made by the late Anna M. Harkness; $500,000 by John D. Rockefeller, Jr., a duplicate of his gift of several years ago; $25,000 from Coleman du Pont; $25,000 from Mortimer L. Schiff and $15,000 from Edwin Gould.

ACCORDING to *Museum News*, a bill authorizing an appropriation of $820,000 for a larger botanical garden in Washington has been passed by the U. S. House of Representatives. Two additional city blocks will be purchased with this amount and the present buildings removed. This new property which adjoins the present botanical garden will nearly double the area. The removal of the Bartholdi fountain from its present position, provided for in the new measure, will make it possible to bring the garden into closer harmony with the Capitol grounds.

AN addition of 80,000 acres to the Monongahela National Forest on the head waters of the Potomac River has been authorized by the National Forestry Commission. The land lies in the Seneca Park section of the Alleghanies, near Spruce Mountain, the highest peak in West Virginia, and will bring the area of that park to 189,520 acres. Other authorizations by the commission included the purchase of 35,334 acres as additions to eastern national forests, and a recommendation, sent to President Coolidge, that 430,437 acres be acquired for extension of western national forest reserves. Purchases in Pennsylvania comprised 15,131 acres in Elk, Warren and Forest Counties. In Oxford County, Maine, 469 acres were authorized for purchase. The western extensions asked for included 224,257 acres for the Missouri and Helena National Forests, Montana; 137,480 acres for the Idaho, Sawtooth and Challis National Forests, Idaho; 67,000 acres for the Wyoming National Forests, and 1,720 for Colonial Forests, Washington.

A COMPLETELY equipped X-ray laboratory, marking a new departure in museum practice, has been installed at the Field Museum of Natural History, Chicago. Stanley Field, president of the museum, financed the equipment of the laboratory, which has been developed as a division of roentgenology. Primarily the laboratory is to aid in the examination, differentiation and classification of natural history specimens. The X-ray is expected to prove of value in the study of the bones of mummies and other objects.

WESTERN RESERVE UNIVERSITY has announced that J. G. Sholes, president of the Ohio Chemical and Manufacturing Company, has made an annual grant of two thousand dollars for the establishment of fellowships for the study of gases to be carried on under the direction of Dr. H. S. Booth, of the department of chemistry of the university, the work to be done in the Morley chemistry laboratory. The fellowships will be known as "The Ohio Chemical Fellowships" and will be devoted to pure science researches on gases with particular emphasis on the gases of value as anesthetics. The university will immediately consider applications for the fellowships, so that their research may start with the beginning of the second semester.

ACCORDING to *Nature*, Mr. Heron-Allen has presented the Heron-Allen and Earland collection of Foraminifera to the British Museum of Natural History under conditions which will enable him and his collaborator to keep it up-to-date, with additions and rearrangement. The collection, which numbers between seventeen and eighteen thousand slides, includes the Millett, Siddall, Sidebottom and other notable collections, and is said to be the largest and most complete in the world.

A GOLD medal has been awarded to the New York State College of Forestry, Syracuse University, for its educational service connected with the conservation of the forest, by the Sesqui-Centennial Exposition. The diploma for this award is being prepared and will probably be ready for presentation during the early part of 1927. The award was in connection with a series of exhibits prepared by the college, showing the progress made in forestry educational methods, in presenting forestry to the public, and the manner in which students have been brought into direct contact with the subject by taking them into the field where actual operations of forest management are conducted.

THE Eastern Siberian section of the Russian Geographical Society announces the celebration of its seventy-fifth anniversary at the end of this month. The occasion is to be marked by various social functions and an exhibition illustrating the results of the society's work in Siberia. Various publications are also announced, including the fifteenth volume of the *Isvestia*, with a series of historical articles and a volume of general geographical and statistical articles on Eastern Siberia.

UNIVERSITY AND EDUCATIONAL NOTES

THE University of Pennsylvania has received a contribution of $250,000 from the Carnegie Corporation for the endowment of medical research in the university's school of medicine and a gift of $25,000 from Charles H. Ludington for research work in the Henry Phipps Institute during the current year.

COLONEL HENRY W. SACKETT, of New York City, has given to Cornell University $200,000 to provide for the permanent conservation of the landscape beauty of the university's campus.

CONTRACTS have been let for the construction of the Service Memorial Institute which will be a unit in the group of buildings devoted to medical instruction at the University of Wisconsin. Some $600,000 of the surplus from the Wisconsin's Soldiers' Rehabilitation fund are available, under legislative enactment, for building the structure. It will provide quarters for the research and clinical work of various departments of the medical school.

THE Chicago Lying-in Hospital has announced plans for its affiliation with the University of Chicago. A new $1,000,000 building will be erected on the university campus.

DEAN CHARLES H. SNOW has announced the establishment of a course of study leading to the graduate degree of aeronautical engineer in the Daniel Guggenheim School of Aeronautics of New York University. The school was established in 1925.

AT Princeton University, Dr. William T. Thom, Jr., chief of the fuel section of the United States Geological Survey, has been appointed associate professor of geology, and Dr. Robert N. Pease, associate professor of chemistry at the University of Virginia, research associate in chemistry.

RECENT graduates of the University of Wisconsin with pharmacy as a major have received appointments as follows: L. E. Harris has returned to the University of Oklahoma, where he previously held the position of assistant professor in pharmacy; H. G. Hewitt has accepted a position in the College of Pharmacy, University of Buffalo; G. L. Jenkins has been reappointed as instructor in pharmacy at the University of Wisconsin; K. H. Rang has accepted a position in the University of Saskatchewan, department of pharmacy; Petrocinio Valenzuela has returned to the University of the Philippines, in the College of Pharmacy, in which he previously held a professorship.

H. MUNRO FOX, fellow of Gonville and Caius College, Cambridge, has been appointed to the Mason chair of zoology at the University of Birmingham, to succeed the late Professor F. W. Gamble.

DISCUSSION AND CORRESPONDENCE

KINETIC ACTIVITY, ORIENTED ADSORPTION AND MOLECULAR DEFORMATION AS FACTORS IN CATALYSIS

IF a swinging magnet passes near a fixed one, so that there is a close approach of like poles, the swinging magnet is deflected from its course or is even made to recoil. This simple device was used by Sir Ernest Rutherford to illustrate the influence of atomic nuclei on alpha particles shot out by radium.

If, in this experiment, the poles are of opposite polarity, they will attract each other; but the velocity of the moving magnet will determine whether or not the two will cohere. The most favorable condition for cohesion is naturally a direct head-on meeting at a relatively low velocity, whereas an off-center approach at relatively high velocity is unfavorable. Analogous conditions govern the fate of comets which approach the sun.

Atoms and molecules are no longer regarded as tiny little hard balls, for we now know them to be highly organized structures, most of which have, or may be made to have, some kind of polarity, which may result in their mutual cohesion. Chemical combination is a special case of such cohesion. From the fact that most atoms and molecules are able to build up, under proper conditions, into chains or three dimensional groups, it seems evident that they have a plurality of areas of charge or polarity. The tendency of these aggregations to crystallize, that is, to assume regular but various space lattices, having cleavage planes of unequal strength, further indicates that the fields of the particles (atoms or atomic groups) are of unequal strengths at different places, and are, in the course of group or crystal formation, in some way adjusted or fitted to each other. Possibly these particle fields are the net result of the motion of the constituent electronic units.

The more highly complicated the particles (atoms, molecules or molecular groups), the less the probability that they will present to each other their various polar areas in such fashion that true crystal-lattice or crystallographic union may take place, with the elimination of solvent or other adsorbed film, if such there be. To effect such union speedily, the meeting, besides being properly oriented, must be at an efficient velocity. However, since most particles have a plurality of areas of electric or magnetic fields, some kind of attachment less rigid or lasting than true chemical combination may occur. This seems to account for the tendency of more complicated molecules to form haphazard or random groups, or aggregations of such groups, from which, however, they *tend* to move toward their position of minimum potential—one big crystal. If for any reason (*e.g.*, adsorption of ions) groups acquire like charges of sufficient strength, the resulting repulsive forces will militate against union, and we have the time-lag characteristic of the colloidal state.

Transferring these ideas of optimum kinetic velocity and of oriented meeting to catalytic phenomena, the function of a catalyst may be pictured in three stages:

First, the catalyst binds or adsorbs a reacting constituent and holds it relatively immobile.