UNIVERSITY AND EDUCATIONAL NEWS

THE sum of $40,000 has been given by Mr. Andrew Carnegie to Allegheny College for a chemical laboratory to replace the one recently destroyed by fire.

MR. PATTEN, who has already given $500,000 to the medical school of Northwestern University, has now added $27,000 for scholarships.

PROFESSOR C. H. PEABODY, head of the department of naval architecture at the Massachusetts Institute of Technology, has been notified by the Aero Club of America of the establishment of an award in the form of a medal for the students at the institute. The medal is to be termed the "Aeronautical Engineers' Medal" and is for award annually for merit to a student in the graduate course in aeronautical engineering.

AT the University of Chicago Dr. Frank Christian Becht has been appointed assistant professor in the department of physiology, his particular field of work being pharmacology. Professor Becht, who is a graduate of the University of Chicago, was for two years assistant professor of physiology in the University of Illinois and later assistant professor of pharmacology in the Northwestern University Medical School.

IN the medical department of the University of Oregon Dr. J. M. Connolly has resigned as professor of physiological chemistry and Dr. H. D. Haskins, of Western Reserve University, Cleveland, has been elected his successor. Dr. B. L. Arms has resigned as professor of bacteriology to accept a position in the University of Texas and Dr. W. H. Norton, of Johns Hopkins Medical School, has been appointed to the vacant position.

Two professors from Louvain University—MM. Charles Jean de Valée Poussin and Léon Dupriez—have been invited by Harvard University to deliver lectures in the second semester. The former will lecture on mathematics, the latter will give the Godkin lectures on "Proportional Representation in Belgium" and two courses.

DISCUSSION AND CORRESPONDENCE

THE FUNDAMENTAL EQUATION OF MECHANICS

IN his recent review of Maurer's "Technical Mechanics,"[1] Professor L. M. Hoskins has discussed at some length the question whether $F = ma$ or $F/F' = a/a'$ is the better form in which to introduce the "fundamental equation of mechanics." As Professor Hoskins' defense of the equation $F = ma$ is the clearest I have seen, and as I am still one of those who prefer the equation $F/F' = a/a'$, I should like to state here the advantages which this latter equation seems to me to possess.

In the first place, the qualitative notion of *force,* and the use of the *spring balance* as an instrument for the quantitative measurement of forces, may safely be assumed to be familiar to any one beginning the study of mechanics.[2]

The first serious problem, then, which confronts the teacher of dynamics is the problem of making the student understand the effect which a force produces when it acts on a material particle. This effect is, of course, the acceleration of the particle in the direction of the force, the exact quantitative relation being most simply stated as follows:

If a given particle is acted on at two different times by two forces F and F', and if a

[1] SCIENCE, December 4, 1914.

[2] The question of the unit of force, which occupies so large a place at the very beginning of the subject in the ordinary treatment, need not be dwelt upon at this stage. To the beginner, a unit force is quite properly any force which brings the pointer of a standard spring balance to the point marked "1" on the scale, whether the instrument reads pounds, or dynes, or grams; just as a degree of temperature is, to the beginner, simply the distance between two divisions of the scale of a standard thermometer, whether that scale reads Fahrenheit, Réaumur or Centigrade. The conversion factors connecting the various degrees of temperature should indeed be stated; but the question of ultimate standards, being chiefly a question for the technician, need not be raised at this point. For further details, see the writer's "Recommendations Concerning the Units of Force," in the *Bulletin of the Society for the Promotion of Engineering Education,* June, 1913, the most important of which have already been adopted by the U. S. Bureau of Standards.