

port of solutes across cellular membranes.

He did not publish his Nobel prize-winning theory of chemiosmotic reactions in well 'refereed journals' but resorted to a technique that practitioners of pathological sciences are accused of—of using privately published monographs. Not for him the little men who call themselves editors who arrogate themselves to being arbiters of science. His theory was received with great reservation by workers in the field because it was unorthodox, provocative and based on very little experimental evidence. But it slowly gained acceptance first because other hypotheses postulated the occurrence of energy-rich intermediate compounds for which no evidence could be obtained

even after intensive search.

He was one who ploughed a very lonely furrow. We would like to quote a part of his speech at the Nobel banquet as it tells us about the bitter process of creation and the travails faced by the innovator:

... the creative process in science and in art consists of two main activities—an imaginative jumping forward to a new abstraction or simplified representation followed by a critical look back to see how nature appears in the light of the new vision. *The imaginative leap forward is a hazardous unreasonable activity.* Reason can be used only when looking critically back. Moreover in the experimental sciences the scientific fraternity must test the new theory—to destruction, if possible. Meanwhile the originator of the theory may have a very lonely time, especially when his colleagues find his views of nature unfamiliar and difficult to appreciate. The final outcome cannot be known either to the originator of the theory or his colleagues and critics who are bent on falsifying it. Thus the scientific

innovator may feel all the more lonely and uncertain. On the other hand, faced with a new theory the members of the scientific establishment are more vulnerable than the lonely innovator. For, if the innovator should happen to be right, the ensuing upheaval of the established order may be very painful and uncongenial to those who have long committed to themselves to develop and serve it'

Besides his interest in communication between molecules, Peter Mitchell became more and more interested in the problem of communication between higher organisms like human beings in civilized societies, especially in the context of the spread of violence.

Yes, he was truly a remarkable man. He died in April 1992. V. Sitaramam (page 806) gives us a personal glimpse of this man.

S&T in India — Editor's note

In our early enthusiasm we invited many directors of science and technology institutes to write articles about their laboratories, highlighting the major research done over the years. The idea was that scientists and readers of *Current Science* should become acquainted with what is happening in science and technology in the country and if possible also learn from the enormous accumulated experience. We even thought such articles may promote cooperation among scientists in different centres and the larger utilization of the pool of scientific instruments collected in India. Unfortunately the experiment has not been much of a success and we have decided to discontinue this presentation after this issue.

A few writers did bring out vividly the philosophy behind the workings of their laboratory and highlighted important pieces of work which made an impact in India and outside. However, many turned out to be routine catalogues of activities over the years not discriminating between good and indifferent work. Invariably these articles have been authored by directors of laboratories, who, for good reasons, shy away from the exercise of critical scientific judgement. We were indeed advised that such a differentiation may produce disquiet amongst the scientists!

What then must be done to bring the significant scientific work done at various centres in India to the attention of interested scientists. One is, of course, through original articles published in learned journals (including *Current Science*). Many laboratories however concentrate in applied science and technology and so do not often publish 'original' communications. One idea that has been suggested to us is to commission knowledgeable scientists (with a flair for writing) to visit laboratories and render critical accounts of the work done in them. One is not too sure whether the idea would be acceptable to many laboratories and whether such writers will be welcome and doors opened to them. Readers are requested to send in their suggestions on this subject.