

## EDUCATION

## Poorly Trained Teachers

► PRESIDENT KENNEDY charged in his report on education to Congress that, "about one out of every five of the nearly 1,600,000 teachers in our elementary and secondary schools fails to meet full certification standards for teaching or has not completed four years of college work."

This is because teachers' salaries still are not high enough to attract and retain the capable teachers needed; and revenues for school systems are not sufficient to provide funds for adequate salaries or supplemental instruction for the teachers.

The President urged Congress to enact legislation to provide 2,500 scholarships to outstanding elementary and secondary school teachers for a year of full-time study, support establishment of institutes to make available additional instruction for teachers in subjects in which they may be weak and make available grants to colleges and universities to defray part of the cost of projects to improve teacher preparation.

Grants would also be provided for local public school systems for experimental projects and to generally improve quality of instruction. The President noted with satisfaction that the present legislation in Congress to improve higher education facilities appears certain of passage, but he warned that there would be little value in efforts to broaden and improve higher education without "a great effort for excellence" at the basic levels of education.

A 75% increase in the total cost of edu-

cation—another \$20 billion a year—is required to provide an adequate educational system, the President said.

There is a shortage today of more than 127,000 classrooms in elementary and secondary schools. By 1970, growing college enrollments will require twice as many facilities as now available. Forty percent of those who enter college drop out before graduation because of inadequate preparation or lack of funds.

In addition to special education programs to provide more scientists, engineers, doctors, dentists and nurses, the President also called for a full-scale attack on adult illiteracy, calling attention to the fact that more than 8,000,000 American citizens aged 25 or above "have attended school for less than five years, and more than a third of these completely lack the ability to read or write."

"The twin tragedies of illiteracy and dependency are often passed on from generation to generation," he said, urging Congress to authorize a five-year program of grants to colleges and states to develop programs to enable every adult the opportunity to become literate.

Teachers' salaries and aid to elementary and secondary schools may get rough sledding in Congress, but a large part of the Administration's program of Federal aid to education stands a better chance of passing this election year.

• Science News Letter, 81:114 February 24, 1962

## MEDICINE

## Measles Vaccine Success

► PROTECTION against natural measles is obtained with an inactivated measles virus vaccine, two leading scientific articles in the *Journal of the American Medical Association*, 179:391, 398, 1962, report to the physicians of the nation.

There is now "substantial evidence that it is possible to provide protection against measles with a stable, inactivated virus vaccine without untoward side effects," an editorial (p. 453) said.

There will probably be two methods of immunization against measles just as there are two kinds of polio vaccines, one a live attenuated strain and the other an inactivated vaccine.

The killed or inactivated vaccine reported upon as tested in Syracuse and Buffalo, N. Y., won medical praise in the *Journal of the American Medical Association* editorial as appearing "to be stable under a variety of experimental stresses." Because it can "be mixed apparently with other antigens without decreasing its efficiency" it presumably could be administered along with other protective "shots" that are given children.

One of the series of killed virus tests reported upon consisted of a vaccine and

placebo administered alternately to 63 members of 22 families in Syracuse (p. 391). The study was conducted by Drs. Harry A. Feldman and Alvin Novack, State University of New York's Upstate Medical Center, also in Syracuse, working with Dr. Joel Warren of Chas. Pfizer & Co. of Terre Haute, Ind., who supplied the vaccine.

The other series was carried out in kindergartens and first grades in Buffalo, with 330 children receiving vaccine and 319 placebo (p. 398). Fifteen schools participated, on the basis of having experienced no obvious measles outbreak during the current school year.

The team for this field trial, also with Pfizer vaccine, consisted of Drs. Warren Winkelstein, Rachel Jense and William E. Mosher of Erie County Health Department, Buffalo; Dr. Glen E. Gresham, Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga., and Dr. David T. Karzon, University of Buffalo School of Medicine. Antibody formation was demonstrated in both tests.

The vaccine is prepared from virus grown in monkey kidney tissue that is then inactivated with formalin.

In the tests of the weakened live virus

vaccine, which have been conducted in the New York City and Philadelphia areas, gamma globulin obtained from blood was injected simultaneously as a modification of the vaccine. It is pointed out in the current *JAMA* discussion that the cost and availability of gamma globulin cause some concern and that heat in warm areas of the world has an adverse effect.

The killed vaccine requires three intramuscular injections weeks apart, while the weakened live vaccine needs only one shot.

Both vaccines used are outgrowths of the initial work done by Dr. John F. Enders of Harvard, who received a Nobel Prize for his virus research. He was the first to isolate definitely the measles virus. The Enders vaccine, which was a live weakened form tested in 1958, used the same Edmonston strain that is now in both vaccines most recently tested.

Studies are under way to further weaken the live vaccine strain. In the future a combination of the attenuated live virus and the killed vaccine may prove useful.

Measles is not a minor disease. The 1960 U.S. deaths were estimated at 410 out of 436,000 cases contrasted with 260 deaths from polio, which was less widespread by use of polio vaccine. Measles is an even more serious disease in other parts of the world.

Before a measles vaccine is licensed for use by practicing physicians, additional tests will be made and Government approval will be necessary.

• Science News Letter, 81:114 February 24, 1962

## TECHNOLOGY

## Computers Help Builders Schedule Construction

► THE SAME PLANNING and scheduling technique that expedited development of the Polaris missile is now saving time and money on building construction projects.

Called "critical path," the system uses computers to coordinate the thousands of separate activities that range between ground-breaking and occupancy.

Unlike standard scheduling techniques, it shows in graphic form the interrelationship between these activities—what must precede each job, what must follow it and what can run concurrently with it.

This information is vital because it indicates far in advance potential trouble spots that can plague a project and hold up construction for weeks. It reveals, for instance, that if a subcontract is not let, or a shop drawing approved, or a piece of equipment ordered by a certain date, then the entire project may be seriously impeded two months hence.

According to Walter Kidde Constructors, Inc., New York, an engineering and construction firm that has helped initiate the system in building construction, critical path is coming to the forefront mainly because builders must install increasingly complex mechanical and electrical systems in today's structures.

• Science News Letter, 81:114 February 24, 1962