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MANY influences in our modern life keep girls away from scientific subjects. Their aunts give them dolls rather than Mechano sets. Their schools prescribe dancing or cooking rather than rock study or shop work. Yet even if they did want physics, they would scarcely be able to get into physics classes in today's high schools. So said fifty teachers, principals, school superintendents, counselors, and scientists who took part in a one-day discussion on "Physics Education for Secondary-School Girls" which was held last May under the auspices of the Washington, D. C. Joint Board on Science Education at Immaculata High School and Junior College.

There are not enough science teachers with adequate physics training. Men and women with makeshift preparation are pressed into physics teaching. The pay is poor. Teachers who are successful are usually tempted to turn to administration because of the higher salaries. There is a shortage of demonstration equipment, but even when it is available, the physics teacher doesn't have sufficient time to get it set up for the required five classes per day. There is usually less than one hour of laboratory for each class. Such are the troubles in the schools themselves.

On the part of all students, both boys and girls, is the desire for the good marks which make entrance into college possible. Science teachers are apparently notorious for giving low grades. In science classes the

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HIGH SCHOOL PHYSICS

student is often up against a stiffer set of standards than in other subjects, a situation not recognized by college admission boards looking only at A's and B's. Girls who have proved proficient in the humanities are especially more sensitive to the chilly air of science. The shock of poor marks is greater for them than for most boys who have learned to take C's in their stride.

It was easier to describe the factors that keep girls away from physics than to propose the cures. Most of the conferees thought that the most important thing is to start physics and all science earlier. Consideration of the physical universe should start in nursery school and be continuous in the educational process. Quantitative thinking, an insight into the relation of mathematics to physical phenomena, should be part of every young child's experience. Thus the discipline of science would come very early for both boys and girls. As they matured, their interest in science, in this technological age, would also grow.

Once this interest is acquired, girls would prove as adept in physics as boys, given spirited and imaginative instructors. Several teachers reported that girls are more apt than boys to be fascinated with the general principles of physics. It is only the "engineering" aspects which frighten them. Even the handicap of a lack of manual skills or instrumental know-how can be quickly overcome in an imaginative lab course. The girl's lack of preconceived ideas of how things should be done can be turned into the positive advantage of permitting a freer use of imagination and originality.

Earlier science instruction and better teachers will

come only from community pressure. This point was stressed again and again in many different ways. Teachers have mechanisms for complaining about working conditions and salaries but such complaints receive little attention unless backed up by "political power" in the community. The scientists in any region can do much to influence opinion by giving talks at PTA meetings, business men's lunch clubs, chambers of commerce, and similar groups, making physics, and all science, seem a more familiar and important part of modern life. Such talks should, in vivid and concrete ways, stress the liberal-arts aspect of physics, its values in general education, not merely its vocational advantages. The availability of such talks should be made known in some way, perhaps by the circulation of lists of topics in the way that the Washington, D. C. Joint Board on Science Education now announces possible talks for student groups.

Exhibits, such as those displayed by the AEC traveling trucks, should be made available to community groups as well as to schools. The number of "cultural" physics courses available to parents in colleges or in adult education centers should be increased.

The great influence of movies, radio, and TV on community attitudes was, of course, recognized. But the educators at the Immaculata meeting spent little time hoping that Mr. Disney would solve their problems. The feeling crystallized that, in the Washington community at least, the efforts of local scientists could do much to change the climate of opinion on the value of physics.

