Paradigm in dictionaries

The editors of the latest earth-sciences dictionary\(^1\) wrote, ‘As recorders we express no opinion’. The words orocene, rhombochasm, sphenochasm, sphenopiezism, orata, oroclimatot and nematot pertaining to Carey’s\(^2\) theory of expanding earth find no place in the dictionary though there is an entry for Carey and another for expanding earth. This is certainly expressing an opinion. A dictionary ‘records words and expressions that are in current use and explains meanings attached to them’, the editors wrote\(^1\) (emphasis added). The expanding-earth hypothesis is a paradigm that has lost to plate tectonics, and the vocabulary of the former is not in current use. A paradigm is\(^3\) ‘the source of the methods, problem-field and standards of solution accepted by any mature scientific community at any given time’ and has aspects of ‘selection, evaluation’ (emphasis added). Thus the selection of terms on the basis of current use further the hold of a paradigm or what was called the ‘ruling theory’ by Chamberlin\(^4\). Incidentally, the publication of the earth-sciences dictionary coincides with the centenary of Chamberlin’s oft-reprinted paper on multiple working hypotheses. Chamberlin discussed the methods of ruling theory, working hypothesis and multiple working hypotheses. The discussion is obviously incomplete without mention of the method of multiple ruling theories, held and debated by different schools or traditions. The last method has all the advantages of the method of multiple working hypotheses recommended by Chamberlin, and yet is more realistic and practical, as it puts no ideal requirement on individual researchers, and, even if they stick to their favourite ruling theory, offers the intended advantage to the community of scientists by public conduct of controversies.

CORRESPONDENCE

Compilers of scientific dictionaries who wish to ‘express no opinion’ of their own must adopt a non-paradigmatic or plural-selection criterion. Contemporary usage is not always such a criterion. A historical outlook is more desirable in dictionary-making, because theories not in vogue now can make appearance again and, at times, with advantage.


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Flowering in bamboo

The report\(^1\) of induced flowering in tissue-cultured bamboo and letter\(^4\) published in this journal are based on the incorrect notion that all bamboo clumps, without exception, flower only in fixed cycles. Most bamboo species show precocious flowering and seedlings of 2 to 3 years age have been known to flower and produce viable seeds. Birbal\(^3\) reported that seeds of Dendrocalamus strictus collected from flowering of 1894 and sown in May 1896 flowered in April 1899 and produced, in June 1899, a crop of healthy seeds, some of which were sown and germinated. The flowering culms were 3 to 5 feet (1 to 1.5 m) high. Ahmed\(^4\) reported that 2-3-year-old seedlings of D. strictus flowered in the Parahat Forest Division of Bihar. Hasan\(^3\) reported that 2-3-year-old seedlings of Bambusa tulda sown in the Forest Research Institute, Chittagong, flowered and produced seeds. Of 39 clumps raised from these seedlings 16 behaved similarly.

In temporary forest nurseries, where large numbers of seedlings of D. strictus (Roxb) Nees and B. arundinacea (Retz.) Willd., the most commonly planted bamboo species in India, are raised and some remain unused, it is quite common to see flowering in some of the 2-3-year-old clumps.

What is claimed to be induced flowering is most likely the result of an accidental selection of seed with inherent tendency of precocious flowering. Tissue-culture plantlets of various species of bamboo have been raised from seedlings with seed as the starting point. No group has successfully raised plantable material from mature culms. This type of research has no practical value; genetic superiority of the explant is not established before picking the same for multiplication. B. tulda, which has not flowered progressively since 1810, has not been grown successfully by any tissue-culture group in India so far. Most bamboo species have been raised successfully by rooting of nodal cuttings from culms obtained from mature clumps. That tissue culture has not succeeded with mature culms shows either its limitations or lack of effort on the part of plant scientists.

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A. F. Mascarenhas replies:
We do not agree with Chaturvedi's views.

SCIENTIFIC CORRESPONDENCE

NEWS

Adaptive problem solving

A one-week seminar was recently (8–15 May 1991) held at Kodai kannal on the
topic 'Object-oriented analysis and pro-
gramming'. The seminar was sponsored
by the Department of Applied Science
of the American College, Madurai. The
participants were young scientists from
Mysore University School of Studies in
Physics, Raman Research Institute,
Bangalore; Kodai kannal International
School and the physics and applied
science departments of the American
College.

Object-oriented analysis is a recently
developed systematic way of analysing
problems for solutions using computers.
Its new emphasis includes the encapsu-
lation of data abstractions and opera-
tional abstractions in a way which
tends to make the resulting programs
relatively insensitive to changes in the
problem. This means that additional
demands or requirements of the user on
the system can be easily incorporated
without disturbing the system itself.
This has obvious advantages in scientifi-
cal situations where the essence of
creativity is innovation. Sadly we often
find our computational tools become
too easily ineffective when problem
innovations or new user demands/re-
quirements are introduced. Object-
oriented analysis is intended to reduce
this effect.

For realistic experience and learning
the participants used a real administra-
tive problem which demonstrated in its
solution many of the features and
advantages of the method. The disci-
pline and methodology can certainly be
used to advantage in many scientific
situations also and readers may find the
book Object-Oriented Analysis by Coad
and Yourdon (Prentice Hall, New York,
1990) a worthwhile introduction for
both scientific and computer-oriented
use.

The participants in the seminar were
able to appreciate the potential impact
of this new methodology on computer-
aided solutions in their own fields,
including the very strategic area of
computer-aided instrumentation of
many sorts.

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