

Correspondence

Dangers in the Use of the Science Citation Index

SIR.—Attention has been drawn (see *Nature*, 227, 669; 1970) to the usefulness of the *Science Citation Index (SCI)* for studying science. Certainly, as the author makes clear, this is likely to be a valuable tool for the study of the history and development of science.

However, there appear to be certain dangers inherent in applying it to some of the potential uses described in the paper. For example, once the uses of the *SCI* become more widely known and accepted, an uncritical non-specialist committee seeking to appoint a specialist to a post may well use a diagram of the form shown in Fig. 1 of the paper to appoint the author of paper 2 without going through the tiresome business of reading papers 3 to 15 in detail. Not all citations are complimentary ones, however, and there is nothing in Fig. 1 to show that the author of paper 2 did not make a major "boob" which is subsequently being held up as an unfortunate example by the later authors. It may even have been a clever hoax paper which has subsequently been debunked.

Another disadvantage is the necessarily long time constant involved—the author of paper 2 may have been doing good work in the years before 1947, but the real question in the case of an appointment to a post is what sort of work is he doing or capable of doing more than 13 years later? There is also a danger that the person who is on top of his field in the late 1950s (referring again to Fig. 1 of the paper) might well be automatically passed over because of insufficient time having elapsed for his work to have been formally published and formally recognized, even though fellow workers in his field are already making use of his results. Thus, use of the *SCI* for merit awards may well result in a form of advancement according to seniority.

An interesting anomaly is that it could be possible for a scientist to be so well established that he would drop right out of the "top fifty". How many authors refer to "The Theory of Relativity (Einstein, 1905)" rather than "Einstein's Theory of Relativity", or simply "The Theory of Relativity"?

The author further suggests that "prizes, grants, fellowships and other forms of recognition, could be awarded without the wasteful in-fighting and manoeuvring among scientists described by Watson". Possibly, but it will be interesting to see if extended use of the *SCI* for this purpose leads to a significant decrease in the average number of citations listed per paper. In particular, under this system, detrimental references to another paper could actually assist the author of that paper to win an award.

A further difficulty of a technical nature is that many authors change the style of their name throughout their career. For example A. B. Jones and A. Jones may well be the same person, but in the *SCI* they will receive separate listings. Conversely two different J. Smiths may appear as one person in *SCI*. Moreover, on marriage, many women scientists change to using their husband's surname on their papers, and so will receive separate pre- and post-marriage listings.

Finally, the author ranked as No. 1 in Fig. 3 of the paper is shown as having an outstanding superiority in number of citations over all others. Reference to *SCI* for 1967 shows that this is due largely to a single 1951 publication¹ which is cited approximately 2,350 times. However, because this paper has three other authors, none of whom appear in the top "fifty" of Fig. 3, it would appear that to obtain a good *SCI* rating it is all-important to ensure that one's name appears first on a multi-author paper—or has the computer erred? The paper in question is entitled "Protein Measurement with the Folin Phenol Reagent".

Not being an expert in biochemistry, I am unable to evaluate its worth, though according to the *SCI* criteria it must be one of the outstanding scientific papers of the last few decades. It would be instructive to hear from a biochemist why it is that this particular paper is quoted so prolifically in comparison with all other scientific papers. Dr Garfield clearly recognizes the possibility of abuse of the *SCI*, and he and other experts in the field of science information will undoubtedly be aware of these and other dangers. There does remain, however, the difficulty that the techniques involved are simple enough to be used superficially by uninformed persons.

Yours faithfully,

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¹ Lowry, O. H., Rosebrough, N. J., Farr, A. L., and Randall, R. J., *J. Biol. Chem.*, 193, 265 (1951).

The Enzyme Defect in Fabry's Disease

SIR.—In your issue of May 16 (*Nature*, 226, 596; 1970) your correspondent stated that Fabry's disease can now easily be diagnosed because of the absence of ceramide trihexosidase in the plasma of patients with the disease. In fact, the assay of this enzyme which requires the isolation and the purification of ceramide trihexoside is not an easy task for most clinical laboratories, even in university hospitals.

The finding that Fabry's disease is simply due to the absence of a non-specific α -galactosidase is, in this respect, far more promising. This lysosomal enzyme is not detectable in leucocytes, in the plasma and in the urine of male patients with the disease. The α -galactosidase activity in the leucocytes and in the plasma of female carriers of the disease is only 15 to 40 per cent of the amount present in normal leucocytes and plasma. The enzyme determination is quite simple and needs only a colorimeter if one uses *p*-nitrophenyl- α -D-galactopyranoside as substrate or a fluorimeter if the more sensitive assay with 4-methylumbelliferyl- α -D-galactopyranoside is preferred. Both substrates are now commercially available from Koch-Light Laboratories Ltd, Colnbrook, Buckinghamshire, and their distributors in the United States, Pierce Laboratories.

Yours faithfully,

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¹ Kint, J. A., *Science*, 167, 1268 (1970).

Our Medical Biochemistry Correspondent writes: I am afraid I had overlooked Kint's paper on Fabry's disease. His results are certainly interesting, particularly as the linkage in the ceramide trihexoside was thought to be β . His assay is certainly very simple to carry out, but Brady *et al.*¹ have recently pointed out that one needs to be very cautious in identifying enzyme deficiencies using artificial substrates of this type. In two patients with generalized gangliosidosis, there was very little β -galactosidase activity with *p*-nitrophenyl- β -galactoside as substrate but an increased activity when sphingolipids themselves were used as substrates.

¹ *Biochim. Biophys. Acta*, 210, 193 (1970).