List of Contributors and Participants VIII
Preface XII

Introductory Remarks

Scharrer, B. (Bronx, N.Y.): The Concept of Neurosecretion Past and Present

Hypothalamus and Hormones

Scharrer, B. (Bronx, N.Y.): The Spectrum of Neuroendocrine Communication
Weitzman, E. D. (Bronx, N.Y.): Temporal Organization of Neuroendocrine Function in Relation to the Sleep-Waking Cycle in Man
Cross, B. A. (Bristol): Functional Identification of Hypothalamic Neurones
Ruoff, H.-J.; Gosbee, J. L. and Lederis, K. (Calgary): Substances Affecting the Release of Neurohypophysial Hormones
McCann, S. M.; Cooper, K.; Harms, P. G.; Libertun, C.; Negro-Vilar, A.; Ojeda, S. R.; Orias, R.; Moss, R. L.; Fawcett, C. P. and Krulich, L. (Dallas, Tex.): Control of Gonadotropin and Prolactin Secretion by Hypothalamic Releasing and Inhibiting Hormones

Contents VI

Van Loon, G. R. (Toronto): Brain Catecholamines in the Regulation of ACTH Secretion
Bala, R. M. (Calgary): Human Growth Hormone and Somatomedin
Tolis, G. and Friesen, H. G. (Montreal): The Control of Prolactin Secretion
Hayward, J. N. (Los Angeles, Calif.): Neurohumoral Regulation of Neuroendocrine Cells in the Hypothalamus
Grant, G.; Vale, W.; Brazeau, P.; Rivier, J.; Monahan, M.; Gilon, C.; Amoss, M.; Rivier, C.; Ling, N.; Burgus, R. and Guillemin, R. (San Diego, Calif.): Control of Anterior Pituitary Hormone Secretion: Hypothalamic Peptides and their Interactions
Kastin, A. J.; Schally, A. V.; Ehrensing, R. H. and Barbeau, A. (New Orleans, La.): Endocrine and Extra-Endocrine Studies of Hypothalamic Hormones in Man 196
Kraicer, J. (Kingston): Mechanism of Action of Hypothalamic Releasing Hormones: Role of Ions in the Release of Adenohypophysial Hormones 207

Metabolic and Behavioral Aspects of Hypothalamic Function

MacLean, P. D. (Bethesda, Md.): Influence of Limbic Cortex on Hypothalamus: New Anatomic and Microelectrode Findings 216
Wayner, M. J.; Ono, T.; Nolley, D. and de Young, A. (Syracuse, N.Y.): Effects of Ethyl Alcohol, Angiotensin and Several Essential Amino Acids on the Lateral Hypothalamus 232
Mrosovsky, N. (Toronto): Natural and Experimental Hypothalamic Changes in Hibemators 251
Mogenson, G. J. (London, Ontario): Changing Views of the Role of the Hypothalamus in the Control of Ingestive Behaviors 268
Smith, O. A.; Stephenson, R. B. and Randall, D. C. (Seattle, Wash.): Range of Control of Cardiovascular Variables by the Hypothalamus 294
Hilton, S. M. (Birmingham): The Role of the Hypothalamus in the Organisation of Patterns of Cardiovascular Response 306

Hypothalamus in Thermoregulation

Eisenman, J. S. (New York, N.Y.): Unit Studies of Brainstem Projections to the Preoptic Area and Hypothalamus 328
Adair, E. R. (New Haven, Conn.): Hypothalamic Control of Thermoregulatory Behavior: Preoptic-Posterior Hypothalamic Interaction 341
Veale, W. L. and Cooper, K. E. (Calgary): Evidence for the Involvement of Prostaglandins in Fever 359

Contents VII

Myers, R. D. (Lafayette, Ind.): Ionic Concepts of the Set-Point for Body Temperature 371
Cooper, K. E. and Veale, W. L. (Calgary): Fever, an Abnormal Drive to the Heat-Conserving and -Producing Mechanisms? 391
Rosendorff, C. (Johannesburg): Hypothalamic Blood Flow 399

Panel and General Discussion 408
Contributors

Adair, E., John B. Pierce Foundation, 290 Congress Avenue, New Haven, CT 06519 (USA)
Bala, R. M., Division of Medicine, University of Calgary, Calgary, Alberta T2N 1N4 (Canada)
Beck, J. C. (Chairman), Royal Victoria Hospital, Room 15, 4 Main, Montreal 112, Quebec (Canada)
Cooper, K., Division of Medical Physiology, University of Calgary, Calgary, Alberta T2N 1N4 (Canada)
Cross, B. A., Department of Anatomy, Medical School, Bristol BS8 1TD (England)
Eisenman, J. S., Mount Sinai Medical School, 5th Avenue and 100th Street, New York, NY 10029 (USA)
Fortier, C., Department of Physiology, Laval University, Quebec City, P.Q. 10e (Canada)
Friesen, H., Royal Victoria Hospital, Room 19, 4 Main, Montreal 112, Quebec (Canada)
Grant, G., The Salk Institute, P.O. Box 1809, San Diego, CA 92112 (USA)
Hardy, J. D., John B. Pierce Foundation, 290 Congress Avenue, New Haven, CT 06519 (USA)
Hayward, J., Department of Neurology-RNRC, UCLA School of Medicine, Los Angeles, CA 90024 (USA)
Hilton, S. M., Department of Physiology, The Medical School, Vincent Drive, Birmingham B15 2TJ (England)
Kastin, A. J., Endocrinology Section, Veterans Administration Hospital, 1601 Perdido Street, New Orleans, LA 70140 (USA)
Kraicer, J., Department of Physiology, Queen’s University, Kingston, Ontario (Canada)

Lederis, K., Division of Pharmacology and Therapeutics, University of Calgary, Calgary, Alberta T2N 1N4 (Canada)
Legan, S. J., Reproductive Endocrinology Program, Department of Pathology, The University of Michigan, Ann Arbor, MI 48104 (USA)
MacLean, P. D., Laboratory of Brain Evolution and Behaviour, National Institute of Mental Health, Building 110, NIHAC, Bethesda, MD 20014 (USA)
McCann, S. M., Department of Physiology, Southwestern Medical School, Dallas, TX 75235 (USA)
McKenzie, J. M., Department of Medicine, Royal Victoria Hospital, 687 Pine Avenue West, Montreal 112, P.Q. (Canada)
Mogenson, G., Departments of Physiology and Psychology, University of Western Ontario, London 72, Ontario (Canada)
Mrosovsky, N., Departments of Zoology and Psychology, University of Toronto, Toronto, Ontario (Canada)
Myers, R. D., Laboratory of Neuropsychology, Purdue University, Lafayette, IN 47097 (USA)
Raisman, G., Department of Human Anatomy, University of Oxford, South Parks Road, Oxford OX1 3QX (England)
Rosendorff, C., Department of Physiology, University of Witwatersrand, Medical School, Hospital Street, Johannesburg (South Africa)
Ruoff, H.-J., Pharmakologisches Institut der Universität Tübingen, D-74 Tübingen, Wilhelmstrasse 56 (FRG)
Sachs, H., Roche Institute of Molecular Biology, Nutley, NJ 07110 (USA)
Scharrer, B., Department of Anatomy, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, NY 10461 (USA)
Smith, O. A., Regional Primate Research Center SJ-50, University of Washington, Seattle, WA 98195 (USA)
Van Loon, G. R., Clinical Investigation Unit, Toronto General Hospital, Toronto, Ontario M5G 1L7 (Canada)
Veale, W., Division of Medical Physiology, University of Calgary, Calgary, Alberta T2N 1N4 (Canada)
Wayner, M. J., Brain Research Laboratory, Syracuse University, 601 University Avenue, Syracuse, NY 13210 (USA)
Weitzman, E. D., Montefiore Hospital and Medical Center, 111 East 210th Street, Bronx, NY 10467 (USA)

Participants

Abrahams, V. C., Department of Physiology, Queen’s University, Kingston, Ontario (Canada)
Aylesworth, S., 71 Glouchester Cresc. S.W., Calgary, Alberta T3E 4V3 (Canada)
Bashforth, G., University of Saskatchewan, Saskatoon, Saskatchewan (Canada)
Behrman, H. R., Research Division, Merck & Co. Inc., Rahway, New Jersey (USA)
Berzins, R., University of Saskatchewan, Saskatoon, Saskatchewan (Canada)
Bryson, W., William S. Merrell Company, Toronto, Ontario (Canada)
List of Contributors and Participants

Christopherson, R., Department of Animal Science, University of Alberta, Edmonton, Alberta (Canada)
Cioe, J., Department of Psychology, University of Western Ontario, London, Ontario N6A 3K7 (Canada)
Cottle, W., Department of Physiology, University of Alberta, Edmonton, Alberta (Canada)
Church, R., Division of Medical Biochemistry, University of Calgary, Faculty of Medicine, Calgary, Alberta T2N 1N4 (Canada)
Crim, L., Marine Sciences Research Laboratory, Memorial University of Newfoundland, St. John’s, Newfoundland (Canada)
Davis, S. L., Department of Animal Industries, College of Agriculture, University of Idaho, Moscow, ID 83843 (USA)
Downman, C., Royal Free Hospital, School of Medicine, 8 Hunter Street, London WC1N 1PB (England)
Dunsmore, C., 19 Baker Crescent N.W., Calgary, Alberta T2L 1R3 (Canada)
Faiers, A., Department of Physiology, University of Western Ontario, London, Ontario N6A 3K7 (Canada)
Fryer, J., Department of Zoology, University of Alberta, Edmonton, Alberta (Canada)
Goba, H., 413 Tegler Building, 10189-101 Street, Edmonton, Alberta T5J 0T8 (Canada)
Gudauskas, J., 1030 Gretna Green Way, Los Angeles, CA 90049 (USA)
Henderson, N. E., Department of Biology, University of Calgary, Alberta T2N 1N4 (Canada)
Heninger, R., Department of Zoology, Brigham Young University, 575 Widtsoe Building, Provo, UT 84602 (USA)
Hepburn, A. L., 359 Palliser Square, 115-9 Avenue S.E., Calgary, Alberta T2G 0P5 (Canada)
Isabirye, J., University of Saskatchewan, Saskatoon, Saskatchewan (Canada)
Karsch, F., Reproductive Endocrinology Program, Department of Pathology, University of Michigan, Medical School, Ann Arbor, MI 48104 (USA)
Kregzde, J., 12341 Chianti, Los Alamitos, Calif. (USA)
Lemon, P., Department of Pharmacology and Therapeutics, University of Manitoba, Winnipeg, Manitoba R3P 0B6 (Canada)
Manns, J., Department of Veterinary Physiology, University of Saskatchewan, Saskatoon, Saskatchewan (Canada)
Martin, J., Division of Neurology, McGill University, Montreal General Hospital, Montreal, Quebec (Canada)
McMahon, J. P., 190 A Cain Avenue, De Ridder, LA 70634 (USA)
Miller, J., Department of Physiology, University of British Columbia, Vancouver,
List of Contributors and Participants XI

Page, R., M.S. Hershey Medical Centre, Hershey, PA 17033 (USA)
Patrick, S. J., Department of Biochemistry, Dalhousie University, Halifax, Nova Scotia (Canada)
Peitchinis, J., School of Nursing, University of Calgary, Calgary, Alberta T2N 1N4 (Canada)
Peter, R. E., Department of Zoology, University of Alberta, Edmonton, Alberta (Canada)
Petrali, E. A., Department of Psychiatry, University Hospital, Saskatoon, Saskatchewan (Canada)
Phillips, T., Department of Psychology, University of British Columbia, Vancouver 8, B.C. (Canada)
Reel, J. R., Parke-Davis Research Laboratories, 2800 Plymouth Road, Ann Arbor, MI 48106 (USA)
Reichert, H., Psychiatric Research Unit, University Hospital, Saskatoon, Saskatchewan (Canada)
Renaud, L., Montreal General Hospital, Montreal, P.Q. (Canada)
Rippel, R. H., Abbott Laboratory, North Chicago, 111. (USA)
Robertson, F., 3720 Underhill Drive, Calgary, Alberta T2N 4G1 (Canada)
Ruf, K., Department of Neurosciences, McMaster University Medical Centre, 1200 Main Street West, Hamilton 16, Ontario (Canada)
Sherwood, N., Biology Department, University of Victoria, Victoria, B.C. (Canada)
Smith, C., Department of Biology, University of Calgary, Calgary, Alberta T2N 1N4 (Canada)
Steinberg, H. H., 122 South Michigan Avenue, Suite 1811, People’s Gas Building, Chicago, IL 60603 (USA)
Thompson, J. R., Department of Animal Science, University of Alberta, Edmonton, Alberta (Canada)
Usher, D., Department of Pharmacology, Faculty of Medicine, University of Ottawa, Ottawa, Ontario (Canada)
van Petten, G. R., Department of Pharmacology and Therapeutics, University of Calgary, Calgary, Alberta T2N 1N4 (Canada)
Wang, L., Department of Zoology, University of Alberta, Edmonton, Alberta (Canada)
Preface

The diverse functions of the hypothalamus have, in recent years, been shown to be clearly inter-related. The hypothalamic control of any one physiological function cannot any longer be considered in isolation. For example, during the reproductive cycle in man, which is under hypothalamic control, water and salt balance and body temperature are also regulated and emotional changes are often apparent. Thus, the research endocrinologist needs to consult with the neurochemist-neurophysiologist, the behavioral scientist and the clinical investigator.

The symposium was part of the opening celebrations of the new Health Sciences Centre which houses the Medical School at Calgary in which research and teaching have both been organized on an interdisciplinary basis. At Calgary a nucleus of hypothalamic researchers had already come together. This setting provided a reason for an attempt to gather leading investigators concerned with endocrine, metabolic and behavioral research, who usually work in parallel but are not always cognizant of likely relationships between divergent functional aspects. It is felt that this integration has been of mutual benefit to the workers from different fields.

Another aspect of this symposium, namely the publication of the proceedings within a few months after the presentation of the reports, should also be beneficial to those interested in the diverse hypothalamic functions: the progress in investigations at present is such that new knowledge presented today may become obsolete within a year or two. Realization of this and appropriate co-operation by the Messrs. S. Karger AG will, no doubt, be appreciated by interested readers when the proceedings arrive on the bookshelves.

The proceedings are presented in the form and in the sequence in which the symposium was held. The section dealing with ‘Hypothalamus
and hormones’ includes all presentations in 3 sessions dealing with the
endocrine aspects. Equally, the reports given in sessions on ‘Metabolic and behavioral’ functions and in ‘Thermoregulation’ are grouped under separate headings. The Summary represents an abbreviated edited form of the final sessions of the symposium, in which general aspects of endocrine and nonendocrine functions of the hypothalamus were considered in several formal presentations by members of the panel and the resulting general discussion.

The planning of the symposium was the joint effort of the members of the Symposium Organizing Committee and the Central Opening Ceremonies Committee, to whom our thanks are due. Especially, the input by Dr. Warren Veale, before, during and after the symposium is greatly appreciated.

The symposium could not have been held without the generous financial support from the Medical Research Council of Canada and contributions from many organizations and firms (Astra Chemicals Ltd., Ayerst Laboratories, Beckman Instruments Inc., Boehringer Ingelheim (Canada) Ltd., Burroughs Wellcome Co., Garworth, Walter A. Carveth Ltd., Fisher Scientific Co. Ltd., Mead Johnson (Canada), The William S. Merrell Co., The Mogul Corporation, Sandoz Pharmaceuticals, Schering Corporation Ltd., Warner-Chilcott Laboratories Co. Ltd., E. R. Squibb & Sons Ltd., Wild of Canada Ltd., Winthrop Laboratories, Wyeth Limited, Abbott Laboratories Ltd., Smith, Kline & French of Canada Ltd., Merck-Frosst Laboratories and Pfizer). Special thanks are due to Messrs. Merck-Frosst (Canada) who supported the session on ‘Metabolic-behavioral aspects of hypothalamic function’ in its entirety.

We are grateful for the smooth day-to-day operation of the symposium to Miss Betty Buchanan from the Department of Continuing Education, University of Calgary, and her assistants, especially to Mrs. Sandra Demchuk; to Mr. V. Jackson and Mr. Stewart Eaton for excellent audio-visual services and other physical arrangements.

Miss Louise Workman, assisted by Miss Linda Smyth, Mrs. Jean Goldie, Miss Judy Stearns and Miss Marianne Jochumsen carried the main secretarial burden in the organization of this symposium and, especially, in the patient and rapid preparation of manuscripts for the press. Last, but not least, the patience and indulgence of our wives during the period before and during the symposium, and the editorial work, are greatly appreciated.
Calgary, June 1973

K. Lederis
K. E. Cooper