has not been measured; we do not regard the 5/2− octet as being particularly "well established."

In the letter of Alitti and colleagues both abstract and text claim a discovery and a new conjecture, but at least in their footnotes they admit that this is not so. The PHYSICS TODAY news story accepts these claims without qualification. The letter was already misleading; your story was just wrong.

PHILIP DAUBER, ARTHUR H. ROSENFELD, GERALD R. LYNCH, CHARLES G. WOHL
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A REPLY FROM BROOKHAVEN: In response to the negative remarks of Dauber, Rosenfeld, Lynch and Wohl concerning the short item, "New Cascade Particle Completes 5/2− Octet," we will restrict our comments to their reference to the *Physical Review Letter* of Alitti et al.

(a) The *Physical Review Letter* of Alitti et al was far from misleading. It is clearly and unambiguously stated, "The earlier data, although suggestive, were far from convincing because of limited statistics and difficulties with interference effects. The inconclusive nature of the old data is also indicated in the latest compilation by Rosenfeld et al."[1] The importance of the present experiment is that it has a much greater statistical validity than the experiment of Badier et al and is free from the systematic difficulties of the experiment of Smith et al (as partially acknowledged by Dauber et al).

(b) It should be noted that essentially the same Berkeley data have been interpreted by the same authors in two different ways: (1) as evidence for a $\Xi(1820)$ (Dubna Conference 1964)[2] and (2) as evidence for a $\Xi(1930)$ (Athens Conference 1965).[3] We believe that data that allows such flexibility of interpretation is certainly not conclusive. This conclusion is reinforced by the existence of an enormous time lag between the availability of the Berkeley Ξ data, 1965, and its publication in *The Physical Review* or *Physical Review Letters*, 1969.

(c) Concerning the question of the 5/2− octet, we must again refer to Rosenfeld's compilation.[1] Here the $N(1680)$, $\Lambda(1827)$ and $\Sigma(1765)$ are noted to have $J^P = 5/2^-$. With the addition of the $\Xi(1930)$ one notes that the Gell-Mann–Okubo mass formula is satisfied and that nine experimental decay rates are fitted rather well by three parameters in the SU(3) formulation of the octet. To quote Alitti et al, "An application of the Gell-Mann–Okubo mass formula suggests that it is a member of a $J^P = 5/2^-$ baryon octet and detailed SU (3) study of the total and partial widths of the member states seems to give a reasonable overall consistent picture." If one is not convinced of the existence of the octet unless the $\Xi(1930)$ spin and parity are also measured then the present experiment clearly cannot convince Dauber et al of the existence of the 5/2− octet. On the other hand, we note that these same men did not take exception to the existence of the $3/2^+$ decuplet noted in the same PHYSICS TODAY item although the spin of the Ω^- has yet to be measured.

With respect to the actual PHYSICS TODAY item, we believe the use of "established the existence of" instead of the word "found" may be a more precise and less controversial way of "telling it how it really was."

References

1. *Review of Particle Properties*, UCRL 8030, August 1968.
2. *Proceedings of the 12th International Conference on High Energy Physics* (Dubna, 5–15 August 1964) page 600.
3. *Proceedings of Athens Second Topical Conference on Resonant Particles* (10–12 June 1965) page 251.

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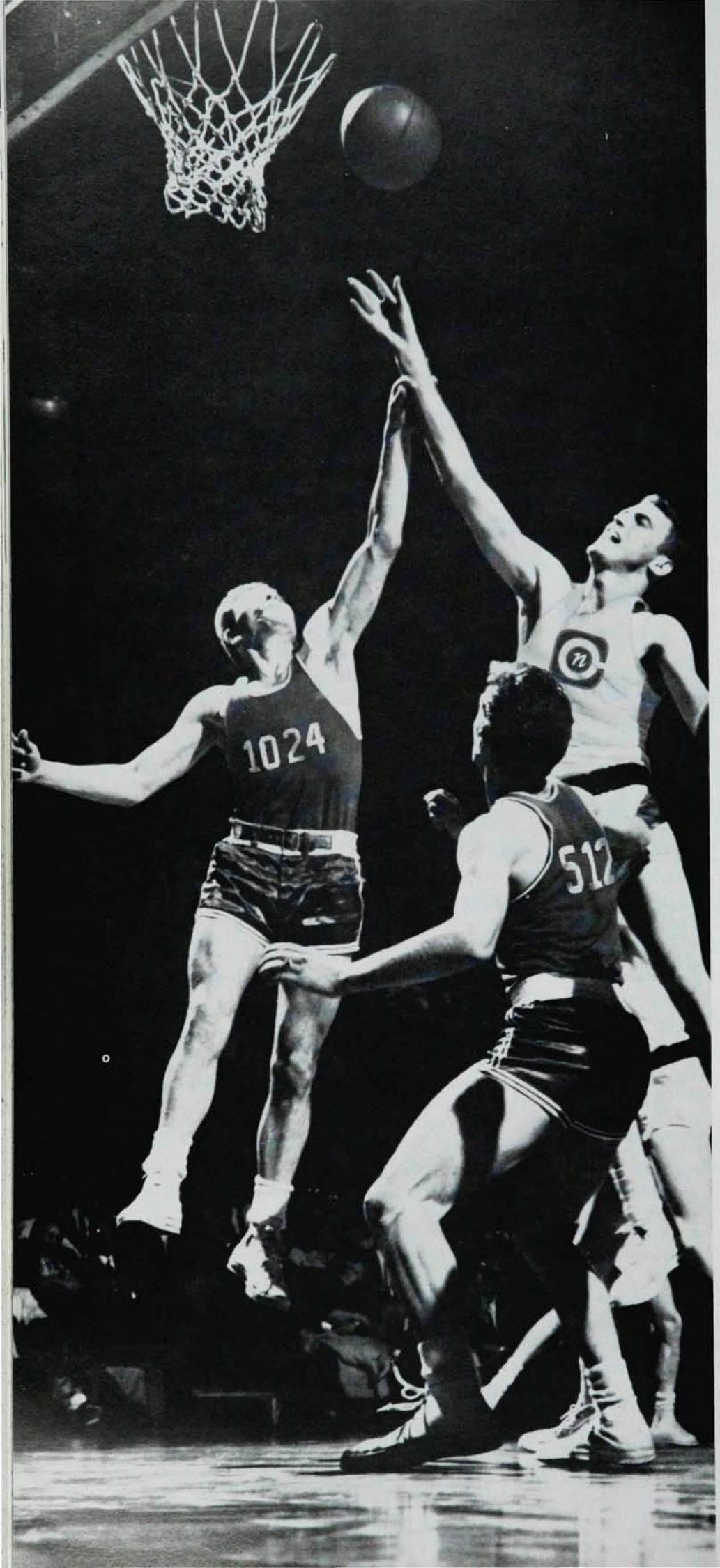
Citations and evaluation

In a letter to PHYSICS TODAY in 1953,[1] M. J. E. Golay proposed the preparation of a referenced-author index, or what is now known as a "citation index," as a tool for bibliographic search and as a means of dealing with "one of the knottiest tasks faced by scientific management, namely the problem of evaluating published research results." Doubtless many are aware of the existence of the *Science Citation Index*, which has been published annually since 1964 by the Institute for Scientific Information of Philadelphia. It is the particular purpose of this let-



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ter to call the attention of fellow physicists to studies that aim to evaluate various ways of using the citation index to deal with the knotty task identified by Golay. A pertinent bibliography is given on pages 7 and 8 of part I of the *Science Citation Index* for 1967.

Of particular interest to physicists is a paper[2] that appeared in the *American Sociological Review* in June 1967 by S. and J. R. Cole entitled "Scientific Output and Recognition: A Study in the Reward System of Science." This study uses a number of methods to determine the validity of various ways of using the *Science Citation Index* to measure scientific recognition for physicists. The results for a group of 120 physicists support a claim that various measures of citation frequency correlate highly with other measures of recognition.

It must be emphasized, of course, that no single number can responsibly be substituted for detailed study of the total professional output of a scientist in evaluating his professional performance. But those who must evaluate published research will certainly be remiss in their responsibilities if they ignore the evidence that citation frequency is a significantly validated, readily ascertainable, objective measure of scientific recognition of published research of physicists.

The ready availability of citation data and their validation as a measure of scientific recognition of the published research of physicists also opens the possibility of evaluating the operation of local reward systems in those employment situations in which published research is allegedly a major determinant of rewards. Studies of citation frequency versus rewards within those employment environments might generate evidence of favoritism or discrimination and therefore could eventually lead to appropriate corrective action.

References

1. M. J. E. Golay, "Referenced-Author Lists," PHYSICS TODAY **6**, no. 1, 20 (1953).
2. S. Cole, J. R. Cole, American Sociological Review **32**, 377 (1967).

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