trons in the space between the electrodes. No one of the eight sets of data is satisfactorily represented by equation (1) if the value of the temperature T is taken 10 per cent. in error.

The range of the measurements which have been made thus far is as follows:

1440° K.—1.0×10^{-11} amp. saturation current to 1.0×10^{-14} amp. at 1.02 volts.

2475° K. — $.24 \times 10^{-3}$ amp. saturation current to 2.0×10^{-14} amp. at 5.35 volts.

Data are still to be taken at temperatures below 1440° K. and above 2475° K., and at all temperatures the range of the measurements may be somewhat extended by further refinements to eliminate some of the disturbing factors which are still present.

L. H. GERMER
RESEARCH LABORATORIES OF THE
AMERICAN TELEPHONE AND TELEGRAPH
COMPANY, INC.
AND THE WESTERN ELECTRIC COMPANY, INC.
MARCH 5, 1923

THE AMERICAN PHYSIOLOGICAL SOCIETY

THE thirty-fifth annual session of the American Physiological Society met at the University of Toronto, Toronto, Canada, December 27, 28 and 29, 1922. The scientific meetings were held in the physiological lecture room of the University of Toronto. There were six scientific sessions lasting through three days with over seventy-five titles. Two of these sessions were combined programs in which the physiologists joined with the biochemists, pharmacologists and pathologists of the Federation of American Societies for Experimental Biology. Of the sessions the combined program of the last afternoon discussing various aspects of the internal secretion of the pancreas and its physiological rôle in the body aroused the greatest enthusiasm and the largest general attendance. The individual programs as a whole were of high quality and of the usual variety, covering all fields of physiological endeavor. The American physiologists are justly proud of the high standard of the research contributions.

The most important business transacted at the annual session was the following:

Dr. William T. Porter, of Harvard University, continued his research fellowship grant of $1,200. The council announced the appointment to this fellowship for the year 1922-23 of Miss Florence B. Seibert. The occupant of the fellowship under the terms of the grant is privileged to choose any research laboratory in which to carry forward the researches. Miss Seibert elected to work under the guidance of Professor L. B. Mendel, of Yale University.

It was announced by the council that Dr. William T. Porter had donated to the society all the remaining volumes and plates of the *American Journal of Physiology* issued under his editorship. This generous grant puts the society in possession of all the reserve sets of the *American Journal of Physiology.*

The council reported before the society that the *American Journal of Physiology,* now in its sixty-fourth volume, and *Physiological Reviews,* now in its third volume, were both at the present time self-supporting with a sufficient credit balance to maintain publication on a very stable basis. The commendable financial condition of the journals is largely credited to the conservative and skilful financial management of the managing editor, Dr. Donald R. Hooker, of Baltimore. As an expression of appreciation by the membership of the society as a whole, Dr. Hooker was given an enthusiastic vote of thanks for his unselfish and tireless labors in maintaining not only the financial success but the high research ideals and standards of publication in the journals of the society.

Dr. Donald R. Hooker was elected managing editor of the *American Journal of Physiology* for the year 1923. The board of editors for *Physiological Reviews* designated for 1923 consists of:

William H. Howell, Johns Hopkins School of Hygiene, *chairman*; Donald R. Hooker, Baltimore; J. J. R. Macleod, University of Toronto; L. B. Mendel, Yale University; Reid Hunt, Harvard University; H. Gideon Wells, University of Chicago; Walter J. Meek, University of Wisconsin.

Professor A. J. Carlson, University of Chicago, was nominated representative of the society on the National Research Council.

The following scientists were elected to membership in the society:

Thomas Addis, M. D., professor of medicine, Stanford University.

Janet Howell Clark, A.M., Ph.D., associate in physiological hygiene, School of Hygiene, Johns Hopkins University.

Roger Sanford Hubbard, A.M., Ph.D., biological chemist, Clifton Springs Sanitarium, Clifton Springs, N. Y.

David Rapport, M.D., fellow of the National Research Council, 1922-23.

M. H. Rees, A.M., Ph.D., M.D., professor of physiology and pharmacology, University of Colorado.

Norman B. Taylor, M.B., M.R.C.S., F.R.C.S., assistant professor of physiology, Toronto University.

J. Earl Thomas, M.D., associate professor of physiology, St. Louis University.

The officers elected for the year 1923 are:

President, Anton J. Carlson, University of Chicago.

Secretary, Charles W. Greene, University of Missouri.

Treasurer, Joseph Erlanger, Washington University, St. Louis.

Arnold B. Luckhardt, University of Chicago, and John R. Murlin, University of Rochester, were elected to membership in the council of the society.

The following resolutions were presented and voted by the society:

Resolved: That the American Physiological Society strongly approves the full international character of the Physiological Congress at Edinburgh, and that we heartily support the efforts of the organization committee in that attitude.

Resolved: That the Physiological Society extend an invitation to the International Physiological Congress of 1926 to meet in America.

Resolved: That the American Physiological Society express to the local committee and especially to its chairman, Dr. Henderson, their appreciation of the excellent management of the meetings and of the delightful entertainment provided, which place the Toronto meeting among the most successful and enjoyable in the history of the society.

SCIENTIFIC PROGRAM

The topics rendered in the scientific program are completely listed below:

The significance of the dual function of hemoglobin in relation to the mechanism of the chemical regulation of respiration: ROBERT GESELL, Washington University, St. Louis.

Circulatory changes in experimental dehydration: N. M. KEITH, Mayo Foundation.

The effect of anoxemia on metabolism: E. J. KOEHLER (by invitation), E. H. BRUNQUIST (by invitation), and A. S. LOEVENHART, University of Wisconsin.

Some effects of strychnine and physostigmine upon the blood picture: C. W. EDMUNDS and PUTNAM C. LLOYD (by invitation), University of Michigan.

On the existence of a hitherto unknown nutritive factor essential for reproduction: H. N. EVANS and K. SCOTT BISHOP (by invitation), University of California.

A comparison of the effects of the injection of gum acacia solution and of the transfusion of blood on the oxidative power of the brain as indicated by alterations in temperature after the injection of adrenalin: GEORGE W. CRILE, AMY F. ROWLAND (by invitation), and S. W. WALLACE (by invitation), Cleveland Clinic.

The respiratory quotient and basal metabolism following removal of the liver and glucose injection: F. C. MANN, Mayo Foundation.

On the physical properties, daily amount and rate of secretion of human pancreatic juice: A. B. LUCKHARDT, FRED STANGL (by invitation), and F. C. KOCH (by invitation), University of Chicago.

Respiratory exchange studies under ether narcosis: T. K. KRUSE, University of Pittsburgh.

The basal metabolism of girls from eleven to fourteen years of age: MARY SWARTZ ROSE and GRACE MACLEOD (by invitation), Teachers College, Columbia University.

On the local reflex mechanism and the nature of the segmental contractions in the small intestine: ALBERT KUNTZ (by invitation), and J. EARL THOMAS (by invitation), St. Louis University.

Electrical conductivity of living tissues as affected by the surrounding medium: S. C. BROOKS (by invitation), Washington, D. C.

Some X-ray studies on the heart: W. J. MEEK and J. A. E. EYSTER, University of Wisconsin.

The physiological action of ionizing radiations: ALFRED C. REDFIELD, Harvard Medical School.

On the cause of the initial rise in the basal metabolic rate during fasting: MARGARET KUNDE (by invitation), Chicago.

Influence of gonad hormones on the seminal vesicles: N. F. FISHER (by invitation), Chicago.

Effect of muscular activity on perfused adrenin: R. G. HOSKINS and E. P. DURRANT (by invitation), Ohio State University.

Effect of digestive enzymes on pituitary extract action: MAURICE H. REES (by invitation) and RICHARD WHITEHEAD (by invitation), University of Colorado.

Neuro-muscular activity in cretinoid sheep: SUTHERLAND SIMPSON and HOWARD S. LIDDELL (by invitation), Cornell University.

The cost of work in exophthalmic goiter: H. S. PLUMMER (by invitation) and W. M. BOOTHBY, Mayo Foundation.

The effect of thyro-parathyroidectomy and parathyroidectomy at 100 days of age on the growth of male albino rats: F. S. HAMMETT, Wistar Institute.

The pathogenesis of parathyroid tetany: L. R. DRAGSTEDT, University of Chicago.

The control and cure of parathyroid tetany: A. B. LUCKHARDT, P. ROSENBLOOM (by invitation), J. BLUMENSTOCK (by invitation), and B. GOLDBERG (by invitation), University of Chicago.

Increase in size at moulting: J. P. BAUMBERGER and J. M. D. OLMSTED, Stanford University.

The calorigenic action of adrenalin chloride: W. M. BOOTHBY and I. SANDIFORD (by invitation), Mayo Foundation.

The supposed relation of the adrenals to reflex volume changes in the denervated limb. (Lantern): G. N. STEWART and J. M. ROGOFF, Western Reserve University.

The supposed relation of the adrenals to the blood-pressure changes induced by cerebral anemia. (Lantern): J. M. ROGOFF and HELEN C. COOMBS, Western Reserve University and Columbia University.

Retinal mean local sign; a new view of the relation of the retinal mosaic to visual perception: F. W. WEYMOUTH, EMELIE E. ANDERSON (by invitation) and H. L. AVERILL (by invitation), Stanford University.

Chemical effects produced by passing electric currents through thin artificial membranes of high electrical resistance: R. S. LILLIE and S. E. POND (by invitation), Nela Research Laboratory.

Some physiological effects of saccharin: A. J. CARLSON, University of Chicago.

Delay in the response to the second of two stimuli in nerve, and in the nerve-muscle preparation: ALEXANDER FORBES, F. R. GRIFFITH (by invitation) and L. H. RAY (by invitation), Harvard Medical School.

Some characteristics of the action current in nerve: HERBERT S. GASSER and JOSEPH ERLANGER, Washington University, St. Louis.

Rapid intestinal absorption, without digestion, of a complex protein substance—tissue fibrinogen: C. A. MILLS, University of Cincinnati.

The effect of formaldehyde upon the vitamin content of milk: A. M. BLEILE and R. J. SEYMOUR (by invitation), Ohio State University.

The excitation of gastric secretion by application of substances to the duodenal mucosa: A. C. IVY and G. B. MCILVAIN (by invitation), Loyola University.

The behavior of the empty stomach in the mollusca: T. L. PATTERSON, Detroit College of Medicine and Surgery.

Study of pulse wave velocity in arteriosclerosis: JANE SANDS (by invitation), University of Pennsylvania.

The all-or-none character of minimal flexion reflex contractions in the spinal cord: E. L. PORTER, Western Reserve University.

The influence of insomnia, fasting, etc., on the kneejerk: MARY A. M. HAUPT (by invitation) and N. KLEITMAN (by invitation).

Experiments on the mechanism of action of insulin: J. J. R. MACLEOD, N. A. MCCORMICK (by invitation), E. C. NOBLE (by invitation) and K. O'BRIEN (by invitation), University of Toronto.

Quantitative parallelism of effect of insulin in man, dog, rabbit: F. H. BANTING (by invitation), C. H. BEST (by invitation), G. M. DOBBIN (by invitation) and J. A. GILCHRIST (by invitation), University of Toronto.

Delayed manifestation of the physiological effects of insulin following the administration of certain pancreatic extracts: J. B. COLLIP, University of Alberta.

Methods of administration of insulin: F. G. BANTING (by invitation), G. M. DOBBIN (by invitation) and MISS S. CAIRNS (by invitation), University of Toronto.

Methods of administration of pancreatic extracts to diabetic animals and man: C. CLYDE SUTTER (by invitation), C. B. F. GIBBS (by invitation) and JOHN R. MURLIN, University of Rochester.

The physiological assay of insulin: G. S. EADIE (by invitation), N. A. MCCORMICK (by invitation), MISS K. O'BRIEN (by invitation) and J. J. R. MACLEOD, University of Toronto.

The effect of voluntary contractions and of dermography on the number of visible capillaries of the human skin: G. N. TSANG, University of Minnesota.

PAPERS BY TITLE

Measurement of the circulation rate in man: H. W. HAGGARD and Y. HENDERSON, Yale University.

On Weichardt's supposed fatigue toxin: FREDERIC S. LEE and B. ARONOVITCH (by invitation), Columbia University.

The chemical regulation of the activities of the human kidney: E. F. ADOLPH, University of Pittsburgh.

Some conditions determining adrenal secretion:

F. A. HARTMAN, University of Buffalo.

Some effects of adrenalin on the perfused bullfrog heart: C. I. REED (by invitation), University of Kansas.

On the concentration of proteins in tissues: E. J. COHN, Harvard University.

The site of the anaphylactic reaction of the uterus: O. O. STOLAND, University of Kansas.

Certain factors affecting filtration through berkefeld candles: STUART MUDD, Harvard University.

Some effects of various environmental temperatures upon the blood of dogs: E. L. SCOTT and F. B. FLINN (by invitation), Columbia University.

Causation of the differential blood pressure in aortic regurgitation: H. C. BAZETT, University of Pennsylvania.

Bio-physical studies of the effects of adrenalin upon the temperature of the brain and of other organs and tissues: GEORGE W. CRILE and HUGO FRICKE (by invitation), Cleveland Clinic.

The motile state of the stomach of the monkey in hunger: T. L. PATTERSON and JESSIE ILLENDEN (by invitation), Detroit College of Medicine and Surgery.

The electrocardiogram in fasting dogs: H. C. LAWSON (by invitation), S. MORGULIS and A. E. GUENTHER, University of Nebraska.

On the relations of cortical and sub-cortical cerebral lesions to spastic phenomena in the marsupial: FRED T. ROGERS, Baylor University.

Relation of the ovary to the gravid uterus in the aplacental opossum: CARL HARTMAN, University of Texas.

Removal of the semicircular canals in baby chicks: L. B. NICE and C. L. FURROW (by invitation), University of Oklahoma.

Experiments on migration of bacteria: SHIELDS WARREN (by invitation) and STUART MUDD, Harvard University.

Administration of lactic acid following removal of the liver: F. C. MANN and T. B. MAGATH (by invitation), Mayo Foundation.

Certain features of the physiology of growth as illustrated by the lamellibranch tibela: F. W. WEYMOUTH, Leland Stanford Junior University.

A note on the control of the cardia in man: A. J. CARLSON, Chicago.

The influence of the cerebrum and cerebellum on decerebrate and ether rigidity: J. M. D. OLMSTED and W. P. WARNER (by invitation), Toronto.

Distribution of vitamin A in the digestive secretions and urine: ETHEL COOPER (by invitation), Chicago.

The after effects of prolonged fasting on gastric secretions: MARGARET M. KUNDE (by invitation), Chicago.

Electric capacity of the brain and other animal tissues: GEORGE W. CRILE and C. NUSBAUM (by invitation), Cleveland Clinic.

Heparin, an anticoagulant: W. H. HOWELL, Johns Hopkins University.

The effect of gymnasium exercises and athletic contests on the blood catalase: W. E. BURGE, University of Illinois.

DEMONSTRATIONS

Demonstration of the turning and caloric reactions on the isolated eye muscles of the rabbit, with some theoretical remarks: R. BARANY (by invitation), University of Upsala.

Horizontal eye movement produced from the cortex of the vermis in the rabbit: R. BARANY (by invitation), University of Upsala.

A simplified automatic and bloodless method of recording the volume-flow of blood: ROBERT GESELL, Washington University.

Filtration through frog-skin: TORALD SOLLMANN, Western Reserve University.

A new method for determining the clotting time of the blood: C. A. MILLS and M. F. PETERSON (by invitation), University of Cincinnati.

A method of estimating the thickness of cell membranes: HUGO FRICKE (by invitation), Cleveland Clinic.

Cinema demonstration of growth and gait of cretinoid sheep: H. S. LIDDELL (by invitation) and SUTHERLAND SIMPSON, Cornell University.

An apparatus for regulating the body temperature during operative procedures: MUNROE A. McIVER (by invitation), Harvard Medical School.

Note on a method of making simultaneous fast and slow drum records of fatigue: F. M. BALDWIN, Iowa State College.

The silver non-polarizable electrode adapted for use in electrocardiography: M. DRESBACH, Albany Medical College.

A gas analysis apparatus for use with chamber respiration apparatus: THORNE M. CARPENTER, Carnegie Nutrition Laboratory.

Hypoglycæmic symptoms: J. J. R. MACLEOD, University of Toronto.

Some small gas analysis apparatus: J. J. R. MACLEOD, University of Toronto.

Experiment showing effect of stretching on isotonic, isometric, cardiac muscle contractions: N. S. CLARK (by invitation) and V. E. HENDERSON, University of Toronto.

Some new experimental devices: D. E. JACKSON, University of Cincinnati.

CHARLES W. GREENE, *Secretary*