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Bamboo flowers in Indian labs, but who will reap the benefits?

IN recent years few papers published from India have attracted as much attention in the international press as that on *in vitro* flowering of bamboo by R. S. Nadgauda, V. A. Parasharami and A. F. Mascarenhas of the National Chemical Laboratory (NCL), Pune (see *Nature*, 1990, 344, 335). This work has found its way into, beginning with *The New York Times*, the columns of *Newsweek*, *The Economist* and *Guardian*. (Perhaps the most amusing headline that appeared was in *Arab News*: 'Indian woman gets bamboo to flower', reminding us of the classical Indian woman of yore who has been perpetuated so often in our stone sculptures.) We could well be standing—to quote David Hanke of Cambridge—'on the threshold of a bamboo revolution'. But this remarkable success has stirred up an old debate. V. Siddhartha writing in this issue (see Opinion, page 347) expresses some concern about the manner in which pathbreaking results of Indian science are reported. There are many questions raised and suggestions made in his note to which our scientists must give some thought before accepting or rejecting them. Siddhartha's note was sent to Mascarenhas and a few other scientists, and to some science administrators. Some of the responses are also published.

Some of the more important issues are listed below:

(i) When Madame Curie and C. V. Raman were asked why they did not patent their discoveries, they replied that the thought never occurred to them; further restricting scientific knowledge in any manner was abhorrent to them. Is this the view Indian scientists should take now?

(ii) Indian science has grown and matured. Applications will necessarily be forthcoming. If discoveries are published in journals, patenting them *afterwards* would present many problems. On the other hand, recognized journals refuse to publish papers that do not include all relevant scientific details. In India procedures for obtaining Indian or international patents seem to be rather complicated.

(iii) The Government has been quite generous in promoting science in India. Now it is becoming aware that there are possibilities of returns. Would (or should) Government take steps to protect its investments? Before this happens should (or would) our scientists arrive at a consensus on this issue so that any action taken will not hurt or affect the progress of science in India?

(iv) Many Indian scientists are not conscious of the developmental, economic and commercial implications of their work. On the other hand, Western groups seem to be aware of the intrinsic capability of Indian scientists (as evidenced by the keenness of their commercial firms to start research laboratories in India). Is there any need for Indian scientists to take note of this?

(v) Recognition and publicity have come in a big way because the NCL work was published first in *Nature*, one of the most reputed journals. On the other hand, similar work presented at the Third International Bamboo Workshop in Cochin in November 1988 where some of our better scientists in this field were present got no notice at all. Does this imply that our scientists do not (or will not) discern important work when reported in India?

(vi) Was the editorial in *Pramana* (see page 348) written almost two decades ago valid then? Does it have any meaning now?

(vii) Another development has been pointed out in Siddhartha's article. Readers of *Current Science* may remember that Indian scientists overwhelmingly favoured reprinting of foreign journals in India (see *Current Science*, 1990, 59, 8). If, 'as a few already available Indian editions do, these Indian 'reprints' also have 'joint' editorial boards in which the names of senior Indian scientists and science administrators are included, will it mean that these journals will contain material not in their original editions? If so, is this good or bad for Indian science?