

M. S. Devanandan

An obituary

Marcus S. Devanandan was awarded the MBBS degree by the University of Madras in 1959, following a course of study at Christian Medical College, Vellore. His primary motivation for enrolling in medicine was to study physiology. Therefore, after his internship he worked in the Department of Physiology, Vellore, and then proceeded to the All India Institute of Medical Sciences, New Delhi, to pursue postgraduate studies in physiology. At that time, there was an unfortunate controversy regarding the differentiation of medical and non-medical physiologists. He had the courage to refuse to enrol for the MD degree in physiology, choosing instead to work as a full-time researcher under A. S. Paintal. Paintal introduced him to neurophysiology and to the investigation of the relationship between structure and function. This early work led to independent publications in 1964.

Subsequently, Devanandan was accepted as a PhD scholar in the laboratory of John Eccles (later Sir John Eccles) at the Australian National University Canberra, Australia. Eccles' lab consisted of a truly international group of scholars, including such luminaries as Rodolfo Llinas, R. F. Schmidt, William Willis and T. Yokota. Devanandan completed his PhD in 1966 in presynaptic inhibition in the spinal cord. He demonstrated for the first time that presynaptic inhibition of motoneurons can occur in response to natural stimuli, in addition to its induction by synchronous electrical volleys that had been reported earlier. This work is widely cited in later works, and in reference books on presynaptic inhibition. While in Canberra, he also completed an investigation on single motor units in mammalian muscle, together with R. M. Eccles and R. Westerman. This was published in a seminal paper, introducing a new method of identifying motor units through intracellular stimulation of motoneurons.

Despite an offer by Eccles to remain in his group, Devanandan was set on returning to his homeland to pursue a research career there. In 1967, he returned to the All India Institute of Medical Sciences, New Delhi, where he set up an independent laboratory as part of

Paintal's group. He spent seven years working on the 'J' reflex in collaboration with Paintal and others, leading to work cited in a leading textbook of physiology, *Introduction to Physiology* edited by Davson and Segal. He went on a sabbatical as a Wellcome Research Fellow, Trinity College, Oxford, in the laboratory of C. Phillips, where he was initiated into the field of sensorimotor organization of the hand.

Devanandan's experience in these outstanding laboratories on three continents taught him that, in order to do successful research work, one must know how to



design, fabricate and maintain one's own equipment. He realized that this is especially true in India, where suitable technical help is often lacking. In 1975, he returned to CMC, Vellore, as an Associate Professor to set up a laboratory in the Department of Neurological Sciences, thus finally accepting an offer that had been made by J. Chandy (one of the founding fathers of neurosurgery and neurology in India) years earlier. In his maiden year at Vellore, he made a tremendous impact on the second-year medical students by his lectures and laboratory demonstrations in neurophysiology. As a direct result of this exposure, no fewer than eight students (from a class of 60) spent time in his laboratory over

the ensuing years, a truly impressive record by any standards! A number of this original cohort continue to be engaged in research, two of them (K. Sathian at Emory University, Atlanta, USA and Soumya Ghosh, Neuromuscular Institute, Perth, Western Australia) are working in the field of neurosciences. His other research students include anatomists, physiologists, zoologists, physicists, and electronic engineers. He showed great determination in sticking to his principles and soon built up from scratch a well-equipped laboratory to study the sensorimotor organization of the hand using psychophysical, neurophysiological and neuroanatomical methods.

His most recent interest was anterograde and retrograde labelling of second-order neurons in the study of the organization of sensory, motor and autonomic systems. He considered this work to be the most exciting of all his research work.

In due course he was promoted to Professor and served as rotating Head of the Department of Neurological Sciences. Assisted by a dedicated group of students and assistants, he steadily accumulated publications in international journals such as *Brain*, *The Journal of Anatomy*, *Anatomical Record* and *Acta Anatomica* and thereby defied the conventional wisdom that it is impossible to do quality research in India. His work with K. Sathian on the sensory innervation of finger joints is cited in *Gray's Anatomy*. In addition, he took a keen interest in the lives and well-being of his students and colleagues. He and his wife, Sarojini Devanandan, always kept their home open to students and friends who were constantly dropping in. Moreover, he was devoted to his family and was proud of the achievements of his daughters Krishna and Malini.

He retired from CMC in February, 1997. He intended to start a major neurophysiology centre at Vellore. He joined the Schieffelin Leprosy Research and Training Centre, Karigiri, to set up yet another neurophysiology laboratory from scratch. He initiated collaborative work with Å. Vallbo, Göteborg University, Sweden; his former students K. Sathian, Emory University, Atlanta; and Soumya

Ghosh, University of Western Australia, Perth; A. G. Akoev, Pavlov Institute of Physiology, Russia; and Rohit Manchanda IIT, Bombay. He wanted to use micro-neurography and functional brain imaging to define sensory deficits in leprosy patients and to explore the central neural re-organization resulting from prolonged loss of peripheral sensation. He also continued collaborative work with his former graduate students, now

faculty members of Christian Medical College and Hospital. They are Indirani (Anatomy Department), Abdul Kader (Physiology Department) and K. Srinivasa Babu (Neurological Sciences). Unfortunately he developed complications following prolonged treatment of polyarteritis nodosa. Though well aware that the end was near, he remained cheerful and concerned about others' well being. On 30 November 1997 he died peacefully.

K. SRINIVASA BABU

*Department of Neurological Sciences
Christian Medical College and Hospital
Vellore 632 004, India*

K. SATHIAN

*Department of Neurology
WWRB-6000,
Emory University School of Medicine
P.O. Drawer V,
Atlanta, GA 30322, USA*

MEETINGS/SYMPOSIUMS/SEMINARS

The Eighth Asian Congress of Fluid Mechanics

Date: 6–10 December 1999

Place: Shenzhen, China

The Congress welcomes papers in any branch of fluid mechanics and especially so in the areas of: Turbulence and flow instabilities; Computational fluid dynamics; Gas dynamics; Boundary layer flows; Aerospace fluid dynamics; Geophysical fluid dynamics; Environmental fluid mechanics; Combustion and reacting flows; Hydrodynamics and hydraulics; Industrial fluid mechanics; Fluid machinery; Bluff-body aerodynamics; Multi-phase flows; Bio-fluid mechanics; Flow visualization; Flow measurement; Flow control; Heat and mass transfer; Astrophysical fluid dynamics; Plasma dynamics; Magneto hydrodynamics; and Aeroacoustics and aeroelasticity.

Contact: Mr Lin He
The Chinese Society of Theoretical and Applied Mechanics,
No 15, Zhong-Guan-Cun Road,
Beijing 100080, China
Fax: (86 10) 6255 9588, 6256 1284
E-mail: cstam@sun.ihep.ac.cn

Indian Geological Congress (IGC-2000) and National Seminar on Ground Water Resources

Date: 1–4 February 2000

Place: Udaipur

Contact: Dr P. S. Ranawat (Convener) or
Dr Vinod Agrawal (Organizing Secretary) IGC-2000
Department of Geology
M.L. Sukhadia University
51 Saraswati Marg
Udaipur 313 002, India
Tel: 0294-413955 Ext. 417
(off-time) 0294-529986
Fax: 0294-412459 or 413150
E-mail: psranawat@yahoo.com