

ending the voyeurism implicit in eavesdropping on such an intimate moment in a married couple's life.

- A funny, brilliant pastiche of a baby crawling over glass. Every hand print and foot print lights up as it walks—it sounds simple, but the camera work and lighting make it a magical moment.

- A magnificent introductory tracking shot of bodies (some 98 of them I believe) ranging from the very young to the aged and infirm.

- Richard Gregory's optical illusions are beautifully demonstrated, as well as some of J. Tanner's film on growth.

There are also some boring sequences. A demonstration of foreplay (some in schlieren no less!) and sexual intercourse is as lengthily tedious as it is unnecessary. Whilst scrupulously satisfying edicts of the British Board of Film Censors, it seems designed more to titillate than reveal. It seems to be included, along with other sequences,

to meet some film distributor's estimate of the audience's taste rather than being concerned with the needs and integrity of the subject.

This is, alas, the essence of the film. Too often while pretending to be "vulgar" in the original and honourable sense of the word, the element of voyeurism implicit in the producing of today's "flesh" movies makes the film "vulgar" with all that the modern meaning implies. It thus mars what otherwise might have been an outstanding film.

"Birth, copulation and death,
I should be bored,
I should be bored."

So far as this film is concerned, T. S. Eliot just misses hitting the nail on the head, but he is not far off the mark.

AUBREY SINGER

Correspondence

Soviet Restrictions

SIR,—I am glad to see from Jukes's letter (*Nature*, 228, 589; 1970) that I am not the only one who thinks the letter from Bikerman (*Nature*, 228, 297; 1970) extraordinary. To compare his own failure to obtain a travel grant with the trials of Medvedev is an insult to a very courageous man. No one is presumably preventing Bikerman from leaving the USA, whereas, to judge from Medvedev's testimony, the attitude of the Soviet authorities borders on the psychotic. On balance, it is Bikerman's letter, not Medvedev's book, which is "subtle communist propaganda".

Cahn's subsequent point (*Nature*, 228, 485; 1970) about the non-arrival of Russian speakers at meetings is unfortunately only too common. He might have added that, when they do turn up, they have often been allocated barely two pieces of hard currency to rub together. The consequences of this can be extremely embarrassing.

Yours faithfully,
G. B. ANSELL

Department of Pharmacology,
The Medical School,
Birmingham B15 2TJ.

Science Citation Index

SIR,—Following E. Garfield's article¹ about heavily cited authors, several apparent shortcomings of the *Science Citation Index (SCI)* have been pointed out²⁻⁴. I could list many other reasons why the *SCI* apparently should not work, and why the "most cited author" list may be misleading.

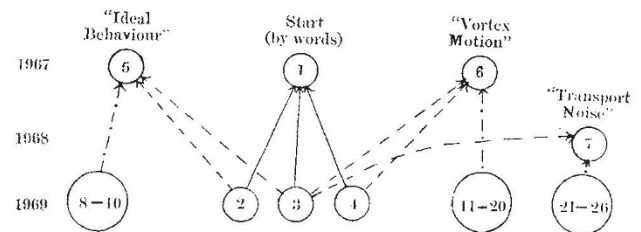
The reason why the *SCI* does work and the list is valuable becomes clear if we talk about probabilities rather than certainties. Thorough investigations⁵ of citation practices show that various apparent shortcomings do not normally affect the system; they are low probability events or possibilities—in contrast to the high probability that a well cited article reflects a beneficial progressive impact.

Hopefully, the system will be used with discrimination, unlike the usage described by Croom⁴. Hopefully also, the assessment of an author by citation counts will be qualified by a consideration of the activity in his subject area, nature of the research front, and so forth—in conjunction with any other facts or opinions that may assist in the assessment. I think we may assume that Garfield's remark: ". . . it is up to the scientific community to prevent abuse of the *SCI* . . ." means that the

SCI, author lists and such like, should be applied with reasonable intelligence.

A reader of the top of the league table will doubtless reflect on the nature of the author's impact—whether it be inventive, original, interpretive or methodological. Moreover, if our author is cited consistently, year after year, perhaps long after he published, it may be concluded that his impact endures.

The set of subjects symbolized in the references of an article is usually associated with the subjects, concepts, methods, apparatus and so on, described in the text (there are also occasional excesses of undeserved self-citing and bibliographic mutual back-scratching).



A, Locate starting article by words in the *Permuterm Index*: 1.
B, Enter *Citation Index* to locate citing articles. Examine references keyed to specific aspects of the subject in the text: →, 2, 3, 4.
C, Select references symbolizing those aspects: —→, 5, 6, 7.
D, Enter the *Citation Index* to locate articles, —→ 8-10, 11-20, 21-26, which cite the "subjects" 5, 6, 7 respectively.

Fig. 1. Identification of subject aspects—"The physics of super-conductors".

Fig. 1 illustrates the citation connexions between articles about "The physics of super-conductors". Articles 5, 6 and 7 were rather easily identified with certain aspects of the subject when using the *SCI* without subject expertise. Articles citing them relate to similar aspects.

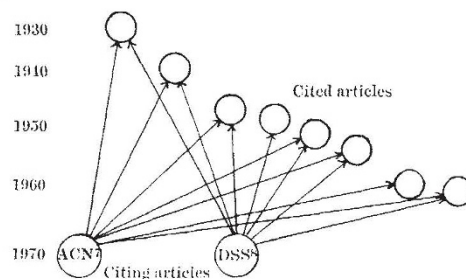
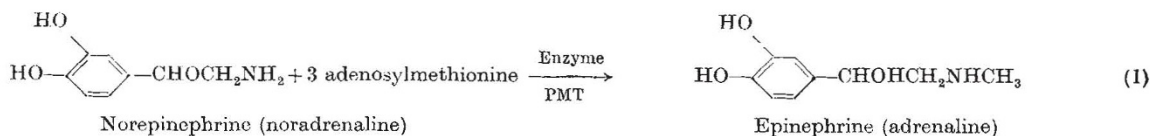


Fig. 2. Similarity of articles indicated by "bibliographic coupling". Two articles, each containing eight references, have six of them in common.



An artefact called "bibliographic coupling"⁶ was used when considering this subject. An extreme example of it recently occurred in *Nature*, when two articles^{7,8} (published independently) contained virtually the same set of references (Fig. 2). A study of such diagrams helps to identify subject similarity, particularly when titles are inexplicit, and the articles appear in journals with apparently quite different disciplinary coverage (quite a common occurrence).

Quite complex concepts may be conveniently symbolized by a reference. Thus the enzyme assay shown in equation (1) is symbolized by:

Saelens, J. K., *et al.*, *Biochem. Pharm.*, **16**, 1043 (1967) which leads to:

Nikodije, B., *et al.*, *Biochem. Pharm.*, **18**, 1577 (1969). "Catechol-o-methyltransferase 1. An enzymatic assay for cardiac norepinephrine" (a 1969 article which cites Saelens).

Because only 0.005 per cent of authors are in the

exalted category mentioned by Garfield, and because the outcome of the average *SCI* search is usually based on the works of the remaining 99.995 per cent, one look-up in the *SCI* usually locates a small number of relevant articles, together with an even smaller amount of "noise". This is one of the main virtues of the system.

Yours faithfully,

A. E. CAWKELL

ISI European Branch,
132 High Street,
Uxbridge,
Middlesex.

¹ Garfield, E., *Nature*, **227**, 669 (1970).

² Comfort, A., *Nature*, **227**, 1069 (1970).

³ Oliver, P. T. P., *Nature*, **227**, 870 (1970).

⁴ Croom, D. L., *Nature*, **227**, 1173 (1970).

⁵ Cawkell, A. E., *J. Doc.*, **24**, 299 (1968).

⁶ Kessler, M. M., *Inform. Stor. Retr.*, **1**, 769 (1963).

⁷ Neville, A. C., *Nature*, **225**, 199 (1970).

⁸ Smith, D. S., *Nature*, **225**, 199 (1970).

⁹ Barlup, J., *Bull. Med. Libr. Ass.*, **57**, 260 (1969).

Obituaries



Professor David Al'bertovich Frank-Kamenetskii

ON July 2, 1970, Professor David Al'bertovich Frank-Kamenetskii, one of the leading scientists and science journalists of the Soviet Union, died suddenly in his fifty-ninth year.

David Frank-Kamenetskii was born in Vil'nyus in 1910, the son of a chemical engineer who later became a professor at the University of Irkutsk. He graduated in the department of non-ferrous metallurgy of the Tomsk Technological Institute and after working for a period in a factory and a period as a teacher in a technical college he was invited by Academician N. N. Semenov to go to the Institute of Chemical Physics of the Academy of Sciences of the USSR in Leningrad, where in 1938 he presented his thesis for the degree of candidate of chemical sciences. In 1943 he became a doctor of physical and mathematical sciences, and became head of the department of technical chemistry in Gor'kii State University. From 1956 onwards, he worked in the Kurchatov Institute of Atomic Energy and at the same time founded and directed the Department of Plasma Physics in the Moscow Institute of Physics and Technology.

Frank-Kamenetskii was known for his basic research in a number of fields, including the theory of combustion and chemical kinetics, exothermic reactions, astrophysics and plasma physics; in the last field he introduced the concept of magnetosonic resonance. His works include *Diffusion and Heat-Transfer in Chemical Kinetics*, *Oxidation of Nitrogen in Combustion and Explosions*, *Physical Processes within Stars* and also a number of popular works on physics and astrophysics. During recent years he was deputy chief editor of the popular science magazine *Priroda*.

For his own research work, and for his achievements in the popularization of science, he was awarded a number of prizes and honours, including the Order of Lenin, the Order of the Red Banner of Labour and three State Prizes of the Soviet Union.

Academician S. S. Medvedev

THE death occurred on August 13, 1970, of Academician Sergei Sergeevich Medvedev, one of the most renowned Russian specialists in the physics and chemistry of high molecular compounds. He was in his eightieth year.

Sergei Medvedev was born in Moscow in 1891. After graduating from Moscow University in 1918, he played an active part in the organization of the Central Asian University of Tashkent and became head of the Central Chemical Laboratory of the Uzbek Council of Agriculture. In 1922 he founded the laboratory of oxidation and polymerization processes in the L. Ya. Karpov Physical Chemistry Institute in Moscow, holding the post of head of the laboratory until the end of his life. From 1938 onwards, he was an instructor at the Moscow Institute of Fine Chemical Technology. He became a corresponding member of the Academy of Sciences of the USSR in 1938, and was elected to full membership of the Academy in 1958.

Medvedev's research dealt with many pure and applied aspects of polymerization, including the production of synthetic rubber, the effect of nuclear radiation on polymerization and the production of synthetic textiles.