Whatever the medium is, the new wave conception has altered the view we take of the best answers to the question with which I began this lecture. Matter is still supposed made of discrete units, but instead of these units moving by laws which concern them alone as did the laws of Newtonian dynamics, we have had to introduce laws based on waves. Now a wave is essentially a continuous thing, even if the continuity is only mathematical. It is spread through space, not divided into little lumps. So although the older belief in the discontinuity of matter still holds, it has lost some of its rigidity; continuity has crept in by the back door.

The idea of the ether has also changed. The sole function left it is to guide the quanta; they do the work. The picture of light as waves breaking on a shore of matter, and thus disturbing it, is replaced by one of a stream of bullets which affect only the particular objects which they hit. The bullets, it is true, do not move quite as ordinary bullets would; they are directed by the waves, but all the effects are bullet effects, not wave effects.

We have seen that Newtonian mechanics needs modification; that it is a simplification which is permissible only when the wave-length is very small. This of course does not detract from its practical value in every-day life and in astronomy, nor from our estimate of the genius which gave it a form which has satisfied two and a half centuries. On the contrary, the new developments, as far as they concern light, which I have tried to explain to you at such length, are much better expressed in the words of Newton's Optics.

> Those that are averse from assenting to any new discoveries but such as they can explain by an hypothesis, may for the present suppose, that as stones by falling upon water put the water into an undulatory motion, and all bodies by percussion excite vibrations in the Air; so the Rays of Light excite vibrations in the refracting Medium or Substance . . . that the vibrations thus excited are propagated in the refracting or reflecting Medium or Substance, much after the manner that vibrations are propagated in the Air for causing Sound, and move faster than the Rays so as to overtake them . . . and that every Ray is successively disposed to be easily reflected or easily transmitted by every vibration which overtakes it. But whether this Hypothesis be true or false I do not here consider.

After being regarded for generations as an artificial attempt to save a dying theory, we have proved this guess of Newton's to be a supreme example of the intuition of genius.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE DES MOINES PRIZE

THE approach of the annual meeting of the American Association and associated societies, which is to occur this year at Des Moines, Iowa, between December 27 and January 2, attracts attention to the annual award of the American Association prize. As most readers know, this thousand-dollar prize is awarded annually to the author of a notable contribution to science presented at the annual meeting. The award is made possible through the generosity of a member of the association who prefers that his name shall not be revealed. In the establishment of the annual prize it was the aim of the donor and of the association to aid some of the younger investigators in the continuation of studies by which they have already made valuable contributions. While the award of course constitutes a notable honor, yet it is to be considered primarily as an aid to further productive study.

Membership in the association is not required to render an author eligible to consideration in the awarding of the prize, but the prize must always be awarded to the author of a paper presented at the meeting and announced in the general program, which includes the programs of all the special societies that take part in the annual meeting. Because contributions in different fields of science can not be quantitatively compared with respect to value and importance, it is expressly stated that the committee on prize award shall make no attempt to select the *best* or *most* notable paper presented at the meeting. The committee is asked simply to select a paper that is noteworthy. It has also been provided that the prizes at two consecutive meetings shall not be awarded in the same field of science.

There is no open competition for this prize and authors are not to submit manuscripts nor to make applications to those who have the responsibility of the award. Any paper presented at the meeting may be considered, as has been said. It should be noted, however, that the Press Service of the American Association requests from the authors two copies of every paper to be presented at any meeting and needs to have these at least a week or two before the opening of the meeting. It is desirable that the representatives of the press should have access to the manuscripts of all papers long before they are to be presented and the Press Service, of which Austin H.

Clark is director, makes arrangements for that, as far as manuscripts are received in time. The manuscripts in the hands of the Press Service are available to the committee on award throughout the meeting and it generally happens that the manuscript of the particular paper finally selected has been previously noted in the daily press. At the close of the meeting the selected paper receives very wide attention in the newspapers throughout the United States and Canada and much work is avoided if its manuscript has been and is available for examination in the office of the Press Service.

The arrangements by which the winning paper is selected are very simple. The secretaries of the sections and societies that take part in the meeting are each expected to make one or more nominations in writing and these nominations constitute the papers to be considered by the committee on prize award. Any members who wish the committee to consider a certain paper should make the suggestion to the secretary who is in charge of the particular session before which the suggested paper has been or is about to be presented.

BURTON E. LIVINGSTON,
Permanent Secretary

SCIENTIFIC EVENTS

FORESTRY RESEARCH IN INDIA

THE Viceroy of India, accompanied by Lady Irwin, opened on November 7 the new Government Forest Research Institute at Dehra Dun, the largest in the British Empire, if not in the world.

According to the account in the London *Times*, Dehra Dun has been a center for scientific forest work since 1878, when a training college for rangers and foresters was established, and research proper started here in 1906. Research had no sooner begun than it started to expand, and the war gave it a very great indirect impetus by creating a demand for the maximum utilization of all kinds of Indian products. The industrial commission of 1918 pointed out the need of extending the Research Institute, its equipment and its staff. The government of India thereupon took up 1,200 acres of land, including 13 villages, on the outskirts of Dehra Dun to fulfil these requirements. The acquisition and development of this area, the building out from the Central Institute of residences for the staff, who are carrying out work under the five main heads of silviculture, forest economy, forest entomology, forest botany and chemistry, and the construction of mills and workshops for the sawing, testing and seasoning of timber, have cost in all £850,000.

Preparatory to the completion of the buildings the government of India appointed a committee of business men, with Sir Chunilal Mehta as chairman, to review the organization of the institute and to make recommendations for the attainment of maximum efficiency in its work.

The viceroy paid a tribute to the work of the committee. He said that the government hoped in due course to give effect to very many of the committee's recommendations. The government intended, within the limits of its financial liability, to give the institute the scientific staff which it required, and to omit no measure which would enhance its usefulness. The Forest Department dealt with nearly a quarter of the total area of British India, and made an annual profit of nearly £2,750,000. An instance of the value of forestry research was provided at the government rifle factory at Ishapur, where a saving of £10,000 a year had been made by adopting the institute's recipe for the seasoning of Indian walnut for rifle stocks. Another instance was the recent suppression of an epidemic of boring insects in the Sal forests, which had destroyed 5,500,000 trees. Two companies were being floated in London to exploit the great Burma bamboo forests, and the joint technical member of the boards of both was a pulp expert who had just retired from the Dehra Dun Institute.

DEDICATION OF THE GEORGE HERBERT JONES LABORATORY OF THE UNIVERSITY OF CHICAGO

THE George Herbert Jones Laboratory of Chemistry will be dedicated at the University of Chicago on December 16 and 17 with the following program:

MONDAY, DECEMBER 16

9:30 A. M.

Presentation of the building by George Herbert Jones, director of the Inland Steel Co., and president of the Pershing Quicksilver Co. and of Hillside Fluorspar Mines.

Acceptance of the laboratory by President Robert M. Hutchins.

Presentation of a bust of the donor by Leonard Crunelle, by the daughter of the donor, Mrs. Walter J. Jarratt.

Acceptance and address on the life of Mr. Jones by David Evans, president of the Chicago Steel Foundries.

Presentation of the bust of the late John U. Nef by Leonard Crunelle, by Fred W. Upson, head of the department of chemistry, University of Nebraska, for alumni and friends.

"Nef, the Man and Teacher," by J. W. E. Glattfeld, University of Chicago.