

recently: "At all levels of education, teaching programs have become increasingly dependent upon a well-stocked library, the services of a professional librarian, and up-to-date textbooks..."

The paperback book: The paperback book is now rapidly assuming an important role among instructional materials in the classroom. *Paperbound Books in Print* (Bowker) lists thousands of titles covering art, biography, economics, fiction, history, literature, philosophy, poetry, reference works and works on religion and science. From this store of print, the elementary and secondary teacher can select richly for almost any teacher-learning purpose.

The advantages of the paperback are:

- The abundance of paperbacks gives teachers the opportunity to choose readily materials of varying content and of just the right vocabulary, conceptual and interest levels.
- The relatively lower costs of paperbacks makes possible individual approaches to teaching.
- Ready availability of paperbacks in the classroom often sparks the development of new teaching techniques.

Programed instruction: Today, educators and publishers view programed instruction calmly and gauge realistically its potentialities, which are considerable. The points which have emerged after a decade of tryouts are these:

The learning principles behind programed instruction can be realized either through the use of hardware (teaching machines) or print. Both media have proved their effectiveness.

Programed instruction is gaining a role in the classroom because it can relieve the teacher from repetitive tasks, freeing him for more creative teaching duties, such as individualized instruction.

Because programed instruction helps teachers do a better job, the number of programs (ranging from arithmetic to zoology) has grown during recent years. Only a handful existed in 1960. Today, the number of programs has passed the 1000-mark. Further expansion depends only on the willingness of school systems to equip faculties with this potent teaching tool.

The usefulness of print needs no apology after serving as man's carrier of knowledge for more than five centuries.

But words and pictures and paper constitute only part of the media used in today's instruction. Technological aids have entered the classroom — and are there to stay.

Innovations of technology

Primitive man probably never had a theory for the bow and arrow as instructional tools; but he knew he

couldn't teach a boy to hunt without them. Whenever and wherever good teachers have instructed the young, they have supplemented the spoken word (and later, the printed word) with concrete materials. Although it required centuries of scholastic verbalism to return man's mind to the need for "realism" in teaching, pictures, objects, field trips began to count in teaching. Benjamin Harris, who, before 1690, published *The New England Primer*, well realized the importance of pictures. Froebel became obsessed with the role of the sphere in teaching the young; Pestalozzi built his teaching techniques around objects.

The motion picture was barely ten years old when school principals in Chicago began sponsoring projectionists clubs (1895). And early in the 1900's the superintendent of schools in St. Louis was regularly dispatching a horse and wagon, loaded with teaching aids for the use of schools in his district.

While theorists debated the role of audio-visual aids, scientists and inventors waited neither for theory nor for the conclusion of the debates. Motion pictures, records and radio gained a firm place in the daily lives of Americans. Their place in the classroom was still shaky by mid-century. But the range of instructional material widened from year to year, not only because educators gradually admitted electric media into the teaching process, but because technology entered the age of electronics and began to turn out devices, usable in schools, at what has been called a frightening pace.

The machine is at hand: Today the machine exists; it exists in education as well as in industry and in the home. "A new technology for education has been developed," said a position paper developed by a group of audio-visual experts, "and proved through basic research and practice." The products of this technology have already gone through four generations, as suggested by Wilbur Schramm: from blackboards, maps, models (first generation); printed teaching materials (second generation); motion pictures, radio, television (third generation); through language labs and information storage and retrieval systems (fourth generation).

The gap between what we can do with technological teaching aids and what we actually do is still wide. So many educational media are available for use, and so relatively few are put to work on classroom tasks.

Consider the overhead projector: This simple device enlarges up to ten times the natural size print, drawings, photographs, charts and graphs which are on transparent materials. Its versatility as a teaching tool is recognized daily by teachers from kindergarten through college. It is as effective in teaching accounting as zoology.

But the projector is only as useful as the material on the transparency to be flashed on the screen. Hence authors, editors and publishers are devoting the same care and thought to the development of transparencies