Science, the botanical department of the University of Pennsylvania, and the various field clubs are fully exploited, the pages being interspersed with numerous half-tone illustrations of points of botanical interest, in addition to many excellent portraits, the full-page illustrations amounting to forty-eight. The work is written in a pleasing style, is well printed, and forms an attractive volume. The portions relating to the earlier botanical workers who gave to Philadelphia its early botanical prestige are particularly interesting. Additional matter of general interest is found in the historical account of the scientific journals and serial publications that have been issued from Philadelphia. An interesting account of the historic trees of the vicinity closes the work.

The author is sanguine that Philadelphia 'is peculiarly fitted to be the botanical center of America,' and his references to 'the metropolitan life and publishing houses' of New York on the one side, and 'the libraries and scientific departments' of Washington on the other, illustrate well how near one can live to cities and yet fail to appreciate their most salient features.

LUCIEN M. UNDERWOOD.

The Maturation, Fertilization and Early Development of the Planarians. By WILLARD G. VAN NAME. From Trans. Conn. Acad., Vol. X., p. 263–300, pl. xxxvi.–xli. August, 1899.

The author has studied the early life history of *Eustylochus ellipticus* (Girard), and *Planocera nebulosa* Verrill with great care. The characteristic features of each structure are presented, so far as could be determined from the study of the material, which is not favorable for the solution of certain points. While the results obtained agree in the main with those of previous observers, light is thrown on a number of doubtful points. Especial mention may be made of the discussion of the centrosphere and its parts, as well as that on the interesting modifications in the form of the chromosomes. The paper is well illustrated. H. B. W.

SOCIETIES AND ACADEMIES.

BIOLOGICAL SOCIETY OF WASHINGTON.

THE 313th meeting of the Society was held Saturday, December 2d. W. H. Dall exhibited a specimen of the fruit of a species of *Barringtonia* stating that it was used for capturing fish, the kernel being bruised and cast into small ponds or streams whereupon the fish became stupefied and rose to the surface, where those that were wanted were gathered. The effect upon the fish was only temporary, those not taken soon recovering.

Frederick V. Coville showed an entire and a bisected cone of *Pinus alternata* both covered with lichens. Mr. Coville stated that these cones remained on the trees from 20 to 50 years and seemed to open and release the seeds only when exposed to great heat, so that no seedlings of this pine were to be seen except where the ground had been swept over by fire.

L. H. Dewey spoke on 'Frost Flowers,' saying that this name is applied to peculiar formations of ice found on certain plants on frosty mornings in fall and early winter. They are most frequently observed on dittany, *Cunila origanoides;* frostweed, *Helianthemum canadense;* marsh fleabanes, *Pluchea camphorata* and *P. fœtida*, and on the Pacific coast on the cultivated heliotrope. The first published record of the phenomenon appears to be that of Dr. Stephen Elliott, in 1824, who observed it on *Pluchea fœtida* ('Conyza bifrons') and made a note of it in his 'Botany of South Carolina and Georgia.' It has since been observed, studied and written about by many botanists and physicists. It is apparently purely physical in character, due to capillary movement of water and the action of frost, but no thoroughly satisfactory explanation has yet been given why it should be found on only about twenty-six species of plants and not on others. Further observations in the field at this season are needed to determine whether frost flowers may be found on species other than those recorded, and also further studies are needed on the structure of plants exhibiting the phenomenon.

H. J. Webber presented a paper 'The Effect of Hybridization in the Origination of Cultivated Plants,' calling attention to the remarkable development of certain of our cultivated plants, due to the effect of hybridization. It was pointed out that this is particularly true in the grape where 57 per cent. of the sorts of known parentage are hybrids while only 29 per cent.

are selected seedlings, and 14 per cent. chance seedlings, or wildlings. In pears, plums and other fruits important developments due to hybridization were pointed out, and special attention was called to the plum where a gradual amalgamation of our native plum with the Japan plum, *Prunus triflora;* and apricot plum, *P. Simoni,* is being brought about which bids fair to ultimately revolutionize plum culture. Instances were also cited where epoch-making improvements had been secured in corn, wheat, peas and tomatoes.

O. P. Hay discussed 'The Chronological Distribution of Elasmobranchs' presenting a diagram which showed by means of one set of curves the chronological distribution of the species of North American elasmobranchs and by another set the distribution of those of Europe. A table was also given which showed the genera belonging to each of the geological periods. The relationship of the paleozoic families of skates to those of the Neozoic was also considered.

O. F. COOK,
Secretary.

PHILOSOPHICAL SOCIETY OF WASHINGTON.

AT the 506th Meeting of the Society held at the Cosmos Club, November 11th, informal communications were made by Dr. A. Martin on the extraction of the 4th root by successive subtractions; and by Mr. Marcus Baker, on his recent duties in Paris in connection with the Venezuelan boundary arbitration. The first regular paper was by Mr. R. H. Strother, on 'Some Observations on a Problem in Dynamics.' The problem was how a cat turns over in the air, and was illustrated by Professor Marey's photographs of a cat turning over while falling, and by a model which performs the same feat. The model consists of two cylinders of wood connected by elastic bands. Each of the cylinders describes a continuous complex motion, one of the components of which is a rotation about its longitudinal axis, the motion being such that the sum of the moments of momentum is constantly equal to zero. It is possible for a ring to describe a motion in its own plane such that its moment of momentum is zero, but involving a rotation of the ring about its center.

Following this paper, Mr. J. Elfreth Watkins gave a chapter from the early history of mechanics.

The 507th meeting was held November 25th in joint session with the Chemical Society of Washington and was devoted throughout to the Atomic Theory. Papers were read by Messrs. J. S. Ames, F. H. Bigelow, H. N. Stokes, Cleveland Abbe and F. K. Cameron. A general discussion followed, in which members of both societies participated.

E. D. PRESTON,
Secretary.

ANTHROPOLOGICAL SOCIETY OF WASHINGTON.

THE 295th Regular Meeting of the Society was held Tuesday, November 21, 1899.

Mr. Wm. F. Willoughby read a paper on 'The Housing of the Laboring Classes in Europe with Special Reference to France and Belgium.'

Mr. Gustavus A. Weber read a paper on the 'Housing of the Laboring Classes in the United States,' and Dr. Geo. M. Kober presented a paper entitled 'The Housing of the Laboring Classes in the City of Washington,' in which he said in part that the question of housing the wage-earners in cities is one of extreme interest to students of sociology and municipal hygiene, and the movement to supply improved, wholesome houses at reasonable rentals in the National capital owes its beginning largely to the labors of members of the Civic Center and of the Woman's Anthropological Society.

The Civic Center Committee on housing the people has for its fields of work, the investigation of the alley houses and slums with special reference to sanitary and sociological conditions, and their effect upon the health and morals of the inhabitants.

From the results of this investigation the objections to our alleys may be summarized as follows:

1. The existence of blind alleys or cul-de-sacs shutting off small communities from the outside world, and which are calculated not only to promote sickness, but also immorality and crime.

2. Insanitary conditions of the alleys and

alley dwellings, which menace not only the health of the immediate inhabitants, but also of the people residing in the same block.

3. The undue prevalence of immorality and crime, since it may be taken for granted that the majority of alley tenants suffer positive deterioration from witnessing the uncurbed vice around them.

4. High rents in proportion to the income of the families especially in consideration of the accommodations offered and the actual value of the property.

The Committee made important recommendations which were endorsed by the Central Relief Committee on January 27, 1897, and public interest was sufficiently aroused to lend to the organization of the Washington Sanitary Improvement Company, whose objects are to offer to capital a safe 5 per cent. investment and at the same time supply to wage-earners sanitary houses at reasonable rentals.

It should be stated that while the original intention was to provide homes for the alley residents and thereby remove the slums, it was considered best to begin this movement by providing improved dwellings for the better class of wage-earners, in the belief that houses vacated by them would be rented by the next grade, and so on until the bottom of the ladder was reached. It is believed that in work of this character it is always best to begin at the top. Had the company acted otherwise, the undertaking would probably have resulted in failure. As it is, the company has already erected 28 two-story flats, each constituting a distinct and complete house of three or four rooms, with bath, with separate entrance, exit, and separate yards and cellars. The company has established a high standard of sanitary homes for wage-earners at reasonable rent, and, unless other landlords pursue the same course, it will continue to supply the demand. The company grants one month's rent free to every tenant, or so much thereof as has not been expended during any one year for interior repairs. Exterior repairs necessitated by the elements are not charged against tenants. No officer of the company receives any compensation, and this, together with the exercise of strict economy and careful business methods, has enabled the directors not only to pay 5 per cent. dividends on all moneys invested in the company from the beginning, but also promoted the philanthropic aspect of the enterprise by providing the very best accommodations from the standpoint of hygiene, and as to comfort, the utmost which a given cost will permit.

J. H. McCormick,
Secretary.

SECTION OF ANTHROPOLOGY AND PSYCHOLOGY. NEW YORK ACADEMY OF SCIENCES.

The regular meeting of the Section was held on November 27th. The entire meeting was devoted to the presentation of papers on anthropological subjects. At the next meeting the program will consist of psychological papers.

Dr. Franz Boas reported on the Eskimo tribes of Hudson Bay according to observations made by Captain George Comer of East Haddam, Conn. He described particularly the natives of Southampton Island, who heretofore have never been visited. The arts of the tribe show a peculiar development, owing to the lack of materials with which other Eskimo tribes are well supplied. The traditions of the tribes of the west coast of Hudson Bay show remarkable analogies to the traditions of the Athapascan tribes of the McKenzie region. The well-known tradition of the Magic Flight was among those recorded by Captain Comer. There are traditions which make it clear that the Eskimos of this region believed in the transmigration of souls. The dress of the women is very remarkable, and it is suggested that the enormous pockets of their stockings may be the survivals of the custom of carrying the children in the boots, as is still done by the Eskimo of Pond's Bay.

Dr. A. Hrdlicka read a paper on the Navahoe Indians. The physical characteristics of these Indians were fully described, and a number of measurements made on fifty adult males and thirty adult females were given in detail. Observations on the life and social and industrial habits of the tribe were also presented. The language belongs to the Athapascan group. From the physical examinations it appears that the tribe, notwithstanding some evident mix-

ture, is radically allied to the ancient Pueblos and to the short-headed people of to-day in other parts of New Mexico and Arizona, and possibly in old Mexico.

Dr. M. H. Saville presented a paper entitled 'Notes on the Mexican *Codex Telleriano-Remensis*.'

CHARLES H. JUDD,
Secretary.

DISCUSSION AND CORRESPONDENCE.

DR. WILSON ON PREHISTORIC ANTHROPOLOGY.

IN SCIENCE October 27th and November 3d, last, Dr. Thomas Wilson has committed several errors which if not corrected are calculated seriously to mislead one not familiar with the subject. The position he occupies as an officer in the United States National Museum of itself gives weight to any paper he may publish, added to which he calls special attention to his travels in Europe and his thorough familiarity with the museums and individuals who believe in a paleolithic period, his acquaintance with the Dordogne, and his many years in the National Museum, all of which he asserts peculiarly fits him to form a valuable opinion in any comparison of American with European Implements. As in at least one paragraph Dr. Wilson has assailed certain assertions of the writer and has referred to the same by misquoting what has been written, opportunity should be taken to show his errors if such exist.

His subject is Paleolithic man in Europe, and America, and his existence through eons of time, only measureable by geologic periods; through all of which man chipped stone and did not know the art of grinding it; or as Dr. Wilson contends, of sawing or drilling stone, of making pottery, or of the use of the bow and arrow; that paleolithic implements are in a class by themselves. Dr. Wilson goes further than do the European archæologists; he adopts their classification and holds up a danger flag to Americans who would deny the existence of evidence of a paleolithic period in America. The writer's denial that European classification is based on sound scientific reasoning he strenuously combats.

Dr. Wilson is one of ten or a dozen members of the Anthropological staff of the United States National Museum, and though the majority of that staff have had equally as good opportunity to study the American branch of the subject, and several of them far better than he, he stands alone in his views. He takes exception to the writer's opinion that the art of chipping stone, technically considered, is more difficult than is pecking and grinding. Yet all experience as well as all implements employed by savage races wherever found, show that the tools used in chipping are complicated, whereas a simple discoidal hammer constitutes the sole implement employed in pecking and battering stone and is found in all countries throughout all periods. No one has suggested the reversal of the paleolithic and neolithic periods for the simple reason that such classification is illogical, it would argue the absence of man during the whole paleolithic period from the areas of metamorphic stone on the continent as such stone does not chip. All experience teaches that man of the stone age wherever found was thoroughly acquainted with the artificial fracture of the available material of his vicinity whether for chipping flint, for battering diorite or kindred stones, or for hammering copper which to him was but a malleable stone. In chipping flint and similar stones, the artificial fracture varies enormously, even in the same ledge, and consequently is treated invariably in the way best suited to its peculiar texture. The present classification of stone age periods has become bewildering chiefly because of its many divisions and subdivisions. Many of these are very useful and suggestive especially that of Thomsen of Denmark who divided the human periods into Stone, Bronze and Iron, but when we read Paleolithic, Neolithic, Prehistoric, Copper, Eolithic, Upper and Lower Tertiary, the same of Quarternary, Mesolithic, Acquitanean, Sortorian, several classes of Lacustrian and a host of Cave periods, named from animals present, or from the type of stone implements found, it must be admitted the series become difficult to remember. This list is but partial and if it were necessary could be greatly increased, but, however useful for local purposes or for a single country, it will not answer for general stone age conditions. Adrien de Mortillet made a most valuable contribution