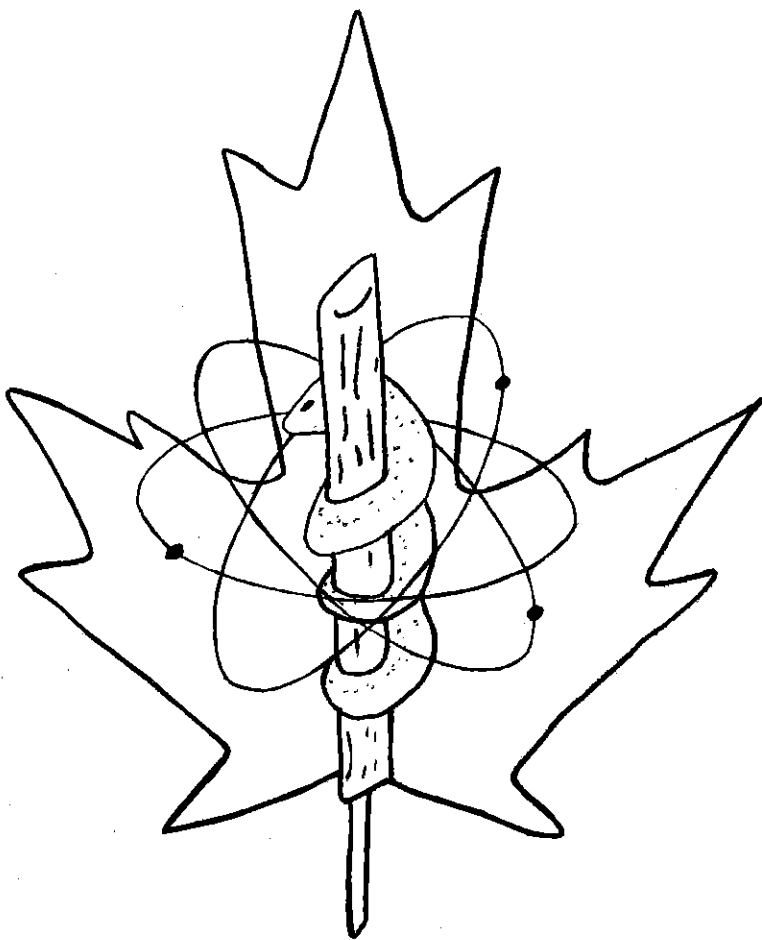


DIGEST OF  
THE 1ST CANADIAN MEDICAL AND BIOLOGICAL  
CONFERENCE



SEPTEMBER 8 AND 9, 1966  
OTTAWA, CANADA

## SPONSOR

Canadian Medical and Biological  
Engineering Society

### Acknowledgement

The financial assistance of the Medical and National Research Councils of Canada is gratefully acknowledged. The Conference is also indebted to the Radio & Electrical Engineering Division of NRC for the use of its building facilities.

## CONFERENCE COMMITTEES

### General Chairman

J.A. Hopps (President, CMBES)

### Papers Committee

R.S.C. Cobbold, Chairman

J.A. Tanner

B.A. Holmlund

### Publications and Publicity

R.S.C. Cobbold

B.A. Holmlund

J.A. Hopps

### Tours

J.A. Tanner

G.M. FitzGibbon

### Session Arrangements

O.Z. Roy

### Accommodation and Transportation

W.A. Delbridge (Secy. CMBES)

### Exhibits

W.A. Delbridge

J.A. Hopps

## CONFERENCE SCHEDULE

### OPENING SESSION

Thursday, 8th Sept., 9:00 a.m.  
Auditorium, Radio & Elect. Bldg.  
N.R.C., Montreal Rd.

Chairman: J.A. Hopps, President, Canadian Medical and Biological Engineering Society

9:00 a.m. Welcoming Address: Dr. W.G. Schneider, Vice-President (Scientific), National Research Council.

9:15 a.m. Opening Address: Mr. L.E. Flory, Secretary General of the International Federation for Medical and Biological Engineering.

"Twenty Years of Medical and Biological Engineering".

### SESSION I

Thursday 8th Sept., 10:00 a.m.  
Auditorium

Chairman: J.A. Hopps, N.R.C. Ottawa.

10:00 a.m. Invited Tutorial Paper: Dr. J.H. Milsum, Professor of Control Engineering, McGill University.

"Biological Control System Modelling"

10:45 - 11:00 a.m. Coffee Break

### SESSION IA

Thursday 8th Sept., 11:00 a.m.  
Auditorium

#### "Modelling and Simulation"

Chairman: Dr. E. Llewellyn Thomas, Institute of Bio-Medical Electronics, University of Toronto.

11:00 a.m. (a) "Physiological Experimentation and Modelling of the Auditory System", C.A. Laszlo & J.H. Milsum, McGill University.

(b) "A Model of the Cardiac Electrophysiological System", F.A. Roberge & R.A. Nadeau, University of Montreal.

(c) "Digital Computer Simulation of Frog Sciatic Nerve", R.W.J. Ford & J.A. Tanner, N.R.C., Ottawa.

(d) "Measurement and Simulation of Handwriting Signals", J.S. MacDonald, U.B.C.

### SESSION IB

Thursday 8th Sept., 11:00 a.m.  
Conference Room

#### "Biomedical Instrumentation"

Chairman: O.Z. Roy, N.R.C. Ottawa.

11:00 a.m. (a) "Regional Hypothermia by an Extracorporeal Arterial Shunt", T.R. Ringer & E.W. Peterson, N.R.C., Ottawa.

(b) "A Canadian Approach to the Problem of Haemodialysis Machinery", F.H. Simonsen, Kingmed Ltd., Kingston.

(c) "Device for Assessing Intracranial Pressures", J. Wade, G. Wacker, J.W. Gerrard & B.A. Holmlund, University of Saskatchewan.

(d) "An Automatic Blood Coagulation Timer", F. Engler, Litton Systems, Rexdale.

12:45 p.m. Lunch at the N.R.C. cafeteria (included in the registration fee).

## SESSION II

Thursday, 8th Sept., 2:00 p.m.

Auditorium

Chairman: Professor R.N. Scott, Director, Bio-Engineering Institute, University of New Brunswick.

2:00 p.m. Invited Tutorial Paper: J. Foot, Director, Prosthetics Orthotics R & D Unit, Rehabilitation Hospital, Winnipeg.

"Lower Extremity Prostheses"

## SESSION IIA

Thursday 8th Sept., 2:45 p.m.

Auditorium

"Prostheses"

Chairman: Professor R.N. Scott, University of New Brunswick.

2:45 p.m. (a) "Myoelectric Control", A. Stein, D. Lewis, F. Engler, & L. Thompson, Litton Systems, Rexdale.

(b) "The Human Operator in a Myo-Electric Control System", R.N. Scott, Univ. of New Brunswick.

(c) "A Method of Providing Kinesthetic Feedback from Prostheses", D.S. Alles, M.I.T.

4:00 p.m. Coffee Break

4:15 p.m. (d) "Communication Systems for the Physically Handicapped", B.A. Holmlund, R.N. Kavanagh & A.E. Krause, Univ. of Saskatchewan, Saskatoon.

(e) "Programmed Speech Output System for the Handicapped", G.J. Huff, B.A. Holmlund, & A.E. Krause, Univ. of Saskatchewan, Saskatoon.

## SESSION IIB

Thursday 8th Sept., 2:45 p.m.

Conference Room

"Mathematical Techniques"  
and

"Physiological Control Systems"

Chairman: Dr. J.A. Tanner, N.R.C. Ottawa.

"Mathematical Techniques"

2:45 p.m. (a) "Computer Simulation of the Variability of the Normal SA Node Pacemaker Firing Frequency", H. Wolf, Dalhousie University.

(b) "A Mathematical Description of the EEG", W. Dietiker, N.R.C., Ottawa.

(c) "The Averaging Technique and Signal of Biological Origin", V.C. Abrahams, Queen's University.

4:00 p.m. Coffee Break

"Physiological Control Systems"

4:15 p.m. (d) "Paths Traced by the Visual Axis during Saccadic Eye-Movements", E. Llewellyn Thomas & H. O'Beirne, University of Toronto.

(e) "A Technique for the Measurement of Pupillary Response in Conjunction with other Psychophysiological Parameters", J.C. Lawless & F.R. Wake, National Defence Medical Centre, and Carleton Univ. Ottawa.

## WORKSHOPS

Thursday 8th Sept. 8:00 p.m. - 10:00 p.m.

(i) Prosthetics - State of the Art To be held at the Beacon Arms Hotel.

(ii) Models of Biological Systems To be held at the National Research Council, where some special working demonstrations of Biological Models have been arranged by Dr. J.A. Tanner.

### SESSION III

Friday 9th Sept., 9:00 a.m.  
Auditorium

Chairman: Professor F. L. Thurstone, Bowman Grey School of Medicine, Visiting Professor, Queen's University.

9:00 a.m. Invited Tutorial Paper: Professor N.F. Moody, Dr. W. Paul & Mr. M. Joy. Institute of Bio-Medical Electronics, University of Toronto.

"Gamma-Ray Camera Techniques in Medicine".

### SESSION IIIA

Friday 9th Sept., 9:45 a.m.  
Auditorium

#### "Monitoring and Diagnostic Systems"

Chairman: Professor F. L. Thurstone, Bowman Grey School of Medicine.

9:45 a.m. (a) "An Improved Ultrasonic Brain Scanner", D.M. Makow & D.L. McRae, N.C.R., Ottawa, & Montreal Neurological Institute.

(b) "Biological Telemetry", O.Z. Roy & J.S. Hart, N.R.C. Ottawa.

10:35 a.m. Coffee Break

10:50 a.m. (c) "A Method of Monitoring Fetal Heart Sounds", F. Konopasek, Hargrave Research Corp., Winnipeg.

(d) "The Intensive Care Monitoring System of the Montreal Heart Institute", G. Warner, Montreal Heart Institute.

### SESSION IIIB

Friday 9th Sept., 9:45 a.m.  
Conference Room

#### "Electrocardiology"

Chairman: Dr. F. Berkman, University of Ottawa.

9:45 a.m. Invited Speaker: J.A. Hopps, Medical Electronics Group, N.R.C., Ottawa.

#### "Aspects of Electro-Cardiology"

10:10 a.m. (a) "Estimation of Cancellation Effects During Ventricular Depolarization", F. Berkman & O.Z. Roy, University of Ottawa and N.R.C., Ottawa.

10:35 a.m. Coffee Break

10:50 a.m. (b) "Feasibility of Analog Computer Techniques for Diagnostic Analysis in Electrocardiography", R. Kieser, A. Wong, & P.M. Rautaharju, Dalhousie University.

(c) "Quality Control in Recording of Exercise Electrocardiograms", D.A. Winter, Dalhousie University.

11:45 a.m. Closing Address, Auditorium

12:00 p.m. Transportation leaves NRC for Conference Luncheon

1:00 p.m. Conference Luncheon - Banquet Room 'B', Beacon Arms Hotel

2:00 p.m. Annual Meeting, CMBES - Banquet Room 'B', Beacon Arms Hotel

2:30 p.m. Transportation leaves hotel for tour of NDMC

4:30 p.m. Transportation leaves NDMC for cocktail party

4:30 - 6:00 p.m. Cocktail party, 346 Mountbatten Avenue

We wish to apologize for the fact that the Table of Contents and page numbers have been omitted. However, the papers are bound in the order in which they are presented in the Conference schedule.

B.A. Holmlund