of Philippines.

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Book.—"Elements of Philippine Agric.," 1908. *Contrib.* about 100 on plant physiol., ferns, and trop. agric.

CROWTHER, CHARLES, Prof. of Agric. Chem., Univ. Leeds, Eng.

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Publ.—"Puerp. Eclampsia"; "Vesicular Mole." *Contrib.*—"Tetanus Puerperalis"; "Intra-cervical Fibroid"; "Prolonged First Stage" etc.

DOUGLAS, LOUDON MACQUEEN, Ed. "Douglas's Encyc. for Food Industries."

3, Lauder Road, Edinburgh; and Author's Club, 2, Whitchall Court, London, S.W.

B. 1863, Midlothian. *Soc.*—F.R.S.E.; etc. *Late* Lect. and Tech. Adviser on Food Industries; Cantor Lect., Roy. Soc. Arts, on Meat Industry.

Books.—"Meat Industry and Meat Inspection," 5 vols., jtly.; "Bacillus of Long Life"; "Annals of Dairying in Europe" etc. *Contrib.* on bacon industry, Rhodesian horticulture, etc.

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Books.—"Flora of Oxfordsh.," 1885; "Flora of Berks.," 1897; "List of Brit. Plants," 1908; "Hayward's Bot. Pocket Book," 14th edn., 1914; "Dillenian Herbaria" jtly., 1907; "Flora of Northants.," 1879—1913; "Biog. of George Don," 1904. *Arts.* on Bot. of Berks., Bucks., Oxon., Northants., etc., in "Victoria County Hist."

Disc. three new species, and added four to British flora.

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Contrib.—"Infl. of thyroid preparations on animal organisms" (*Zsch. f. klin. Med.*, Vol. 33); "Mech. of immunity in relat. to b. pyocyan." (*Annales Inst. Pasteur*, 1899); "Arsacetin in recurrent Fevers" (*Med. Klinik.*, 1909); "Atophan (phenyl-cinehonic acid) in Gout" (*Deut. Med. Woch.*, 1911).

GIBBS, HARRY D., Chief, Div. of Org. Chem., and Assist. to Dirce., Bur. of Sci.; Assoc. Prof. of Chem. Univ. Philippines; Mem. Food and Drugs Bd., P.I.

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Contrib. 40 to *J. Amer. Chem. Soc.*, *J. Phys. Chem.*, *Philippine J. of Sci.*, etc.

GIUFFRIDA-RUGGERI, VINCENZO, Prof. of Anthropol., Naples Univ., Italy.

Books.—"Man A Collective Species," 1913.

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Books.—"Idealism: Essays of a Doctor," 1909; "Reform of Middle Schools," 1913. *Contrib.*—"Changes in size and structure of pancreas cells" (*Virchow's Arch.*, 1909); "Local phenomena in passive immunity against swine erysipelas" (*Z.-bl. f. Bakt.*, 1907); "Objective necessity of progress" (*Rev. internat. de Sociol.*, 1902); "Dietetic treatm. of digestive disturb." (*Petersb. Med. Woch.*, 1911).

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Contrib.—"Embryol. of a Termite" (*J. Morphol.*, 1900); "Effects of early removal of heart and arrest of circulation on frog embryo" (*Anat. Record*, 1907); "Origin and develop. of anterior lymph hearts and subcutaneous lymph sacs in frog" (*Ib.*, 1908); "New and sensitive method of injecting small embryos, etc." (*Ib.*, 1908); etc.

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LAND, WILLIAM J. G., Assist. Prof. of Bot., Univ. Chicago, Ill., U.S.A.

B. 1865, Alton, Ind. *Educ.* Pub. Sch.; Rome (Ind.) Acad.; Univ. Chicago. S.B. 1902, Ph.D. 1904 (Chic.). *Soc.*—Bot. Amer.; F.A.A.; Ill. Acad. Sci. *Late* Three exped. to Mexican tropics, 1906, 1908, 1910; Bot. explor. South Seas, 1912.

Contrib.—"Morph. study of Thuja" (*Bot. Gaz.*, 1902); "Spermatogen and oogen. in Ephedra" (*Ib.*, 1904); "Fertil. and embryog. in Ephedra" (*Ib.*, 1907); "Origin of air chambers" (*Ib.*, 1907).

LUCAS, RICHARD CLEMENT, Cons. Surg., Guy's Hosp. and Evelina Hosp. for Childr., London; Mem. Counc., P.V.-P., Roy. Coll. Surg. Eng.

50, Wimpole Street, London, W.; and Oaklands, Midhurst, Sussex.

B. 1846. F.R.C.S.; B.S., M.B. (Lond.). *Soc.*—Hon. Corresp. Mem. Surg. Paris; Fell. Roy. Med.; Hunterian (P.P.). *Late Lect.* on Anat. and Surg., Guy's Hosp. Med. Sch.; Examr. in Anat., Univ. London and Roy. Colls.

Contrib.—"Normal arrangement of Brachial Plexus of Nerves," 1875; "An undescribed groove on the Sphenoid," 1894; "Joint dis. in Infants due to Purulent Ophthalmia," 1899; and others on hare-lip and double-lip, kidney operations, etc.

McCLURE, JAMES CAMPBELL, Physician, Margaret St. Hosp. for Consump.

41, Welbeck St., Cavendish Sq., London, W. *Educ.* Univs. Glasgow, Berlin. M.B., C.M., 1896; M.D., 1909 (Glas.). *Soc.*—Roy. Med.

Art.—"Clin. Bact." in City of Glasgow Plague Rept., 1901. *Contrib.*—Numerous.

MCGREGOR, RICHARD C (RITENDEN), Ornith., Bur. Sci., Manila, P.I.

B. 1871, Sydney, Australia. *Educ.* Stanford Univ. A.B. 1898. *Soc.*—Fell. Amer. O. U.; Mem. Roy. Austral. O. U.; Cooper Ornith. Club. *Book.*—"Man. of Philippine Birds."

MARTENS, FRIEDRICH FRANZ, Prof. of Phys., Comm. H. Sch., Berlin.

Spandauer Str. 1, Berlin C., Ger.

B. 1873, Christineuhof, Meckl.-Schwerin. *Educ.* Gymns. Waren, Doberau; Univs. Rostock, Berlin, Jena. Ph.D. 1896. *Late Priv. Doz.*, 1901, Univ. Berlin; *Dir.* of Phys. Inst., Univ. Rostock, 1905—06.

Books.—"Phys. of Electrotech.," 2 vols. 1913. *Contrib.* to *Ber. Deut. Phys. Ges.*, *Ann. d. Phys.*, etc., on influ. of at. wt. on dispersion of ultra-violet rays, photometry, polarisation apparatus, etc.

MRÁZEK, ALOIS, Prof. of Zool., Bohem. Univ., Prague.

Dreoni 381, Prague II., Bohemia.

B. 1868. Ph.D.

NĚMEC, BOHUMIL, Prof. of Anat. and Physiol. of Plants, Bohem. Univ., Prague.

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B. 1873. Ph.D.

NOVÁK, KAREL, Ord. Prof. of Electrotech. Constr., Bohem. Tech. H. Sch., Prague.

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B. 1867.

NUŠL, FRANTIŠEK, Ord. Prof. of Math., Bohem. Tech. H. Sch., Prague.

Král. Vinohrady 1226, Prague, Bohemia.

B. 1867.

ODENBACH, FREDERIC, Founder of Jesuit Seismol. Service.

St. Ignatius Coll., Cleveland, O., U.S.A.

PETRIK, JOSEF, Ord. Prof. of Geod., Bohem. Tech. H. Sch., Prague.

Praha II., Václavská ulice čis. 1779, Prague, Bohemia.

PRAVDA, ANTONIN, Prof. of Machine Constr., Bohem. Tech. H. Sch., Prague, Bohemia.

B. 1846.

PREIS, KAREL, Prof. of Anal. Chem. Bohem. Tech. H. Sch., Prague, Bohemia.

B. 1846.

PURKYŇNÉ, CYRIL Ritter v., Ord. Prof. of Miner. and Geol., Bohem. Tech., H. Sch., Prague.

Třebízského ulice čis. 1154, Smichov, Bohemia.

B. 1862.

ŠLECHTA, MICHAEL, Ord. Prof. of Ry. Machine Constr., Bohem. Tech. H. Sch., Prague.

Bydli Vršovice, roh Háčkova a Srbské ulice čis. 582, Prague, Bohemia.

B. 1862.

SMITH, CHARLES HENRY, Assist. Princ. of Hyde Park (Chicago) High Sch.; Ed. *Sch. Sci. and Math.*

5406, Dorchester Ave., Chicago, Ill., U.S.A.

B. 1861, Mexico, N.Y. *Educ.* Univ. Cornell. M.E. 1885 (Cornell). *Soc.*—F.A.A.; Assoc. Amer. Physiol.; Ill. Acad. Sci.; New England Assoc.; Centr. Assoc. Sci. and Math. Teachers (P.P.).

ŠOLIN, JOSEF, Mem. Bohem. Acad. Sci.; Prof. of Mech., Bohem. Tech. H. Sch., Prague, Bohemia.

B. 1841.

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McGee
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Terao
Walker, G. T.**Australasia**Angenheister
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Bidschof
Ernst
Fényi
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France

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Germany

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Bayley, W. S.
Becker, G. F.
Berkey
Bowie
Bownocker
Branner
Branson
Brigham, A. P.
Brooks, A. H.

**GEOLOGY AND
MINERALOGY (Contd.)**

U.S.A. (Contd.)

Brown, C. W.
Buehler
Campbell, M. R.
Carney
Case
Chamberlin
Clark, W. B.
Clarke, J. Mason
Cleland
Cornwall
Crosby
Cross
Dall
Daly
Dana, E. S.
Darton
Davis, C. A.
Davis, W. M.
Diller
Dodge
Eastman
Fairchild, H. L.
Faris
Farrington
Fennemam
Gannett
George
Gilbert
Gill
Glenn
Goldthwait
Gould, C. N.
Grabau
Grant
Graton
Gregory, H. E.
Hall, C. W.
Harris, G. D.
Hitchcock
Hobbs
Hollick
Holmes
Hopkins, T. C.
Iddings
Irving
Jackson, R. T.
Jaggard
Kay
Keith
Kemp, J. F.
Knowlton
Kraus, E. H.
Kunz
Landes
Lanc, A. C.
Lawson, A. C.
Leith
Leonard
Leverett
Lindgren
Louderback
Mathews
Matthes
Mendenhall, W. C.
Merriam
Miller
Moses
Ohern
Osborn, H. F.
Palache
Peck

**GEOLOGY AND
MINERALOGY (Contd.)**

U.S.A. (Contd.)

Penrose
Perkins, G. H.
Phillips
Pirsson
Prosser
Ransome
Reid, H. F.
Rice, W. N.
Ries
Riggs
Rogers
Rolfe, C. W.
Rowe
Ruedemann
Savage
Schuchert
Scott, W. B.
Shattuck, G. B.
Shimer
Smith, E. A.
Smith, G. O.
Smith, J. P.
Smyth
Snider
Spencer, A. C.
Spencer, J. W. W.
Stanton
Stevenson, J. J.
Stewart, C. A.
Swartz
Talbot, M.
Tarr
Taylor, F. B.
Todd
Turner, H. W.
Van Hise
Van Horn
Vaughan
Walcott
Warren
Westgate
Williams, H. S.
Williston
Winchell, A. N.
Winchell, N. H.
Wolf, J. E.

**GYNACEOLOGY
AND OBSTETRICS.**

Asia

Das
Kinoshita

Austria-Hungary

Börner
Kleinhaus
Knauer
Mars
Pawlik
Schauta
Wertheim

Belgium

Fraipont

Denmark

Meyer, L.

**GYNACEOLOGY AND
OBSTETRICS (Contd.)**

France

Audebert
Bar
Champertier de Ribes
Doléris
Guéniot
Guérin-Valmale
Lefour
Oui
Pinard
Porak
Pozzi
Ribemont-Dessaignes
Roland
Vallois

Germany

Ahlfeld
Bayer
Bumm
Döderlein
Fasbender
Fehling
Franqué
Franz
Freund
Fritsch
Henkel
Hofmeier
Jung
Krönig
Krocmer
Küstner
Martin, A.
Menge
Olshausen
Sarwey
Schultze, B.
Seitz
Sellheim
Sigwart
Stocckel
Stumpf
Veit
Voigt, J. E.
Werth
Winter
Zangemeister
Zweifel

Great Britain

Briggs, H.
Byers
Champneys
Corby
Croom
Dempsey, A.
Donald
Kynoch
Lyle
Malins
Phillips, J.
Roberts, D. L.
Simpson, A. R.
Smyly
Stephenson, W.
Swayne, W. C.

Holland

Kouwer
Nijhoff, G. C.
Treub

GYNAECOLOGY AND
OBSTETRICS (*Contd.*)**Italy**

Alferi
Pestalozza
Sfameni
Truzzi

Norway

Brandt, K.

Spain

Bonafonte
Morales y Arjona
Pineda y Garcia
Tello

Sweden

Essen-Möller
Salin
Westermarck

Switzerland

Beuttner
De Seigneux
Herff
Wyder

U.S.A.

Bovée
Cabell
Clark, J. G.
Cragin
Edgar, J. C.
Fry
Green, C. M.
Hirst
Josephi
Kelly, H. A.
King
Montgomery
Painter
Peterson, R.
Somers
Spalding
Stavoly
Webster
Williams
Winn

**MATHEMATICS,
PURE AND APPLIED****Africa**

Breijer
Brown, A.
Crawford
Kent, T. P.
Muir, T.
Roseveare

Asia

Cultis
Fujisawa
Jurdak
Kawai
Kaye
Miwa
Moody
Nagaoka
Takagi

**MATHEMATICS, PURE
AND APPLIED (*Contd.*)****Australasia**

Carslaw
Chapman, R. W.
Gabbatt
Lamb, S. E.
Michell
Nanson
Picken
Richards, D. J.
Ross
Segar

Austria-Hungary

Adler, A.
Beke
Blaschke
Blažok
Bohnicsek
Carda
Czuber
Dantscher
Daublebsky
Denizot
Escherich, G.
Fejér
Finger
Frischauf
Grünwald
Hocevar
Janisch
Jarolimek
Laska
Lerch
Mertens
Müller, E.
Nušl
Petr
Pick
Puzyna
Rados
Schmid
Simony
Sobotka
Šolin
Tilšer
Vančėk
Waelsh
Wirtinger
Zaremba
Zindler
Zorawski

Belgium

Brand, E.
Deruyts
Hubert
Locht
Mineur
Neuberg

Bulgaria

Sourer
Stoianov

Canada

Baker
Dupuis
Fields
Harkness
Johnson, A.
Loudon
MacLean

**MATHEMATICS, PURE
AND APPLIED (*Contd.*)****Denmark**

Hansen
Heegaard
Hjelmster
Juel, C. S.
Nielsen
Valentiner
Zeuthen

France

Adhémar
Andrade
Appell
Borel
Boutroux
Cousin
Darboux
Dautheville
Demons
Drach
Fabry, E.
Fréchet
Hadamard
Humbert
Jordan
Lattés
Léauté
Lecornu
Montessus de Ballore
Nau
Ocagne
Painlevé
Petot
Picard, C. E.
Sauvage
Stoffaës
Villat

Germany

Ackermann-Teubner
Balsler
Beck
Bernstein, E.
Blumenthal
Boehm
Brendel
Bretschneider
Brill
Brunn
Burkhardt
Burmester
Cantor
Dedekind
Dingeldey
Disteli
Doehlemann
Dyck
Engel
Faber
Fensterwalder
Fischer
Frege
Fricke
Frobenius
Furtwängler
Gillmer
Gracfe
Grassmann
Günther
Gutzmer
Haentzschel
Haid

MATHEMATICS, PURE
AND APPLIED (*Contd.*)Germany (*Contd.*)

Hausdorff
 Haussner
 Heffter
 Heger
 Helm
 Hensel
 Herglotz
 Hettner
 Hilbert
 Hölder
 Horn
 Jahnke
 Jolles
 Kiepert
 Killing
 Klein
 Kneser
 Knoblauch
 Koenigsberger, L.
 Krause
 Krazer
 Kriemler
 Krüger
 Lampe
 Landau
 Landsberg
 Lehmann-Filhés
 Lilienthal
 Lindemann
 London
 Lorenz
 Ludwig
 Mangoldt
 Mehmke
 Meyer
 Müller, H. F.
 Müller, R.
 Naetsch
 Netto
 Neumann, E.
 Neumann, K.
 Noether
 Papperitz
 Pasch
 Pochhammer
 Prandtl
 Pringsheim
 Prym
 Reye
 Rodenberg
 Rohn
 Rosanes
 Roost
 Roth
 Rothe
 Ruhm
 Runge
 Scheffers
 Schilling
 Schlesinger
 Schmidt
 Schönflies
 Schotten
 Schottky
 Schur
 Schwarz, H. A.
 Selling
 Stäckel
 Staude
 Stielckberger
 Study

MATHEMATICS, PURE
AND APPLIED (*Contd.*)Germany (*Contd.*)

Sturm
 Thomae
 Timerding
 Vahlen
 Volkmann
 Voss
 Weber, E.
 Wiener
 Winkelmann

Great Britain

Baker, H. F.
 Barnes, E. W.
 Barrell
 Bassett, A. B.
 Bennett, G. T.
 Berry, A.
 Besant
 Boulton
 Bowley
 Bragg
 Bromwich
 Brotherton
 Bryan, G. H.
 Burnside
 Campbell, J. E.
 Carey
 Caunt
 Chrystal
 Cotterill
 Cowell
 Crofton, M. W.
 Dixon, A. C.
 Dixon, A. L.
 Edwards
 Egan
 Elliott
 Eason
 Filon
 Forsyth
 Fraser
 Gallop
 Genese
 Gibson
 Goodwin, J. H. H.
 Grace
 Greenhill
 Greenstreet
 Hardy, G. H.
 Hardy, W. B.
 Havelock
 Heath, R. S.
 Heath, T. L.
 Heawood
 Henricl
 Herman
 Hill, M. J. M.
 Hilton, H.
 Hobson
 Jeans
 Jessop
 Jones, D. C.
 Kempe
 Lamb, H.
 Larmor
 Leahy
 Leathem
 Leudesdorf
 Lodge, A.
 Loney

MATHEMATICS, PURE
AND APPLIED (*Contd.*)Great Britain (*Contd.*)

Love
 MacDonald
 MacMahon
 McWeeney, H. C.
 Mathews, G. B.
 Miller, J.
 Minchin
 Nicholson
 Nicolson, J. T.
 Orr, W. M.
 Pearson, K.
 Perry, J.
 Ramsey
 Richmond
 Russell, B. A. W.
 Steggall
 Swanwick
 Tanner, H. W. L.
 Tarleton
 Wallis, A. J.
 Whitby
 Whittaker
 Willis, A. R.
 Whitehead, A. N.
 Wrapson
 Young, W. H.

Holland

Brouwer
 Cardinaal
 Kapteyn, W.
 Kluyver
 Schuh
 Versluys
 Vries, H. de
 Vries, J. de
 Wind, C. H.

Italy

Abraham, M.
 Albeggiani
 Amodeo
 Castelnuovo
 Ciani
 D'Arcais
 Fano, Gino
 Favaro
 Gerbaldi
 Guccia
 Lauricella
 Levi-Civita
 Loria
 Maggi
 Marcolongo
 Martinetti
 Pascal
 Peano
 Pennacchietti
 Pincherle
 Pittarelli
 Ricci
 Saviotti
 Segre
 Severi
 Tedone
 Venturi
 Veronese
 Vivanti

**MATHEMATICS, PURE
AND APPLIED (Contd.)**

Norway

Birkeland
Bjerknes
Guldberg
Palmstrøm
Sinding
Størmer
Sylov
Thūe

Portugal

Andrea
Costa e Almeida
Cunha, A.
Cunha, P.
Lucas, S.
Moraes, C.
Sequeira

Roumania

Haret
Pangrati

Russia and Finland

Andreev
Bukreew
Kojalovič
Liapunov
Markov
Sintsof
Sochockij
Sonin
Steklov
Tschaplygin
Woronetz
Zukowsky

Servia

Petrovitch

S. and C. America

Broggi
Capelo

Spain

Octavio
Lopez y Dominguez
Torroja
Vegas

Sweden

Bendixson
Brodén
Dunér
Ekman
Koch
Mittag-Leffler
Sidenbladh
Wiman

Switzerland

Cailler
Daniels
Dupasquier
Fehr
Franel
Fueter
Geiser
Graf
Grossmann
Hirsch
Huber
Hurwitz

**MATHEMATICS, PURE
AND APPLIED (Contd.)**

Switzerland (Contd.)

Jaquero
Kinkelin
Kolross
Ott
Rudio
Weiler, A.
Zermelo

U.S.A.

Aley
Allardice
Allen, D. R.
Archibald
Ashton
Austin
Bartlett
Bartes
Basquin
Becker, A. J.
Beman
Benedict
Birkhoff
Blichfeldt
Böcher
Bohlmann
Bolza
Bouton
Bradshaw
Brenke
Brown, E. W.
Brown, S. J.
Bullard
Byerly
Cain
Cajori
Chandler
Coble
Cole, F. N.
Conant
Crawley
Curtiss
Cushing
Daniels
Davis, E. W.
Davis, N. F.
Defoe
Dickson, L. E.
Dowling
Echols
Eddy
Edwards
Eichelberger
Eiesland
Eisenhart
Emch
Evans
Ferry
Field
Fine
Fisher
Fiske
Fite
Ford
Franklin, F.
Gillespie
Green, R. L.
Hall, A. G.
Harlett
Halsted, G. B.
Hancock, H.
Haskell

**MATHEMATICS, PURE
AND APPLIED (Contd.)**

U.S.A. (Contd.)

Hawkes
Holgate
Hoskins
Hulburt
Hutchinson
Karpinski
Kasner
Keyser
Landry
Lehmer
McClintock
Maclay
Macley
McMahon
Manning
Metzler
Miller
Mitchell
Moody, W. A.
Moore, E. H.
Moreno
Moritz, R. E.
Morley, F.
Morley, W. L.
Nicholson
Olds
Osgood
Page, J. M.
Peirce, B. O.
Pierpont
Porter, M. B.
Richardson, R. G. D.
Rietz
Roe
Schwatt
Scott, C. A.
See
Shattuck
Shaw, J. B.
Sisam
Skinner, A. N.
Slichter
Smith, A. G.
Smith, D. E.
Smith, P. F.
Smith, W. B.
Snyder, V.
Stecker
Swartzel
Taber
Tanner, J. H.
Thompson, H. D.
Townsend
Tyler, H. W.
Van Vleck
Veblen
Weld
Westlind
Wilczynski
Wilson, E. B.
Wilson, E. J.
Woodward, R. S.
Young, J. W.

MEDICINE.

(See also other Medical Subjects)

Africa

Beck
Chalmers

MEDICINE (Contd.)**Africa (Contd.)**

Clark
Keatinge
Pinching
Pitchford
Rogers, J. G.
Sergent
Stevenson
Wilson, A. M.

Asia

Aoyama
Araki
Asahina
Buchanan
Castellani
Childe
De Haan
Doi
Graham, H.
Irisawa
Jarcja
Kasahava
Katayama
Melville, C. H.
Miura
Nakanishi
Ogata
Okada
Perry, A.
Rutherford
Strong, R. P.
Sutherland, D. W.
Suto
Tokishige
Tsuno
Walker
Yokote

Australasia

Champtaloup
Colquhoun
Jones, P. S.
MacLaurin, H. N.
Maudsley
Mills, A. E.
Ogston
Verco

Austria-Hungary

Bujwid
Chiari, O.
Dittrich
Epstein
Finger
Frankenberger
Hnátek
Hueppe
Jaksch
Janovsky
Jaworski
Kabrhel
Kolisko
Korányi, A.
Korányi, F.
Kratte
Kreibich
Kučera
Langer, J.
Liebermann
Lukasiewicz
Machek
Maixner
Merk

MEDICINE (Contd.)**Austria-Hungary (Contd.)**

Nékam
Neuburger
Noorden
Pauli
Pfeiffer
Pirquet
Poltzer
Prausnitz
Procházka
Raudnitz
Riehl
Schattenfroh
Schmidt, R.
Slavik
Szontagh
Tendrassik
Urbantschitsch
Winternitz

Belgium

Carpentier
Coppez
Dallemagne
De Smet
Francotte
Hauben
Putzeys
Rommelaere
Sacré
Schiffers

Canada

Birkett
Cunningham, N. F.
Ellis, W. H.
Finley
Grant, J. A.
Lafleur
McPhedran
Orr, R. B.
Rudolf, R. D.
Starkey

Denmark

Erlandsen
Faber
Gram
Reyn
Thomsen
Walbum

France

Ambiel
Arloing
Arnozan
Audry
Babinski
Badal
Balzer
Barrier
Baumel
Béclère
Benjamin
Bertin-Sans
Bézy
Blanchard
Bouchard
Brault
Carrieu
Chantemesse
Chauffard
Chauveau
Chavannaz
Combemale

MEDICINE (Contd.)**France (Contd.)**

Courmont
Coutière
Darier
Debove
Denucé
Dubrenilh
Duplay
Estor
Fabre, P. P. S.
Faivre
Ferré
Fournier
Francois-Franck
Frenkel
Gauenher
Gidoh
Gilbert
Granel
Guilhem
Hallopeau
Hayem
Hutinel
Kaufmann
Kirmisson
Landouzy
Laveran
Layet
Le Dentu
Lemoine
Lermoyez
Letulle
Lcvaditi
Lucas-Champonnière
Magnan
Martin, L.
Millardet
Monprofit
Morel
Mosny
Mosse
Netter
Olmer
Patoir
Perrin
Pettit
Pitres
Railliet
Rauzier
Ribemont-Dessaignes
Richelot
Robin
Roux
Saint-Ange
Sarda
Sebileau
Thoinot
Treille
Triboulet
Troisier
Vaillard
Vallin
Villar
Ville
Vincent
Wurtz

Germany

Bäumler
Baginsky
Bail
Behring
Bessel-Hagen

MEDICINE (Contd.)

Germany (Contd.)

Bloch
 Bonhoff
 Brauer
 Brieger
 Buchholz
 Bürkner
 Czerny, A.
 Damman
 Denker
 Dieudonné
 Doutrellepont
 Dunbar
 Eber
 Eddmann
 Ehrlich
 Eicken
 Emmerich
 Esser
 Ewald, A.
 Fessler
 Fiedler
 Finkler
 Fleiner
 Fraenkel, A.
 Fraenkel, K.
 Fülleborn
 Fürbringer
 Gärtner
 Gaffky
 Goldscheider
 Grashey
 Günther, C.
 Hahn, M.
 Helferich
 Hildebrand, H.
 Hirsch
 Hoffmann
 Hofmann, F.
 Hoppe-Seyler
 Jamin
 Kaup
 Killian
 Kirchner
 Kisskalt
 Klemperer
 Klimmer
 König, J.
 Körner
 Körte
 Kossel
 Kraus, F.
 Krause, P.
 Krückmann
 Kruse
 Kümmel
 Lange
 Laqueur
 Leber
 Lehmann
 Lesser
 Leube
 Levy
 Lichtheim
 Loeffler
 Lüthje
 Lydtin
 Martius
 Matthes
 Meinhard v. Pfaundler
 Mendelsohn
 Menge
 Mense

MEDICINE (Contd.)

Germany (Contd.)

Messerer
 Meyer, F.
 Meyer, G.
 Minkowski
 Moeli
 Moeller, A.
 Moritz
 Müller, F.
 Müller, O.
 Neisser
 Neumann, E.
 Neumann, O. R.
 Nocht
 Opitz
 Ostmann
 Partsch
 Passow, A.
 Penzoldt
 Pfeiffer, L.
 Pfeiffer, R.
 Pohl
 Quincke
 Rahts
 Reichenbach
 Reiss
 Rille
 Romberg
 Rose, E.
 Rumpf
 Sachs, H.
 Salkowski, E.
 Salomon
 Schär
 Schittenheim
 Schjerning
 Schlossmann
 Schmidt, A.
 Schmidt, E.
 Schottelius
 Schreiber
 Schultze, F.
 Seifert
 Sommer
 Spatz
 Steyrer
 Stintzing
 Stoeltzner
 Strasburger, J.
 Strassmann
 Strübing
 Sudhoff
 Tobler
 Ungar
 Unverricht
 Vierordt
 Vogt
 Voit, F.
 Wagenhäuser
 Walb
 Walthard
 Wassermann
 Werner
 Wolf, K.
 Wolf
 Wolters
 Ziemann

Great Britain

Abraham
 Alcock
 Allbutt

MEDICINE (Contd.)

Great Britain (Contd.)

Anderson, Mrs. G.
 Anderson, I. H.
 Anderson, L. E.
 Andrews, H. R.
 Babbie
 Barlow, T.
 Barr, J.
 Bashford
 Bastian
 Beddard, A. P.
 Benson
 Blair, J. A.
 Bolam
 Bradbury
 Bradford
 Branthwaite
 Brindley
 Browne
 Brunton, L.
 Buchanan
 Burgess
 Cameron, C. A.
 Cameron, J. S.
 Carter
 Church, W. S.
 Clarke, J. Michell
 Cockburn
 Collie
 Copeman
 Corby
 Corker
 Coutts
 Cowan, J.
 Cox, M. F.
 Crosby
 Cummins
 Dalton
 Daniels, C. W.
 Davidson
 Donkin
 Douglas, C. C.
 Downes
 Duckworth
 Eade
 Edgeworth
 Elliott
 Finlay
 Fletcher, H. M.
 Fowler, J. K.
 Garrod
 Glaister
 Gowers
 Hall
 Hamer
 Hastings
 Hathaway
 Hay, M.
 Haydon
 Head
 Hill, A. B.
 Hope
 Hopewell-Smith
 Humphry
 Hunt, J. M.
 Hurry
 Jones
 Kenny
 Kenwood
 Kirkpatrick
 Laking
 Latham
 Lawrence

MEDICINE (Contd.)**Great Britain (Contd.)**

Legge
 Little, J.
 Long
 Longhurst
 Lovell
 Luff
 MacAlister
 MacCabe
 McCall
 Mackenzie, D.
 Mackintosh
 Macleod
 McVail
 Manby
 Manson
 Marsden
 Martin, S. H. C.
 Melville
 Milligan
 Moody, J. M.
 Moore, J. W.
 Moritz, S.
 Mott
 Murphy
 Murray, G. R.
 Nash
 Newsholme
 Newton, H. W.
 Nixon
 O'Keefe
 Osler
 Owen, I.
 Parker, R.
 Perry, E. C.
 Philip
 Philipson
 Pilkington
 Pinch
 Pollard, G. H.
 Porter, J.
 Powell, R. D.
 Power
 Pringle
 Pye-Smith
 Ransome
 Raye
 Reid, J.
 Roberts, J. L.
 Robertson, G. S.
 Ross
 Saleeby
 Sambon
 Sandwith
 Saundby
 Sawyer
 Semon
 Sequeira
 Simon, R. M.
 Smith, F. J.
 Smith, W. R.
 Sommerville, D.
 Sprigge
 Steell
 Stephens
 Still
 Stockman, S.
 Taylor, E. H.
 Taylor, W. B.
 Thompson, W. J.
 Thomson, St. C.
 Thornton
 Thresh

MEDICINE (Contd.)**Great Britain (Contd.)**

Tomes
 Tuke
 Wall
 Wanhill
 Weber, H.
 Whitelegge
 Whitfield
 Willcox
 Williams, C. T.
 Williams, J.
 Williams, R. P.
 Woodhouse

Holland

Burger
 Eijkman
 Klein, A.
 Mendes da Costa
 Pcl
 Talma
 Van Ledden Hulsebosch
 Wertheim Salomonson

Italy

Bacelli
 Bastianelli
 Breda
 Campana
 Carrara
 Celli
 Colombini
 Concetti
 De Giovanni
 De Rossi
 Ferreri
 Giuffrè
 Gradenigo
 Gualdi
 Maggiora
 Magnanini
 Masini
 Massci
 Mingazzini
 Ottolenghi
 Sabbatani
 Sanfelice
 Tamassia

Norway

Aaser
 Boeck
 Borthen
 Bull, E.
 Daae
 Faye
 Frølich
 Furst
 Gade
 Geirsvold
 Grøn
 Gumprecht
 Hanssen, K.
 Hanssen, O.
 Hansteen
 Holmboe
 Holst, A.
 Holth
 Johannesen
 Laache
 Lie
 Natvig

MEDICINE (Contd.)**Norway (Contd.)**

Scheel
 Schiøtz, H.
 Sinding-Larsen
 Tanberg
 Uehermann
 Winge, P. E.

Portugal

Azevedo Neves

Russia and Finland

Chereffkoff
 Cherwinsky
 Georgiewsky
 Jarotzki
 Kosinski
 Podvysozky
 Popow
 Sirotinin
 Skvortzov
 Tichomirow
 Troitzky
 Vertogradoff

S. and C. America

Chagos
 Cruz
 Fernandez
 Gorgas
 Guiteras

Spain

Peset
 Santos Fernandez

Sweden

Almqvist
 Edgren
 Henschen
 Hildebrand, C. H.
 Holmgren
 Key-Aberg
 Lundgren
 Overton
 Petren
 Wern
 Zander

Switzerland

Bard
 Burckhardt
 Busse
 Egger
 Feer
 Hagenbach-Burckhardt
 Herff
 Jadassohn
 Kummer
 Mégevand
 Noyer
 Oltramare
 Roth, M.
 Roth, O.
 Sahli
 Schiess
 Siebenmann
 Silberschmidt
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Cavazzani
Fano, Giulio
Luciani
Magini
Stefani

Malta

Samut

Norway

Torup

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Athias
Camara
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Russia and Finland

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Kuliabko
Morochowetz
Pavlov
Tigerstedt

S. and C. America

Celestino

Spain

Gredilla
Torremoella

Sweden

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Johannson
Øhrvall
Thunberg

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Hall, W. S.
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Canada

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Clarke, C. K.

Denmark

Friedenreich
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France

Bergson
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Dumas
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Janet
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Silva Cordeiro

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 Warren, H. C.
 Watson, J. B.
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SEISMOLOGY

(*See Geology*)

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 Riedel
 Rosenbach
 Sonnenburg
 Stich
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 Trendelenburg
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 Ball, C. B.
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 Barling
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 MacNeece
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 Ogston
 Ormsby
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 Paul
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 Pendlebury
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 Purefoy
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 Teale
 Thomson, Al.
 Thornton
 Townsend, E.
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 Underwood
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 Welch, G.
 Wherry
 Whitehead
 Wilson, W. D.
 Woolfries
 Wright, G. A.

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Koch, C. F. A.
 Lameris
 Lanz
 Rotgans

Italy

Bassini
 D'Antona
 Durante
 Negri
 ParlaVecchio
 Romano
 Salomoni
 Tansini
 Vachetta

Norway

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 Bull, P. N.
 Nicolaysen
 Sandberg
 Strøm

Portugal

Feijão
 Gentil, F.
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Russia and Finland

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 Lewschin
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 Pavlovsky
 Spijarny
 Weliaminov
 Zoeger

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Åkerman
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 Borelius

Switzerland

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 Sauereruch
 Schlatter
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 McKee, A. B.
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 Kampen
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 Sasaki
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Heller
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Marktanner-Turnetscher
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Seidlitz
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Spangenberg
Spemann
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Taschenberg
Thesing
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Virohow
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 Harvie-Brown
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 Mitchell, P. C.
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Norway

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 Wilson, E. B.
 Wilson, H. V. P.
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The Editor,

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England.

Address.....

Date

On inspection of the 1914 issue, I,.....
am unable to find mention of the following persons who, in my considered
opinion, are worthy of inclusion in the book.

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