

In this issue

Sensorimotor functions of nervous system

The eight articles in the special section 'Sensorimotor functions of the nervous system', bring about current understanding of the sensorimotor integration of the nervous system. These articles include studies on peripheral nervous system, visceral nervous system, cortical control over the peripheral nervous system and finally studies on how to study the neuronal pathways by labelling the second-order neurons using tracers.

The hand is a distinctive evolutionary feature of primates. Not only is it capable of exquisitely fine movement, it is also endowed with a rich variety and density of sensory nerves and receptors. The sensory and motor functions of the hand are inextricably intertwined, since sensory inputs are essential for precise movement and the acquisition of sensory information from the environment is an active process. A number of approaches have been useful in this regard. Å. B. Vallbo and J. Wessberg (page 464) describe the use of microneurography, a technique that he was one of the first to develop. This allows recording of the activity of single nerve fibres in human nerves. He outlines the results of studies of one of the most complex of all sensory receptors, the muscle spindle. These studies point to important differences in the organization of the relevant control systems in the human hand compared to the hind limb of the cat, the traditional model for such studies.

R. N. Lemon (page 458) emphasizes the direct connections between neurons of the primary motor cortex and spinal motoneurons, which are another characteristic of primates. He reports on recent investigations of this key pathway in man, using the technique of transcranial magnetic stimulation. K. Sathian (page 451) reviews studies of perceptual learning, the ability to improve in per-

formance of a sensory task, with special reference to the human hand. Functional imaging studies such as positron emission tomographic (PET) scanning (see cover) and functional magnetic resonance imaging now offer the ability to investigate the function of particular brain regions in humans while they are actively engaged in particular tasks and their use is increasing exponentially.

A. S. Paintal, discovered the 'J' reflex, in which sensory inputs from the lung influence somatic (body) reflexes such as the widely known 'knee-jerk'. He reviews (page 440) the discovery of this reflex and observations relating to its neural mechanisms. Mohammed Fahim (page 443) describes the role of reflexes triggered by baroreceptors (pressure sensors) in arteries in control of the circulation of blood. Ashima Anand discusses (page 478) the neural basis for some visceral effects of cigarette smoking, while Rohit Manchanda *et al.* outline (page 470) recent findings pertaining to the neurophysiology of smooth muscle in the vas deferens.

Finally, K. Indirani *et al.* present (page 481) work in Devanandan's laboratory on the mapping of both afferent (conveying information TO the nervous system) and efferent (conveying information FROM the nervous system) pathways in somatic as well as visceral systems using a tracer, horseradish peroxidase.

This collection of articles is based on a symposium entitled 'Sensorimotor Functions of the Nervous System', held at Vellore from January 31 to February 1, 1997 to commemorate Professor Devanandan's retirement from CMC, Vellore.

With Devanandan's sad passing away in November 1997, this is a fitting tribute to his life's work and his impact on neuroscience the world over and in India in particular.

K. Srinivasa Babu

Nuclear explosion magnitudes

India and Pakistan conducted nuclear explosions in May 1998. Ever since the explosions, there have been doubts expressed by many on the number, type (fission/fusion) and yield of the explosions. It is understood that the Indian explosion on 11 May 1998 was first characterized as an earthquake by the International Data Centre (USA) monitoring station at Arlington, but later corrected as a nuclear explosion of certain magnitude. Seismographs detect the wave disturbances at great distances and sensitive instruments record all of these both caused by earthquake and explosions. Seismology is a dual science involving both geology and physics and has greatly advanced in recent times. Seismic monitoring happens to be one of the principle methods of the international monitoring system proposed for detecting nuclear explosions under the Comprehensive Test Ban Treaty (CTBT). The questions very often raised are:

- How good is the method to detect nuclear explosions and earthquake and also distinguish between the two?
- What is the highest sensitivity that could be obtained? (the present declared threshold level is 1 kt under CTBT)
- How precisely can the yield epicentre and depth be assessed?

The article by Sikka *et al.* (page 486) addresses certain aspects of the above questions, especially those relating to different magnitudes recorded by various monitoring stations around the world, the reasons for such behaviour and a methodology for estimating the true yield considering specially multiple simultaneous explosions.

S. Rajagopal

We need taxonomists not taxa-Namists

'The beginning of wisdom is to call things by their right names', thus goes a Chinese proverb and only rare personalities are endowed with such wisdom. Linnaeus, a star among the rare, proposed the universal code of binomial nomenclature for all living beings and extinct organisms. In his 'two-name' system he proposed that the two components, viz. the generic and specific components of the name, shall hierarchically describe the characters of the organism such that the users anywhere in the world shall have no ambiguity in referring to the specific organism. Linnean system of naming organisms has obviously done a great service to science in general and biology in particular. But taxonomists, the professional heirs of Linnaeus, somewhere along their lineage, have taken some liberties that have led to both useful and disastrous consequences.

Today we know that the binomial nomenclature has become almost tetranomial system (e.g. *Homo sapien sapien* var *caucassia* (L?)) and

this change is understandably to accommodate the necessary details. But a few other trends speak very differently of the way the taxonomists have taken to the philosophy of Linnaeus. For instance, often the generic and specific names of a newly described organism, are ascribed in order to offer credits (often undue and for non-scientific reasons) to the bosses or to pay dues to the wife, son, daughter, parents and even to their religious leaders and Gods and not to describe the features of the organisms. This trend of 'taxa-Naming' rather than 'taxonoming' the organisms has disastrous consequences. Imagine naming *Drosophila melanogaster* (meaning a fruit fly with black abdomen) as *Lamarckiana punyii* (one of my heroes in evolutionary biology, and my daughter) – certainly a useless, costly and perhaps even an irritating trend indeed. Useless because this name does not indicate whether the organism being described is fruit fly or a mould; costly because the field workers have to invest more energy and time relating these two names to the species they study; and irritating for

obvious reasons. Attributing credits to the great personalities is of course in vogue and we do have *Oenothera lamarckiana* for instance. But this should not be stretched to the extent that it proves costly to the very philosophy of taxonomic naming.

Obviously disturbed by such a tendency of recent taxonomists, Ajit Kumar (page 426) traces the development of this trend and finds that the taxonomists are increasingly afflicted with this bug of *Naming* the taxa after their bosses and others in order to please them at the cost of descriptive features of the organisms. With the interesting data to support this changing trend, he appeals to the nomenclaturists to be professional taxonomists and not taxa-Namists. Further, he observes that while translating such scientific names to common names, some authors carry on this legacy, thus further complicating the already difficult life of field biologists. Let us hope that some introspection among taxonomists would make our life in the field more enjoyable.

K. N. Ganeshiah