

is locally applied. In the case of any curved surface, *e. g.*, of a suspended drop of fluid, the tangentially acting force due to surface-tension must similarly tend to draw the surface-fluid away from any area where the tension is locally lowered; for geometrical reasons this lateral traction is necessarily greater than the externally directed force acting on the surface-fluid at the same area—due to the radial component of surface-tension which compresses the drop and tends to cause outflow at that area; hence in this case also the surface-layer of fluid will tend to be withdrawn from regions of lower and heaped up at regions of higher surface-tension. If the drop is in contact with a solid, such displacements may by reaction cause movements of the drop as a whole. The author's account of the mechanics of amoeboid movement and cell-division needs to be reconsidered, since he assumes throughout that protrusion or outflow always takes place at regions of lowered surface-tension.

The whole subject, however, is full of debatable questions, and in his preface the author expressly defers judgment upon most of these, urging that the present need is for further investigation rather than for theoretical discussion. Most of us will readily grant this, and it is as an aid to investigation that the present manual will find its chief usefulness.

The reviewer feels bound to point out that the book suffers greatly from carelessness in composition and proofreading. The responsibility for this is not the author's alone. A University Press should be careful to maintain high standards in such matters.

RALPH S. LILLIE

#### THE PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

THE seventh number of Volume 3 of the *Proceedings of the National Academy of Sciences* contains the following articles:

*The Cayleyan Curve of the Quartic*: Teresa Cohen, Johns Hopkins University.

*A Search for an Einstein Relativity-Gravitational Effect in the Sun*: Charles E. St. John, Mount Wilson Solar Observatory, Carnegie Institution of Washington. A series of

observations stretching over several years indicates that the Einstein effect does not exist.

*Triads of Transformations of Conjugate Systems of Curves*: Luther Pfahler Eisenhart, department of mathematics, Princeton University.

*The Molecular Weights of the Triaryl-methyls*: M. Gomberg and C. S. Schoepfle, Chemical Laboratory, University of Michigan. After discussing factors influencing dissociation and the relation between dissociation and the nature of the aryl groups, seven triphenyl-methyls are investigated in detail and various inferences are drawn from the graphs of their dissociations against their concentrations.

*Sex-Determination and Sex-Differentiation in Mammals*: Frank R. Lillie, department of zoology, University of Chicago. Discussion of the results of studies of the anatomy of twenty-two fetal free-martins ranging in size from 7.5 to 28 cm. Sex determination in mammals is not irreversible predestination; with known methods and principles of physiology we can investigate the possible range of reversibility.

*The Crystal Structure of Magnesium*: A. W. Hull, Research Laboratory, General Electric Company, Schenectady. The structure is analyzed by means of X-ray.

*The Structure of High-Standing Atolls*: W. M. Davis, department of geology, Harvard University. Attention is drawn to the relation of atoll limestones to their supposed foundation of volcanic rocks. The relative merits of the glacial-control theory and of Darwin's theory are discussed.

*Studies of Magnitude in Star Clusters, VII. A Method for the Determination of the Relative Distances of Globular Clusters*: Harlow Shapley, Mount Wilson Solar Observatory, Carnegie Institution of Washington. The median magnitude of short period variables is constant in each cluster and may be used to determine the distance of the cluster which, with one or two exceptions, is found to be greater than 30,000 light-years.

*The Principal Axes of Stellar Motion*: H. Raymond, Dudley Observatory, Albany, New

York. Three principal axes are determined along which the various groups of stars show markedly unequal motion.

The eighth number of Volume 3 of the *Proceedings of the National Academy of Sciences* contains the following articles:

*Relation of Preferential Motion and of the Spectral-Class and Magnitude Velocity Progressions to Proper Motion*: C. D. Perrine, Observatorio Nacional Argentino, Córdoba.

*Growth of Isolated Sporophytes of Anthoceros*: Douglas Houghton Campbell, department of botany, Leland Stanford University. The young sporophyte of *Anthoceros Pearsoni*, separated from its association with the gametophyte, is capable of limited growth in length and is able to mature normal spores and elaters from the young sporogenous tissue.

*The Mesa Verde Types of Pueblos*: J. Walter Fewkes, Bureau of American Ethnology, Washington, D. C. A morphological study of Far View House and other types of prehistoric buildings.

*A Determination of the Ratio of the Specific Heats of Hydrogen at 18° and —190° C.*: Margaret C. Shields, Ryerson Physical Laboratory, University of Chicago. The value 1.4012 closely in accord with kinetic theory and different from previous determinations at 18° C. is obtained; the value 1.592 is found at —190° C.

*Note on the Coefficient of Total Radiation of a Uniformly Heated Enclosure*: W. W. Coblentz, Bureau of Standards, Washington, D. C. The value  $5.722 \times 10^{-12}$  is found by direct measurement and agrees with that calculated by Millikan on the basis of his values for  $h$  and  $e$ .

*The Development of a Source for Standard Wave-Lengths and the Importance of their Fundamental Values*: Charles E. St. John and Harold D. Babcock, Mount Wilson Solar Observatory, Carnegie Institution of Washington. It is necessary to examine for pole effect; the problem of wave-length determination is not one of routine but one for real investigation.

*On the Presence of Albumoses in Extracts of the Posterior Lobe of the Hypophysis*

*Cerebri*: John J. Abel and M. C. Pincoffs, Pharmacological Laboratory, Johns Hopkins University. Secondary albumoses and possibly peptones were found to be present in all the therapeutically used extracts of the posterior lobe of the hypophysis cerebri that were examined. The "Hypophysin" of the Farbwerke-Hoechst is not, as claimed for it, a solution of the isolated active substances of the pituitary gland but a mixture of albumoses with varying and unknown amounts of active and inactive constituents of the gland.

*On the Rôle of the Thymus in the Production of Tetany*: Eduard Uhlenhuth, Rockefeller Institute of Medical Research, New York. It would seem that thymus contains the substances which cause tetany and secretes them into the body from which they are removed by the parathyroids. Extirpation of the latter would thus cause tetany.

*Evidence of Assortive Mating in a Nudibranch*: W. J. Crozier, Bermuda Biological Station for Research, Agar's Island, Bermuda. Mating pairs of the nudibranch *Chromodoris zebra* are found to exhibit a rather high degree of correlation between the sizes of the two members. This is due to assortive mating, which may constitute an important influence tending to increase the numbers of larvae.

*Coral Reefs of Tutuila, with Reference to the Murray-Agassiz Solution Theory*: Alfred Goldsborough Mayer, Department of Marine Biology, Carnegie Institution of Washington.

*National Research Council*: Suggestions relating to the new National Army by the Anthropology Committee of the National Research Council; First Report of Committee on Botany; Meetings of the Executive Committee.

*Notices of Biographical Memoirs.*

EDWIN BIDWELL WILSON

MASSACHUSETTS INSTITUTE OF TECHNOLOGY,  
CAMBRIDGE, MASS.

#### SPECIAL ARTICLES

A RELATION OF ATOMIC WEIGHTS TO ATOMIC NUMBERS, AND A SUGGESTED STRUCTURE OF ATOMIC NUCLEI

THE writer has plotted, for all the elements, ratios of atomic numbers to the corresponding