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CORRESPONDENCE

We reproduce below a letter written tongue-in-cheek; but it does throw up some serious issues. — *Ed.*

Oops, but is your journal showing?

Senior managers and administrators in scientific and academic institutions often have a serious problem in trying to evaluate the conflicting claims of scientists regarding their publication records. Considering that we have, we are told, the third largest pool of scientific manpower in the world it is surprising that we have yet to evolve a simple, scientific criterion to settle such matters. I would like to propose here, for consideration by the community, a simple numerical criterion that should greatly help our administrators.

1. Science administrators are often confused by conflicting claims regarding the merits of various journals. While it is true that many of us feel that more weight should be given to prestigious and widely read journals like *Proc. Lillipud. Acad. Sci., Int J. Math. Educ. Sci. Technol.*, etc. than to lesser known and hardly read journals like, say, *Comm. Pure Appl. Math.* or *Proc. R. Soc.*, these are subjective judgements. So I propose, in the interests of simplicity, that all journals be given *equal* weight.

2. What qualify as publications? In a democratic society such as ours it would be unfair to limit the distinction to only ones that deal with purely scientific matters. A scientist has an obligation to more than science alone. So I feel that articles in popular magazines (*Illustrated Weekly, Sun, Snow, Stardust*, etc.) and newspapers, and letters to editors, obituaries, ads (issued), etc. should count. This would also imply that office memos, notices, etc. issued at places of work should count but, in the latter, references should be given properly, indicating whether carbon copies were issued to the director, the president (Ind), etc.

3. Another touchy matter has been the role of equations, viz. what weight should be given to them? Since most equations are neither read nor understood, I feel they should be given no weight at all.

4. While many of us feel that any 'international' journal, even the *Arkn. J. Tech.*, is superior to any Indian journal, I feel it would be unpatriotic to give special weight to them. So $J_i = J_n$ ($\forall$ i, n) (sorry, that is an eqn.!).

5. Finally, the criterion. To achieve maximum simplicity I suggest that for each scientist or employee we assign a publication number $N_p(t)$, where t is, naturally, the time. That is, take all 'admissible' publications (of course deleting all equations and handwritten material) and count the total number of *words* (letters would be too troublesome even in our country); that number would then constitute $N_p(t)$ at t. The counting would naturally have to be verified by a committee including impartial members outside the given institution, perhaps even from abroad. I contend that the use of N_p would simplify matters greatly for administration. Even at the local level it would be nice if every scientist would prominently display his current N_p on the door of his room. This would eliminate unnecessary debate and argument regarding the current pecking order.

In conclusion, I submit that the suggested criterion will be of great help in properly evaluating a scientist's real productivity. No doubt operational details will have to be worked out but our administrative colleagues should enjoy doing that.

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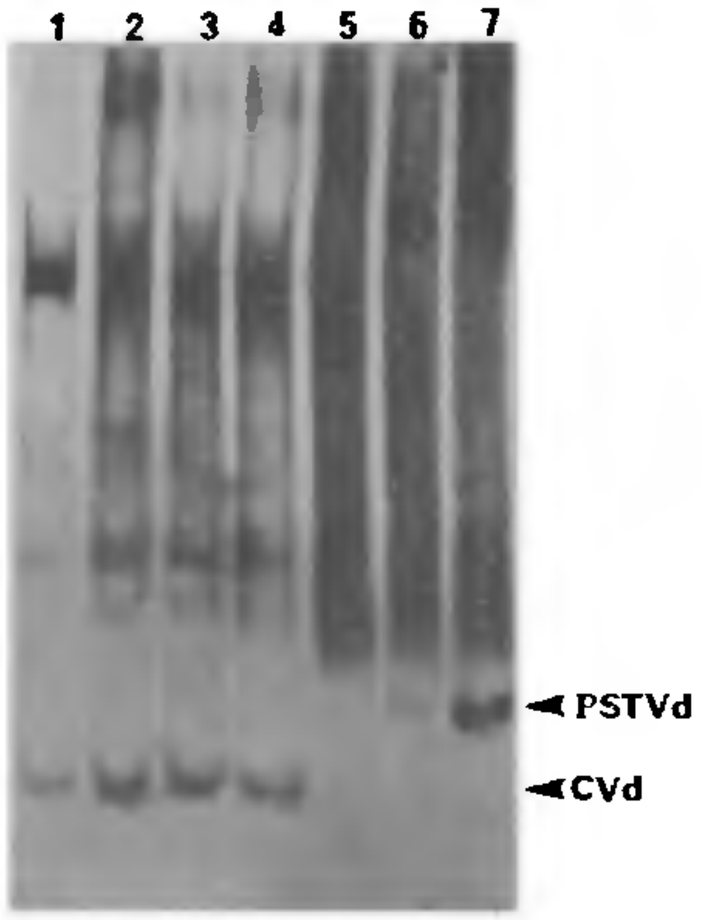
SCIENTIFIC CORRESPONDENCE

Coleus viroid in India

Viroids, low-molecular-weight infectious RNA molecules, are hot-climate pathogens[1,2]. A number of viroid diseases have been recorded from tropical and semi-tropical countries[3]. In India, however, viroid diseases have not received much attention. Recently a viroid was detected in *Coleus scutellaroides* (L.) Benth in Brazil[4], Germany[5] and Canada[6]. The last report showed that the coleus viroid was also present in seeds in high proportion.

We have now detected a viroid in coleus plants and commercial seeds in India. We extracted nucleic acids from leaves of coleus plants following the procedure of Singh and Boucher[7], and analysed a 10-μl nucleic acid sample, purified by CF-11 cellulose column chromatography[8], by return polyacrylamide gel electrophoresis (R-PAGE). The first electrophoresis was done for 1.75–2.5 h at 46 mA and 25°C. The buffer was then replaced with boiling low-salt buffer (1:8 dilution of high-salt buffer), and electrophoresis was done in the reverse direction for another 1.5 h at the same current but at 70°C.

We detected viroid bands in nine out of 10 plants collected from gardens in



R-PAGE detection of viroid in coleus Lanes 1–4 nucleic acids from leaves of individual coleus plants containing viroid, lanes 5 and 6, nucleic acids from leaves of coleus plant in which viroid was not detected, lane 7, PSTVd, used as marker

Delhi. The coleus viroid band migrated differently in R-PAGE from potato spindle tuber viroid (PSTVd), which was used as the reference sample (see figure). The viroid band is about 1 to 2 cm lower than any RNA band visible in non-infected plant tissue. On electrophoretograms, the lowest bands always represent only circular RNA. In R-PAGE, because of the denaturation (by low molarity and high temperature), viroid molecules lose their double-stranded structure and become single-stranded circular forms, and migrate very slowly in the reverse direction. On the other hand, RNAs that are not covalently closed molecules become linear when denatured, migrate faster, and move ahead of the viroid bands.

We also tested coleus seeds obtained from Indo-American Hybrid Seeds (Bangalore, India) and seeds locally collected from coleus plants for presence of the viroid in lots of 10 seeds, replicated thrice, from each seed source. No viroid was detected in seeds collected from the garden plants. However, all commercial seed samples were infected with a viroid that migrated to the same distance as the viroid from coleus leaves. The high incidence of viroid in commercial coleus seeds in India and Canada suggests that viroids may be widely spread throughout the world, and may have a common origin in some tropical parts of the world.

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2. Singh, R. P., *Can. Plant Dis. Surv.*, 1983, **63**, 13.
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7. Singh, R. P. and Boucher, A., *Phytopathology*, 1987, **77**, 1588.
8. Lopez-Herrera, C., Pliego, F. and Flores, R., *J. Phytopathology*, 1987, **119**, 184.

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Remote sensing

I wish to draw attention to the following in the special issue of *Current Science* on remote sensing (vol. 61, nos. 3&4, August 1991):

(i) Page 230, plate 20. The image reproduced has been annotated to represent Ujjain district. To the best of my knowledge, nowhere in Ujjain district are the Vindhyan rocks exposed. This image may represent some other part of Madhya Pradesh, probably Mandsaur district.

(ii) Page 232, plate 23. The homoclinal ridges shown by the image have been identified as unmetamorphosed Aravalli sandstone. This image refers to the Bundi area and the homoclinal ridges are of unmetamorphosed Vindhyan sandstone (Upper Vindhyans). The Aravalli Supergroup rocks are highly metamorphosed and no unmetamorphosed Aravalli rock has been described from anywhere (except some limestones).

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Ashok Kumar Joshi of Regional Remote Sensing Service Centre (RRSSC), Nagpur, replies:

Plate 20 covers parts of Dhar and Ujjain District. The original image covers a much larger area, which falls mainly in Ujjain district and includes a smaller area of Dhar district. However, in this plate a LISS-II-A1 quadrant is reproduced. The northeastern part of the image covers Ujjain district, the rest being area falling in Dhar district. This particular plate was chosen to show contrasting landscapes due to different geologic formations and larger individual agricultural holdings. In a global context, the scene has been identified with the well-known Ujjain. It certainly does not form a part of Mandsaur district.

With regard to the second comment:

(i) The homoclinal ridges are steeply dipping and show two stages of folding as seen just west of Bundi city, which is in accordance with Aravalli deformation.
(ii) These ridges are actually Basal quartzites of Lower Aravalli Supergroup, which are more compact than Upper Vindhyan– Lower Bhander sandstone.
(iii) The continuation of the same ridge northeast forms the Ranthambhor Hills, which is type area of Ranthambhor quartzite. The lithologic characteristics of these rocks are very similar.
(iv) The shallow sedimentary depositional structures found in Basal quartzites of Aravalli Supergroup led some geologists to classify them with the Vindhyan Supergroup where these structures are very common.
(v) These quartzites in Bundi are so different from Lower Bhander sandstone that Soni *et al.*[1] put them as a separate geologic unit, called Bundi sandstone formation.

These features clearly indicate that the quartzites around Bundi are of Lower Aravalli Supergroup, which contradicts work by Heran (1953) and the Geological Survey of India (1967).

The comment that 'the Aravalli Supergroup rocks are highly metamorphosed and no unmetamorphosed Aravalli rock has been described from anywhere is not supported by facts. There is a good collection of papers on this subject in the memoir of Geological Society of India entitled *Precambrian of*