When these remarkable activities were first observed it seemed incredible that we were witnessing a normal mode of erythrocyte formation. The experiments were consequently repeated many times, subjected to various tests, and the results analyzed in the light of all the criticism that could be brought to bear upon the subject. Temperature, media, evaporation, staining reaction and degenerative changes have been carefully considered. It is a pleasure to state that Professor R. J. Terry and Mr. C. H. Danforth, of the anatomical department, have also carefully followed these erythroblast activities and have kindly subjected the results to valuable criticism. In brief, after careful study the conclusion seems unavoidable that we are here confronted with a *normal mode of formation of mammalian erythrocytes by a process of budding and constriction from the parent erythroblast.* It is interesting that this result is in accord with the discarded theory of Malassez (1882), on the origin of erythrocytes from bone marrow cells by budding, while at the same time the investigations were made and the conclusions drawn entirely independent of any previous knowledge of his work.

In addition to the formation of typical erythrocytes, another type of activity consists in the production of either very small buds or slender, elongated, rod-like processes which may ultimately segment into a varying number of subdivisions about one third or one fourth the size of the average erythrocyte. These correspond very closely in size and form to blood platelets. As for the amount of cytoplasm remaining with the nucleus, after the constriction off of an erythrocyte, it may vary from a small rim about the nucleus to a quantity occasionally even larger than the erythrocyte to which the parent cell has given rise. No conclusive evidence of a migration of the nucleus from the cell has as yet been obtained. However, in the case of the smaller erythroblasts the constriction may take place so close to the nucleus that it may present the appearance of nuclear extrusion, and it is readily conceivable that in some cases the constriction may be such as to leave behind a practically cytoplasmic-free nucleus and thus account for the free erythrocytic nuclei occasionally found in the blood. That the fundamental process here described is one of cytoplasmic constriction rather than of nuclear extrusion is still further demonstrated by the fact that occasionally a single large erythroblast was observed to give rise to even two buds, both of which became detached from the parent cell.

Granting that we are justified in the above conclusion, various questions naturally present themselves; among others the behavior of the erythroblasts in different media; the factors involved in the formation of hemoglobin and its separation from the erythroblast; the subsequent assumption by the liberated globule of a disc or cup-shaped form; the fate of the nucleated remainder of the erythroblast, and the possible relationship between lymphocytes and erythroblasts. Investigation bearing on these problems is under way. The present preliminary statement will be followed as soon as possible with a full description of technique, detailed data, and figures upon which these conclusions are based.

V. E. EMMEL

DEPARTMENT OF ANATOMY,
WASHINGTON UNIVERSITY MEDICAL SCHOOL,
April 25, 1912

ON THE APPEARANCE OF ALBINO MUTANTS IN LITTERS OF THE COMMON NORWAY RAT, MUS NORVEGICUS

AFTER several failures to breed the Norway rats in cages, we have finally succeeded in raising them in captivity by means of an improvement in the cages and diet, as well as in general treatment.

This successful experiment was begun more than two years ago and we are just getting the litters which belong to the third generation born in captivity. It may be added that in all cases the brothers and sisters of the same litters were mated as I wished to determine the combined effects of close inbreeding and captivity.

The total number of rats belonging to the third generation born in captivity is not yet large. There are, however, six litters altogether, each having a different parentage. Within these six litters I have found four pure albino rats (white coat and pink eyes) among only brown-coated brothers and sisters. The distribution of these albino mutants within the litters is as follows:

(1) 7 brown and no albinos, born March 15, 1912.
(2) 6 brown and no albinos, born March —, 1912.
(3) 4 brown and 3 albinos, born April 17, 1912.
(4) 4 brown and 1 albino, born April 17, 1912.
(5) 12 brown and no albinos, born April 30, 1912.
(6) 5 brown and no albinos, born May 4, 1912. This litter was found dead; all had pigmented eyes.

Thus the number of albino mutants in proportion to the brown-coated brothers and sisters is not large, though it may increase in subsequent generations. Although I have been anticipating that such albino mutants might occur sometime, nevertheless it was a great surpise to obtain them within so few generations.

So far as I am aware, this is the first instance in which the albino mutants have been obtained from the common Norway rats under laboratory conditions and I thought the event of sufficient interest to justify this note.

S. Hatai

The Wistar Institute

SOCIETIES AND ACADEMIES

THE AMERICAN MATHEMATICAL SOCIETY

The one hundred and fifty-eighth regular meeting of the Society was held at Columbia University on Saturday, April 27, 1912, with an attendance of fifty-two members. President H. B. Fine occupied the chair. The following new members were elected: Miss S. R. Benedict, Smith College; Mr. C. E. Fisher, Rhode Island Normal School; Dr. T. H. Gronwall, Chicago, Ill.; Mr. Louis A. Hopkins, University of Michigan; Dr. A. J. Kempner, University of Illinois; Mr. V. C. Poor, University of Michigan; Mr. R. B. Stone, Harvard University; Mr. K. P. Williams, Princeton University. Seven applications for membership in the society were received.

It was decided to hold the annual meeting this year at Cleveland, Ohio, in affiliation with the American Association for the Advancement of Science. The winter meeting of the Chicago Section will be merged in this general meeting of the society. Owing to President Fine's absence abroad, his presidential address will not be delivered at this meeting but at the annual meeting of 1913.

The following papers were read at the April meeting:

R. L. Moore: "Concerning Jordan curves in non-metrical analysis situs."

J. K. Lamond: "Improper multiple integrals over iterable fields."

L. A. Howland: "Binary conditions for singular points on a cubic."

B. H. Camp: "Certain integrals containing parameters."

S. Lefschetz: "On the V_3^3 with five nodes of the second species in S_4."

E. R. Marshall: "A labor-saving device in computation."

G. D. Birkhoff: "The reducibility of maps."

G. D. Birkhoff: "A determinant formula for the number of ways of coloring any map."

Oswald Veblen: "An application of modular equations in analysis situs."

H. B. Phillips and C. L. E. Moore: "A geometric use of matrices."

H. B. Phillips and C. L. E. Moore: "A theory of linear distance and angle."

L. P. Siceloff: "Sylow subgroups of groups whose orders are of certain special forms."

A. D. Pitcher: "Concerning the continuity and convergence of functions of a general variable."

W. R. Longley: "Proof of a theorem due to Picard."

A. R. Schweitzer: "Remark on a functional equation."

A. R. Schweitzer: "Theorems on functional equations."

Dunham Jackson: "On approximation by trigonometric sums and polynomials (second paper)."

N. J. Lennes: "Concerning Van Vleck's non-measurable set."

N. J. Lennes: "Concerning infinite polygons and polyhedrons."

The next meeting of the society will be the summer meeting, which will be held at the University of Pennsylvania, September 10–11.

F. N. Cole,
Secretary