their appeal with energy and success, in the face of strong opposition and without the heartiest cooperation on the part of the board of regents. The campaign was conducted by a committee of alumni, ably seconded by the *Minnesota Alumni Weekly*. The sum originally desired was $200,000, but the regents voted to ask for only $150,000. Yet the amount granted was $165,000. The issues of the *Minnesota Alumni Weekly* ever since the movement began have contained a quantity of valuable material bearing on the general subject. Statistics were gathered the country over, and the relation of teachers' salaries to incomes from other professions and to the cost of living was set forth. In addition, the *Weekly* published letters from various sources expressing hearty interest in the campaign. From all parts of the state committees of alumni and individuals addressed the members of the legislature on behalf of the movement. As a result, when the legislature came to make up its appropriations for the university fund, it was confronted not with the question whether salaries should be raised, but with the question to what extent they should be raised. We believe that educators generally have grounds for congratulations on this successful movement. Here is a case where the needs of higher education have been put definitely before the people of one of our most important states, and they have responded in a way which indicates a high appreciation of their economic responsibility. Their action is a challenge to emulation.—*Columbia University Quarterly.*

THE AWARD OF THE BOYDEN PREMIUM BY THE FRANKLIN INSTITUTE

In 1859, Uriah A. Boyden, Esq., in his day an eminent mechanical engineer, of Boston, Mass., deposited with the Franklin Institute the sum of one thousand dollars, to be awarded as a prize to any resident of North America, who should determine by experiment whether all rays of light and other physical rays are or are not transmitted with the same velocity.

The Franklin Institute has religiously advertised the proposition of Mr. Boyden since that time until the present, inviting investigators to compete for the premium. During this period, which covers almost fifty years, a large number of essays, possibly as many as 25 or 30, have been presented by investigators for this award, but after careful investigation by a competent committee, appointed in each case, none was found sufficiently meritorious to warrant the institute in granting the prize, until the recent investigation by Dr. Paul R. Heyl, assistant in the department of chemistry of the Central High School of Philadelphia, which, in accordance with the prescribed conditions, was submitted anonymously. This communication was referred to a special committee, consisting of Messrs. Hugo Bilgram, mechanical engineer; Professor Arthur W. Goodspeed, of the department of physics of the University of Pennsylvania, and Dr. George Flowers Stradling, of the department of physics of the Northeast Manual Training School of Philadelphia, who reported unanimously in favor of awarding the Boyden prize for an essay submitted under the pseudonym 'Algol.' The name of the author was only disclosed after the investigators had upon careful examination proved its merits. An abstract of the committee's report follows, which will indicate the extremely delicate nature of the tests required in the investigation.

The applicant 'Algol' for the Boyden premium has succeeded in demonstrating, by experiment, that those of the ultra-violet rays of light, for which glass is transparent, have the same velocity as the light rays proper.

He reasons that if the velocity of these rays were different, they would not arrive, from a distant source, at the same time. For his test he selected 'algol,' a well-known variable star in the constellation Perseus, as the source of light. By means of a diffraction grating he eliminated all but the ultra-violet rays of a known frequency, and by focussing them on a sensitive plate, obtained photographs of the star.

For the purpose of identifying the rays so recorded with the visible rays, regarding the time of their emission, he selected, for the time of his test, the time during which the

light of this star shows the peculiar phenomenon of fading and recovering. The period of this variation is known to be about six hours. During this period he took a number of photographs, one half hour apart, each exposure being twenty minutes, the remaining ten minutes being employed for making the necessary preparations for the next exposure. He thus obtained a number of exposures of the star on the same sensitive plate, but shifted in position. After developing the plate, the successive images plainly showed a fading and recovering, and although the exact location of the minimum brightness could not, in the nature of things, be absolutely determined, the approximate coincidence of the time of the minimum brightness of the visible and the photographed rays was obvious. These tests were repeated a number of times to eliminate the possibility of error and also to take in a certain range of the ultra-violet rays, and since favorable opportunity for making these tests is not frequent, the investigation extended over a period of two years.

The applicant then reasoned as follows: Assuming that the photographic minimum did not exactly coincide with the observed visual minimum, their difference did certainly not exceed an hour, and since the distance of Algol is no less than forty light years, the difference of the velocities of the ultra-violet, and the visual rays could not exceed one part in 250,000. This close approximation establishes equality to all intents and purposes.

At the stated meeting of the Franklin Institute, held on June 19, 1907, the recommendation of the board of managers that the committee's report be approved and the Boyden prize awarded to Dr. Paul R. Heyl was unanimously adopted, and the author will consequently receive this long-delayed and much-coveted award.

SCIENTIFIC NOTES AND NEWS

THE council of the British Association for the Advancement of Science has nominated Mr. Francis Darwin, F.R.S., foreign secretary to the Royal Society, author of important papers on physiological botany and of the 'Life and Letters of Charles Darwin,' to be president of the meeting next year, when, for the fourth time, the association will assemble in Dublin.

ON the occasion of the celebration of the bicentenary of the birth of Linnæus, the Linnean gold medal of the Royal Swedish Academy was awarded to Sir Joseph Hooker.

AT the annual meeting of the American Academy of Arts and Sciences, on May 8, 1907, it was voted to award the Rumford premium to Mr. Edward Goodrich Acheson for the application of heat in the electric furnace to the industrial production of carborundum, graphite and other new and useful substances.

M. H. LE CHATELIER has been elected a member of the section of chemistry of the Paris Academy of Sciences in the room of the late M. Moissan.

PROFESSOR THEODORE W. RICHARDS, the present holder of the Harvard professorship in the University of Berlin, gave an address upon 'Neuere Untersuchungen über Atomgewichte,' to the German Chemical Society in the Hofmann Haus in Berlin, on the evening of June 1. At the address and at the dinner following there were present among many others: Professors Emil Fischer, Landolt, Nernst, Warburg, Planck, Ladenburg, Graebe, Liebermann, Gabriel, Le Blanc, and Brauner.

A PORTRAIT of President Eliot by Mr. John P. Sargent has been unveiled in the Harvard Union in connection with the commencement exercises of the university. The portrait was a gift to President Eliot on his seventieth birthday, chiefly by the alumni of the class of 1904.

PROFESSOR A. E. VERRILL, who has held the chair of zoology and the curatorship of the zoological department of the Peabody Museum at Yale University since 1864, will retire from active service at the close of the present year.

PROFESSOR GEORGE C. COMSTOCK, director of the Washburn Observatory, University of Wisconsin, was honored with the degree of doctor of laws by the University of Illinois at