# Letters

## Who Reads the Journals?

Abelson's editorial regarding foreign distribution of U.S. scientific literature (6 Aug., p. 589) requires comment. In 1961 we began publication of a semiannual geological journal, *Contributions to Geology*. We solicited both U.S. and foreign institutions for exchange or subscriptions. Our circulation from both sources is now approximately 1000 copies. The interesting point is that apparently our foreign readers outnumber the domestic ones by a very large factor. We see references to articles in *Contributions to Geology* in many foreign journals, and reprint requests from abroad are numerous. The fact that many such requests and references are from respected and influential scientists reflects discredit upon American scientists. I suggest that the lesson to be learned from this vignette of scientific publishing is that Americans do not, by and large, read publications. Our colleagues in Europe and Asia are apparently vastly better informed than we are. Circulation or membership figures are so misleading as to be worthless. It is what people actually read that counts. May I suggest to my American colleagues that they spend more time reading and less writing. Our foreign colleagues do.

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## How Children Learn to Read

One can only applaud the *rapprochement* between psychology and education signalled by Gibson's recent article in *Science* entitled "Learning to read" (*1*). But it would be a pity if the careful and imaginative research that she and her colleagues have undertaken were to lead to the error that has, to my mind at least, marred so much of educational research—that is, the effort to devise new instructional methods and materials without sufficient consideration of the nature of mental growth and ability. Although Gibson and her colleagues are still far from taking a "methods and materials" approach, her report suggests that the work is tending in that direction.

This impression is derived from Gibson's emphasis upon the "learning process" in the strict sense in which this term is used by learning theorists. While Gibson uses the terms "development" and "stage," there is no real consideration of how the learning process changes or new processes are acquired with maturation. Indeed, one gets the impression from the article, perhaps mistakenly, that there is *a* learning process which is invariant with age, and that the task of research on reading is to find ways of bringing about relevant discriminations and transfers. Such a position leads inevitably back to the methods-materials approach, because it emphasizes the manipulations of the teacher rather than the mental activities of the pupil.

Our own research on reading, strongly influenced by the work of Jean Piaget, takes a rather different starting point. We start with the assumption that the learning process is a function of the child's developmental level and that the first task of the psychologist is to diagnose such levels and the learning processes associated with them. We have tried to show, for example, that perception changes with age, and that even the ability to reverse figure and ground (*2*) and to integrate parts and wholes (*3*) is partly a function of age. Short-term learning (*4*) does not alter these age differences. With respect to reading, we have tried to show that such developing perceptual abilities are related to reading skill (*5*) and that slow readers are deficient in them (*6*). In recent, as yet unpublished, research we have found, moreover, that perceptual skills important for reading at one level of development may be unimportant or detrimental at other levels. Tactile discrimination of letters, for example, is positively correlated with reading skill among young children but negatively related to reading ability in older children.

A goodly number of recent studies by other researchers also suggest that the learning processes and strategies utilized by children are, in part at least, dependent upon their developmental level. It is also coming to be acknowledged that theories derived from experimentation on adults cannot be applied to children without serious modification. The Gibson article takes no note of these trends and cites research with adults as being relevant to the reading processes of children.

Also omitted from Gibson's article is any mention of individual differences in ability to profit from certain methods and procedures, and of the difficulties of applying laboratory-derived methods in an ordinary classroom. I recall vividly the despair of my father, a machinist, over the meticulous blueprints given to him by inexperienced engineers. The trouble with these blueprints was that they just could not be machined! The same will hold true of blueprints for teaching reading that fail to take account of the realities of the classroom.

Cooperation between psychologists and educators, as Gibson has so clearly pointed out, is long overdue. But theoretically and experimentally sound methods are of little real value unless they can be applied. How to apply them does not follow as a matter of course but is in itself a matter for research.

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**References**

1. E. J. Gibson, *Science* **148**, 1066 (1965).
2. D. Elkind and L. Scott, *Child Develop.* **33**, 619 (1962).
3. D. Elkind, R. R. Koegler, E. Go, *ibid.* **35**, 81 (1964).
4. ———, *Science* **137**, 7 (1962).
5. D. Elkind, M. E. Larson, W. Van Dooninck, *J. Educ. Psychol.* **56**, 50 (1965).
6. D. Elkind, J. Horn, G. Schneider, *J. Genet. Psychol.*, in press.

Elkind criticizes our work for taking what he calls a "methods and materials" approach. Insofar as this is true, I am not at all dismayed by the criticism. One of the principal emphases of progressive reading programs for the past two decades has been so-called "readiness"—an emphasis on maturation