

tion of the fields of physics and chemistry. However, it is not obvious to the prospective student that this is so."

Other factors suggested by Libby as causes for decreased enrollment in the basic sciences are "the rather unsatisfactory salaries" which are paid men of real competence in the sciences; the quality, and especially the insufficient quantity, of instruction in secondary schools; and the quality of science instruction in colleges and universities.

Concerning the last point, said Libby, no university now offering mediocre introductory courses in the sciences can rest easily. "The beginning courses in physics and chemistry are an opportunity to enlist students in the fields. It is of extreme importance that these courses be well taught, that the subject be presented in an interesting and understandable way, not in any way ignoring the basic difficulties, but not with such a mass of detail that the beauty of the basic principles is obscured. It is vital that the better teachers in the whole of the university faculties be asked to teach the beginning courses. It is essential that the laboratory experiments used in the instruction be wisely chosen and well equipped so that the ordinary difficulties of experimentation may not mask the attractiveness of the subjects. It is also important that the teacher of the beginning course in physics or chemistry seriously consider his counselling responsibilities so that students who are interested in the sciences will be encouraged and that the students who are having difficulties of a temporary character will be led to persevere. He should see that the brilliant students be led to pursue the subject matter beyond the general level of the class so that boredom and frustration will not divert them into other fields. The freshman science teacher is certainly one of the vital cogs in the machinery which trains and insures the supply of basic scientists. It is clear at the present time that this job is not being very well done. It is clear that this is one of the principal factors which needs serious consideration in remedying the situation."

His conclusion: "The supply of physicists and chemists will be restored when the problem becomes sufficiently serious to command general attention. But it seems that the universities have a responsibility to recognize the situation early and to do all in their power to remedy it quickly. All of us should worry and consider this problem and try, with our best efforts, to implement any suggestions for improvement which seem sound and thus protect our society against a manpower shortage of the most critical kind."

Research Corporation Award

THE 1954 Research Corporation Award, consisting of an honorarium of \$2500, a plaque, and a citation, was presented on January 18th to Willis E. Lamb, Jr., professor of physics at Stanford University, in recognition of his major contributions to the understanding of atomic structure and quantum electrodynamics.



Willis E. Lamb, Jr., recipient of the 1954 Research Corporation Award for Contribution to Science.

He was cited particularly for having executed "a number of brilliantly conceived and bold experiments" by which the shift in the energy levels of hydrogen atoms was demonstrated and measured, thus providing experimental results leading to "an extension and reformulation of quantum electrodynamics which has greatly increased our understanding of the forces between charged particles . . . and opened new fields of theoretical and experimental investigation into the nature of matter and radiation".

In accepting the award, Lamb noted that much of the work mentioned in the citation had been done in collaboration with Robert Retherford, now of the University of Wisconsin, and with others who had participated in the research. He recalled that construction of the apparatus with which he and Retherford investigated the fine structure of hydrogen was begun in the summer of 1946 at Columbia University. Their first success came in the following year when, through spectral measurements in the microwave region, they observed a minute displacement of the $2s_{1/2}$ energy level from its accepted position as then predicted by Dirac's quantum theory of the electron. This effect (the "Lamb shift") has since been accounted for by Bethe and others as being a result of the interaction of the electron with the radiation field.

Research Corporation, a foundation created more than forty years ago "to provide means for the advancement of scientific investigation by contributing to educational and scientific institutions", established the award in 1925.