infer, therefore, that the embryonic brain, like that of the adult, also has a water-content higher than that of the cord at the same age.

If this is indeed correct, and, moreover, if nuclear volume varies with the water-content of the cell, and, furthermore, if fixation does not destroy or completely reverse the volumetric relations, one would expect the nuclei in the anterior end of an embryonic nervous system to be larger than those in the posterior.

In *Cryptobranchus* embryos such comparisons are easily made. The nuclei are large so that errors, inevitably committed in determining their volumes, are relatively small. Certain precautions however are essential. Thus nuclei in various stages of mitosis must obviously be excluded. Also, since the resting nucleus is ovoid in shape, it is necessary to consider only those similarly oriented with reference to the plane of section. Absolute volumes are, of course, not practicable, nor are they requisite. All that the theory demands is that the average size of the nuclear sections in the regions which had the higher water-content shall be greater than those in the regions in which the water-content was lower. Tracings of some 2,800 nuclei whose outlines on paper were cut out with scissors and weighed under uniform conditions of atmospheric moisture, give results remarkable for their uniformity.

The absolute regularity of the ratios based on *Cryptobranchus,* and on the control observation on the thirty-six hour chick, convinced me that nuclear size, even in preserved materials, can be utilized as an index of original water-content. If now, the absorption of water is itself an index to the surface alteration to which I attribute the change in shape undergone by the cells during involution, then the nuclei of the lateral curling edges in any given section should on the average be larger than those in the, as yet, unfolded center. This, as indicated in the last division of Table VI., is true for *Cryptobranchus.*

Since this expectation has been fulfilled, I feel that the problems involved in the autonomous folding of the nervous system, and by implication, also involved in such other autonomous foldings as that of the entodermal plate in typical invaginate gastrulation, have begun to merge with the physical-chemistry of the tissues concerned, and the conditions to which their constituent cells are subjected at various periods of development.

O. C. GLASER

UNIVERSITY OF MICHIGAN

SOCIETIES AND ACADEMIES

THE AMERICAN MATHEMATICAL SOCIETY

THE twenty-third summer meeting and eighth colloquium of the society were held at Harvard University during the week September 4–8, 1916. Monday and Tuesday were devoted to the summer meeting proper, two sessions being held on each day for the presentation and discussion of papers. The colloquium opened on Wednesday morning and extended to Friday afternoon. Courses of lectures were given by Professor G. C. Evans, of Rice Institute, on "Topics from the theory and applications of functionals, including integral equations," and Professor Oswald Veblen, of Princeton University, on "Analysis situs."

Ninety-nine were in attendance. President E. W. Brown occupied the chair, being relieved by Vice-presidents E. R. Hedrick and Virgil Snyder. The council announced the election of the following persons to membership in the society: Mr. Herman Betz, Cornell University; Mr. J. A. Bigbee, High School, Little Rock, Ark.; Mr. Hillel Halperin, Vanderbilt University; Dr. J. R. Kline, University of Pennsylvania; Professor J. J. Luck, University of Virginia; Dr. F. J. McMackin, Dartmouth College. Seven applications for membership in the society were received.

Through the generosity of Harvard University the freshman dormitories and dining room were thrown open for the use of the society during the meeting. On Monday noon the members were shown the collection of mathematical models belonging to the university. On Wednesday afternoon a visit was paid to the university library, and on Wednesday evening to the observatory. Resolutions were adopted at the meeting expressing the thanks of the society for the hospitality of the university and its officers.

Fraternal greetings were exchanged by cable with the Scandinavian mathematicians assembled at Stockholm. A vote of congratulation was tendered to the secretary on his twenty-first year of service in that capacity.

The twenty-fifth anniversary of the broadening out of the society into a national organization and the founding of the *Bulletin* were celebrated at the banquet on Monday evening, at which eighty-four members and friends were present. Brief addresses were made by Professors Fiske, W. W. Johnson, Fine, Birkhoff, Hedrick, Webster, Coolidge and the secretary.

On Tuesday evening Professor D. E. Smith entertained the society with an interesting account of "The relation of the history of economics to the history of arithmetic problems."

The following papers were read at the summer meeting:

J. C. Fields: "Direct derivation of the complementary theorem."

C. A. Fischer: "Note on the order of continuity of functions of lines."

Olive C. Hazlett: "On the theory of associative division algebras."

W. C. Eells: "A statistical study of eminent mathematicians."

J. L. Coolidge: "The characteristic numbers of real algebraic plane curves."

R. W. Burgess: "The comparison of a certain case of the elastic curve with its approximation."

G. A. Miller: "Orders of operators of congruence groups modulo $2^r 3^s$."

John Eiesland: "Sphere geometry (third paper)."

A. J. Kempner: "Generalization of a theorem on transcendental numbers."

C. N. Moore: "On the developments in Bessel's functions."

Arnold Dresden: "Supplementary note on the second derivatives of an extremal integral."

L. E. Dickson: "Extension of the theory of numbers to the rational numbers of certain sets."

A. G. Webster: "On a theory of acoustic horns."

E. H. Moore: "On properly positive Hermitian matrices."

L. P. Eisenhart: "Deformations of transformations of Ribaucour."

F. R. Sharpe and Virgil Snyder: "On $(2-2)$ point correspondence between two planes."

F. H. Safford: "Surfaces of revolution in the theory of Lamé's products."

Dunham Jackson: "Note on the parametric representation of an arbitrary continuous curve."

Dunham Jackson: "Note on representations of the partial sum of a Fourier series."

L. H. Rice: "Determinants of many dimensions."

L. R. Ford: "Regular continued fractions."

M. W. Haskell: "The eliminant of a system of forms."

E. V. Huntington: "A simple substitute for Duhamel's theorem."

E. V. Huntington and J. R. Kline: "Sets of independent postulates for betweenness."

G. D. Birkhoff: "Dynamical systems with two degrees of freedom (second paper)."

E. B. Van Vleck: "Non-loxodromic substitutions in n variables."

L. I. Hewes: "Nomograms of adjustment."

H. C. M. Morse: "A theorem on the linear dependence of analytic functions of a single variable."

G. A. Pfeiffer: "Note on the linear dependence of analytic functions."

G. M. Green: "On the linear dependence of functions of one variable."

C. L. Bouton: "Iteration and group theory."

G. M. Green: "On the general theory of surfaces."

W. V. Garretson: "On the asymptotic solution of the non-homogenous linear differential equation of the nth order. A particular solution."

Caroline E. Seely: "On series of biorthogonal functions."

A. B. Frizell: "Lemma for a new method of generating alephs."

John Eiesland: "Transformation theory of the flat complex and its associated line complex."

A. R. Schweitzer: "On the type of quasi-transitive functional equations (second paper)."

A. R. Schweitzer: "A problem in quasi-transitive functional equations."

A. R. Schweitzer: "Some theorems on quasi-transitive functional equations."

A. R. Schweitzer: "On the analogy between functional equations and geometric order relations."

T. H. Gronwall: "On the power series for $\log(1+z)$."

T. H. Gronwall: "A problem in geometry connected with the analytic continuation of a power series."

T. H. Gronwall: "On the convergence of Binet's factorial series for $\log \Gamma(z)$ and $\psi(z)$."

T. H. Gronwall: "On the zeroes of the function $\beta(z)$ associated with the gamma function."

The next meeting of the society will be held at Columbia University on Saturday, October 28. The Southwestern Section will meet at the University of Kansas on Saturday, December 2.

F. N. Cole,
Secretary