For Our Children, Let Us Have Museums

Surely a people that neglects its children must lose its birthright. Physicists might reach their children through science museums. But unless they live in Munich or possibly London or Chicago, they will find the museum route to understanding and enthusiasm a hard one to follow.

In talking to the scientific director recently (page 50), I learned that the Munich museum succeeds through a subtle interplay among exhibits devoted to three themes: history, methods and scientific laws. You are likely to see first the actual apparatus used by a pioneer. Simple demonstrations that show natural laws and how they are discovered may follow. Last on display may be operating systems that exploit the laws. Thus after the original apparatus of Heinrich Hertz come demonstrations of simple electric and magnetic principles and later an operating oscillator attached to a transmission line on which you can move a light bulb to find potential maxima and minima.

The Smithsonian Institution is to be congratulated on making an effort in its new Museum of History and Technology. Although the word "physics" did not appear in its floor plans when I looked for it a few years ago, recently I saw their small new section labeled "Physical Sciences." Its philosophy is not yet clear, but at least it mixes history and instruction. In the way of history it has the guts of the old Columbia cyclotron and a figure-eight stellarator. As yet it has no Michelson-Morley, Millikan oil-drop or Davisson-Germer experiment. In the way of instruction I saw a ball rolling down a gently sloping track with markings that show equal time intervals. A label started as follows: "The speed of this ball increases by 32 feet each second. Although the incline causes the ball to fall more slowly, its speed increases at the same rate as though it were falling freely. Galileo devised this experiment about 1609 to test . . ."

You can fare a bit better at the Chicago Museum of Science and Industry, which has an overall size about two thirds that of the Munich museum. Its physics section is small, but you can push some interesting buttons and see informative explanations of why nature behaves as she does. Other smaller and more specialized museums in the United States offer us some hope for future children (and interested adults): the Los Alamos museum of atomic energy, the Boston science museum, Philadelphia's Franklin Institute, the new Ernest O. Lawrence Hall of Science in Berkeley, the New York Museum of Natural History with its planetarium.

But our need is many times as big as attempts to meet it. While youngsters of all ages are cordially wooed into the "other" culture by hundreds of art galleries, libraries, concert halls and theaters, the delights of physics are usually introduced by a high-school textbook at age 17.

Especially distressing is the ease of doing things better. Displays to convey the enjoyment and significance of a Millikan oil-drop experiment, the working of gravity on a steel ball and a cesium-beam clock could be mass produced with the ease of an Erector set. The local bank, school or library could show them after the science teacher or power-plant engineer had set them up.

May I suggest, then, that we start a science museum that can be duplicated and displayed wherever someone will take the trouble? Let us find a national agency, a commercial company, a professional society or a private foundation that will make the exhibits and distribute them cheaply. Let us hope that local authorities will give us a hall, a library table or an office window where people can study pulleys, vacuum tubes and atoms. Our children can then meet explanations of natural phenomena when things around them arouse their curiosity, and a reverence for science can be as simple a part of growing up as enjoyment of Picasso or Mozart.

—R. Hobart Ellis Jr