collegiate Athletics' and the final article is a reprint of Virchow's lecture in 1898 on 'Recent Advances in Science, and their Bearing on Medicine and Surgery.' In the November number James R. Angell presents 'Some Reflections upon the Reaction from Coeducation,' the general tone of the article being decidedly favorable to coeducation, and W. D. Halliburton states 'The Present Position of Chemical Physiology,' being one of the Presidential addresses before the British Association. 'Scientific Palmistry' by Harris H. Wilder is a plea for the use of impressions of the palms and soles for the purposes of identification. 'Towards the North Pole,' reprinted from the London Times shows the work that has been done, but impresses one with the high latitudes reached by the early navigators in their small vessels. Waldon Fawcett describes 'The Development of Economical Utilities for Handling Raw Material' and Frederick A. Woods presents the fourth of his studies of 'Mental and Moral Heredity in Royalty,' while David Starr Jordan tells 'How to Collect Fishes,' an art with which he has had long acquaintance.

Bird Lore for September–October contains 'The Destructive Effects of a Hailstorm Upon Bird Life' by H. McI. Morton, 'A Goldfinch Idyl' by Ella Gilbert Ives, the three best lists of birds observed by members of the Massachusetts Audubon Society and the sixth instalment of 'How to name the Birds' by Frank M. Chapman, besides Notes, Reviews and reports of the Audubon Societies. From this last it appears that there is to be a revival in the use of birds in millinery and that renewed efforts must be made by friends of the birds.

The Museums Journal of Great Britain contains a description of the Oceanographic Museum of the Prince of Monaco, reviews of various museum reports and a large number of notes on museums at home and abroad. It also contains the first instalment of a 'Directory of the Museums of Great Britain and Ireland,' which is intended to give a very considerable amount of information concerning each institution.

IN *The American Naturalist* for October Bashford Dean considers the 'Historical Evidence as to the Origin of the Paired Limbs of Vertebrates,' concluding that this supports the view that they are derived from a continuous lateral fold. D. H. Campbell gives a summary of 'Recent Investigations upon the Embryo Sac of Angiosperms' and Leonard W. Williams describes 'The Vascular System of the Common Squid, *Loligo Pealii*.' F. M. Webster shows the importance of 'Winds and Storms as Agents in the Diffusion of Insects'; D. S. Jordan tells of 'The Colors of Fishes,' not only the permanent colors, but those temporarily assumed, and T. D. A. Cockerell gives some notes on 'Flowers and Insects in New Mexico.' This paper is likely to prove a stumbling block to bibliographers for it contains descriptions of several new species of bees, although there is no hint of this either in the title or introduction.

SOCIETIES AND ACADEMIES.

BIOLOGICAL SOCIETY OF WASHINGTON.

THE 358th meeting of the society was held Saturday evening, October 28.

Mr. W. H. Dall stated that in examining some Corbiculas from Uruguay it was found in several species that the females contained a large number of young shells of various ages; some were developed so far as to show traces of the radiating color markings which characterize the adult. The palearctic Corbiculas have been abundantly collected and described, but no record of their incubation of the young in the maternal body appears in the manuals or such works on the Corbiculidæ as he had been able to consult. It is probable, therefore, that they do not retain the young in this manner. If this inference be correct, the separation by Fischer, on conchological characters, of the South American species under the name of *Neocorbicula* would receive additional support from the difference indicated.

A similar discovery was also announced by Mr. Dall in the common boreal shell known as *Cardita* (*Venericardia*) *borealis*, Conrad,

females of which were found crowded with young shells in a marsupium similar to that of *Sphærium,* not resembling that of *Thecalia,* and other Carditidæ in the ventral portion of the mantle, but in the dorsal region of the body. Specimens from the Aleutian Islands were in this condition about June 1, while in the Polar Sea, near Point Barrow, it occurs in August.

Dr. R. E. B. McKenney spoke on 'Luminous Bacteria.' He briefly reviewed the work done on the luminous bacteria during the past quarter of a century and recorded some of his own observations. In all cases the temperature limits for light production are within those for growth. As soon as the temperature passes beyond limits for normal light production, light instantly disappears. *Bacillus phosphorescens,* Fischer, when grown for a number of generations at 35° C., which is 5° above the maximum temperature for light production, develops a race which emits light at this temperature. Ether to the amount of .1 per cent. in the culture media at once destroys light emission, but not the life nor growth of the bacteria. If the bacteria are grown for a number of generations subject to the effect of .1 per cent. ether in culture, they develop a race which gives forth a light fully as bright if not more brilliant than normally occurs.

The nutrition of these bacteria is of exceptional interest. It was found that a considerable amount of either a *sodium* salt or a *magnesium* salt was essential to growth and to light emission. The amount required for light production was greater than that required for life. Sodium and magnesium are best utilized in the form of their chlorides or nitrates. Other salts of these elements can be utilized, but not to the same advantage as those mentioned. Salts of the other alkali- and alkaline-earth metals cannot replace sodium.

Dr. McKenney's conclusion was that the light production was an intracellular phenomenon. He held, however, that this did not necessarily mean that light production was inseparably bound up with life and incapable of explanation on a physico-chemical basis. The observations of Rodziszewski were cited as evidence of a possible physico-chemical explanation.

Mr. Frederick V. Coville spoke on the 'Plants of the Klamath Indians.' He stated that the country inhabited by these Indians was situated where the wooded western region extended upward and into the plains country east of the Sierras, and that favorable surroundings had made this tribe decidedly superior to their neighbors. The speaker dwelt at some length on the Indian names for the plants, stating that the origin of many was obscure, as they were not derived from roots of other words, but were used only for this class of names. Mr. Coville then described some of the plants most extensively used and stated that the Indians distinguished the plants by their properties rather than by botanical characters. Thus they recognized the differences between two very similar species of *Cornus,* while they had but two names for several species of willows.

F. A. Lucas.

THE PHILOSOPHICAL SOCIETY OF WASHINGTON.

The 555th regular meeting was held October 11, 1902, President Rathbun in the chair.

Mr. J. F. Hayford gave a brief account of recent gravity experiments at the North Tamarack Mine, Michigan, in which he had assisted, and spoke of the anomalous plumb-line divergences and the failure of steel balls dropped down the 4,600-foot shaft to reach the bottom.

The first regular paper was by Professor F. W. Clarke on 'A New Law in Thermochemistry.'

This paper is an extension of one which was presented at the Pittsburgh meeting of the American Association for the Advancement of Science, and of which an abstract appeared in Science for August 22. The general conclusions are as follows:

1. The *absolute* heat of formation of any chemical compound is a function of the number of atomic linkings or unions in the molecule.

2. In the group of substances represented by the aliphatic hydrocarbons, their halides, sulphides, amines and ethers, the absolute heat

of formation is directly proportional to the number of atomic unions in the molecule.

3. The absolute heat of formation of any organic compound is a multiple, by a whole number, of a single constant. The latter is identical with the neutralization constant, and has a value somewhere between 13,700 and 13,800 calories.

4. The thermal value of a union between two atoms is independent of their masses.

5. The absolute heats of formation of corresponding chlorides, bromides and iodides are equal.

The last conclusion at once suggests a correlation between thermochemical data and Faraday's law. From this point of view, the latter may become part of a wider generalization whose details are yet to be worked out.

Mr. J. D. Thompson then explained the principles of the 'Reclassification of the Science Section at the Library of Congress.' All the books in the library are to be grouped in twenty-six classes, lettered A to Z; Q is assigned to science; a second letter gives the first subdivision, and then follow numbers, as Q A 503; in a second line the familiar Cutter author-abbreviations are given. The division is to be rather minute since access to the shelves will be liberally granted to students. It is expected that ultimately the library will have a card catalogue of all the other Washington libraries.

C. K. WEAD,
Secretary.

DISCUSSION AND CORRESPONDENCE.

GUESSES ON THE RELATIVE WEIGHTS OF BILLS AND COINS.

IN SCIENCE for April 25 an account was given by Mr. J. Franklin Messenger of certain results obtained in reply to the question, 'How many one-dollar bills will equal in weight a five-dollar gold piece?' The answers revealed a quite startling notion either of the heaviness of the coin or of the lightness of the bill, the average guess being 2,291 for 97 students of Columbia University and 2,749 for a class of students in the University of Kansas. The correct answer should have been about 7. The writer of the article used only those results that were obtained from male students, somewhat disparagingly remarking that he had omitted the replies of the women because of their great variation. Since the feminine power to make reliable, or at least utilizable, estimates of this nature was thus called in question, I determined to put the same query to a class of 175 students in Smith College. The results were by comparison so gratifying that it may be of interest to state them.

A few had heard of the question before and were more or less sure of the correct answer. Their replies were, of course, excluded, leaving 162 replies for consideration. The average estimate was 108, as compared with the above given figures, 2,291 and 2,749. But, as Mr. Messenger rightly says, it is not so much the average as the median that is here significant. This was found to be 25, as compared with 45 for the Columbia students and 99 for the students of the University of Kansas.

Since a five-dollar gold piece is a relatively unknown quantity to those of us who live in this part of the country, a further question was asked as to the number of one-dollar bills requisite to equal in weight a fifty-cent piece. The average of 162 replies was 161.7, the median 50. The correct number is between 9 and 10. Familiarity with the coin seems not to have added materially to the correctness of the estimate.

I am not at all sure that such investigations as this disclose any profound psychological laws, but the results here given may serve to correct the error that women are less capable than men to make estimates of this sort.

A. H. PIERCE.

SMITH COLLEGE.

A POINT IN NOMENCLATURE.

MORE than once lately, lacking time to explain my views on zoological nomenclature in detail, I have stated to correspondents that they agreed with those of Dr. D. S. Jordan, supposing the latter to be well known. I am, therefore, somewhat distressed to find Dr. Jordan and Mr. Fowler (*Proc. U. S. Natl. Mus.*, XXV., pp. 266–268) adopting a course in nomenclature which seems to me inadvis-