EDITORIAL

On the role of referees, editors and related matters

This issue carries a research article entitled 'The concept of discreteness, continuity and the Cantor continuum theory as related to the life-time and masses of elementary particles' by Raja Ramanna. The processing of this article raised several questions and prompted some soul-searching on wider issues such as the roles of editors, referees, and indeed journals. It is perhaps appropriate to share with our readers both some general procedures we follow and specific relevant details concerning the article appearing in this issue. We are of course committed to the refereeing system (S. Ramaseshan, see *Pramana*, 1972, vol. 1, p. 1). Apart from other good reasons it helps to limit the number of papers we have to publish – an important criterion considering our finances.

Coming first to the overall procedure, the Editor or a Member of the Editorial Board (MEB) decides on two referees for each paper (of which a MEB can be one). To save time many papers are sent to referees in Bangalore. More than half are sent to other places in India. In a number of cases papers are sent outside the country. The authors often also send us a list of possible referees (occasionally on request), and we do sometimes choose names from such a list. We also receive names of scientists who, in the authors' perception, are hostile to them or their ideas. In fairness to the authors, we avoid sending the papers to these to the extent possible.

We use ordinary post, speed post, telex, fax, e-mail and even courier depending on the need to speed things up. The referees have been very responsive and responsible, and we are always grateful for their cooperation.

In case of conflicting opinions we attempt to resolve them by exchanging the reports between the two referees or by choosing a third. In a few cases the Editor or MEB makes the decision to publish or not. Usually we take care to inform the referees if these decisions are against their recommendations. The referees have been most understanding. Many of these procedures have been made fairly routine. Even so there have been delays and we are trying our best to publish papers promptly. We would request our readers/authors to bear with us as we have to bring out an issue every fortnight with a very meagre (but we feel efficient) staff. One also has to be sympathetic with the printers because of unexpected power shut downs, etc.

The editor's life is full of excitement. Many authors feel that they have made breakthroughs in science and that their papers must be published immediately. Some feel that their ideas may be leaked out, causing them to lose priority. They sometimes suspect the referees as they have early access to their results. We have had occasion gently to inform referees of the apprehensions of the authors. Most of the them have taken this in very good spirit.

Coming to the specific article mentioned above*, the author informed us while submitting it that as it contained some seminal ideas an early publication would be appreciated. Your editor (by no means a particle physicist), was attracted by the connection that was made between the cardinal numbers and the lifetimes of elementary particles but was not too comfortable with the treatment of the hydrogen atom. In any case, we received reports from three referees. In spite of the time factor there was no doubt that the paper has been studied by them most carefully.

The first report was overwhelmingly positive. To quote, ' . . . [the part of the paper] relating to elementary particles is quite staggering ... finding such an elegantly simple relationship between cardinal number and the life-times of particles is a breakthrough in particle physics. It would be worthwhile checking for how many more of the discovered particles this relationship is valid. I am reminded of the work of Gell-Mann and Pais in the early fifties which led to the discovery of the strangeness quantum number. The style in which the paper is written makes it easy to comprehend the contents even by those who are not very familiar with Cantor's works.'

'The paper must be published immediately.'

The other two reports can only be described as adverse. We reproduce the concluding paragraphs of each report.

'Specific details apart, if a new theory more general than existing ones is being proposed, the least one would expect is that well known and experimentally tested *formulae* of the earlier theories should emerge at least as limiting cases. Of course, it would be still better to derive the Schrodinger equation itself in some limit, much in the same spirit that Schrodinger could bring out the Hamilton–Jacobi equation as a short wavelength limit. In contrast, the proposal of the present paper is at best a partial fit to some small fraction of the *numbers*, with no attempt to reproduce analytic forms (such as the energy width scaling as principal quantum number to the inverse fifth power). Given this situation concerning as simple a system as a hydrogen atom, my assessment is that the work neither deserves even semi-serious consideration as a potential fundamental theory nor publication.'

'The main contention of this paper is that the energy levels of the hydrogen atom or masses of elementary particles and the width of levels (inverse decay life-times) bear some numerological relationship. While the energy levels/masses are assigned a cardinal number n the related widths are seen to be proportional to $(n/2^n)$. There is some arbitrariness in the assignment of n to any energy level/mass ($n = 9$ — principal quantum number of hydrogenic levels for the first eight levels.

*This editorial was written before the article was revised.

$\pi^{\pm}$ is assigned $n = 5$ while π^0 has 23 and neutron 39). The constant of proportionality is different for different collections of particles which the author appears to group together. Since the author has not identified any definite principle for the assignment of cardinal number to any chosen state and why a specific set of particles are grouped together, (they contain both baryons as well as mesons in each group), no useful conclusions have been arrived at.'

If we had received only the latter two reports, the paper clearly would have been rejected. But in view of one strongly positive report, we are using our discretion in publishing the article.

Most journals do receive a large number of papers proposing new fundamental theories. There is an element of risk in rejecting them automatically as speculative (as *Nature* is reputed to have done in the case of Fermi's theory of β-decay). Editors and referees are not censors. Their duty is to hold a mirror up before the author so that he can see himself as others see him. Apart from protecting readers from a flood of material that is not useful, they also serve a vital function of protecting the author from his own oversights or overenthusiasm. In the present case, I think all our referees have brought the best of their individual perceptions to this task. The step of also publishing extracts from the referees reports, while unusual, is not without precedent. There is no basic reason why our readers should not also benefit from the referees' faculties of appreciation or criticism. Especially when opinions are in such strong conflict, publishing them along with the article may well provoke thought and debate — (some of which might even appear in future issues of the journal!).

Clearly, not every paper will call for such special treatment and open discussion. But in the game of understanding nature's deepest secrets, the odds are long against the player, the stakes proportionally high, and a mere editor may be forgiven for modifying the rules a little.

S. RAMASESHAN

— Editor

NEWS

Transit of Mercury across the Sun's disc on 6 November 1993

D. G. Banhatti and V. Vijay Arunachalam (School of Physics, Madurai Kamaraj University, Madurai) write: 'There will be a transit of Mercury across the Sun's disc on Saturday, 6 November 1993. It will be visible from India, South East Asia, China, Japan and Australiasia. The transit takes place in the south–south–western limb (in the lower right-hand corner) of the Sun's disc. In India it starts at about 8.36 AM and is over by about 10 17 AM. The transit is visible but great precautions have to be taken to protect the eyes. The best is to use a pair of welder's goggles which cuts off both the infrared and the ultraviolet rays Ordinary sunglasses or goggles are not advised.

Mercury has an angular diameter of 10 arcsec. From the first contact it takes 6 min for the entire disc of Mercury to become visible.'

R. K. Kochhar (Indian Institute of Astrophysics, Bangalore) adds: 'From the earth, only transits of Mercury and Venus can be seen. There are, on an average, 13 transits of Mercury per century. The next transit of Mercury will occur on 15 November 1993! The occurrence of these transits was first predicted by Kepler in 1627. The first transit to be observed was that of Mercury; it was seen by Pierre Gassendi from Paris in 1631. It is of interest that the transit of Mercury of 3 November 1651 was observed from Surat in West India by Jeremiah Shakerley. This is probably the earliest use of telescope from India (barely 40 years after Galileo).'