product of the square of the velocity multiplied by the mass, so that a light proton traveling with twice the velocity of a heavy alpha particle would show the same amount of curvature in the track.

Increasingly in cosmic ray and nuclear disintegration research the need has been felt for a simple, sure way to distinguish between the tracks of such particles and also, to differentiate the newer deuteron particles which are the charged nuclei of hydrogen's heavy isotope of mass two.

Prof. T. Russell Wilkins of the physics department of the University of Rochester has now provided this new tool in his studies of the kind of tracks which each of these particles make when they hit directly the emulsion on a photographic plate. So simple is the process that one only has to wrap up the photo plates in the boxes as they come from the maker and expose them to the particle radiation being studied. The skill comes in the photomicrographic enlargements and their interpretation. Knowing the temperature of the emulsion at the time of the experiment, it is possible for Dr. Wilkins and his coworkers to distinguish between protons and alpha rays. For example, in an alpha ray track the little silver grains "developed" by the particle are spaced about 1.47 microns (58 millionths of an inch) apart. Protons, in contrast, show a grain spacing of about 2.16 microns (86 millionths of an inch). The difference is comparatively large and serves as a valuable aid to differentiation between the two particles.

Just recently Dr. Wilkins, cooperating with Dr. J. M. Cork of Michigan University, has obtained a deuteron particle track in an emulsion for the first time.

Science News Letter, March 27, 1937

GENERAL SCIENCE

Civilization Fails in Proper Absorption of Science

DISSATISFACTION with the manner with which society has met and absorbed scientific changes was expressed in a series of four lectures in Princeton by Dr. Frank Baldwin Jewett, president of the Bell Telephone Laboratories.

Speaking on "An Engineer Looks at the Social Implications of Science," he said of the government, "the political government, since it must of necessity be organized to do a vast number of things, is less likely to be competent in a highly technical matter such as the development and application than is a private organization designed and operated solely for that scientific purpose."

Dr. Jewett declared that although the government cannot directly use the services of engineers and scientists "because their field is one in which they can operate with entire absence of certain factors normally present and controlling in other human affairs," still the government should make more use of the knowledge of these men.

Speaking from an international viewpoint, Dr. Jewett asked, "How will the world of those who wish to retain what they have protect themselves against the degrading effects of those who, equipped with the same tools, are struggling to elevate their standards?"

"One has only to visit the more recent of the vast technical establishments of the Orient, particularly those of Japan, to be acutely conscious of how far the migration of applied science has carried the world since the days of its beginning, and how pregnant with social and political problems the future is."

To meet these problems, he recommended the inclusion of science training in the education of every student, "with the thought that thereby they and the society they are to form will be better equipped to handle the problems of science and particularly the problems created by science."

He made "a complete refutation of any claim that applied science has reduced gainful employment," and citing the automobile industry, which threw out of work many drivers, hostlers, wagon-builders, and farm laborers, he pointed to the mushroom growth of allied industries of the automobile that have in the end increased the total of employed labor.

One evil of science Dr. Jewett showed to be that "frequently the appeal of some new thing is such as to offer a lush field for the get-rich-quick artists or those who pander to the baser sides of human nature." He added that such exploiters must be safeguarded against, for "we no longer have opportunity to become fully acquainted with a new thing before its mass impact has confronted us with a major problem of social control and legal regulation for which we have no established guides."

Science News Letter, March 27, 1937

GENERAL SCIENCE

Science on Radio Chains Totals 2 1/4 Hours Weekly

NATION-WIDE radio networks carry 2¼ hours of science broadcasts each week. In the schedule below, times given are Eastern Standard. CBS means Columbia Broadcasting System and NBC means National Broadcasting Company. Local stations carrying these programs can be determined by reference to programs in local newspapers.

Tuesdays

3:45 to 4:00 p.m. HAVE YOU HEARD? — Curious and interesting facts in natural science, presented under the auspices of the Federal Office of Education. NBC Blue Network.

5:00 to 5:30 p.m. YOUR HEALTH —Dramatized health broadcasts under auspices of the American Medical Association. NBC Blue Network.

5:15 to 5:30 p.m. SCIENCE SERVICE SERIES—a notable scientist is interviewed each week by Watson Davis, director of Science Service. CBS Network. (*See page* 207.)

6:00 to 6:15 p.m. SCIENCE IN THE NEWS—Arranged by the University of Chicago Educational Council. NBC Red Network.

Thursdays

2:00 to 2:15 p.m. ACADEMY OF MEDICINE—Medical programs, arranged by the New York Academy of Medicine. CBS Network.

Saturdays

5:30 to 5:45 p.m. DRAMA OF THE SKIES—Dr. Clyde Fisher of the Hayden Planetarium, speaking on astronomical subjects. CBS Network.

Sundays

11:30 to 12:00 a.m. THE WORLD IS YOURS—Dramatizations based on Smithsonian Institution activities, arranged by cooperation with the Federal Office of Education. NBC Red Network.

Science News Letter, March 27, 1937