and milled rice. The respiration of frosted wheat plants. The respiration of wheat plants infected with stem rust: C. H. BAILEY and A. M. GUJAR.

The etiology of limberneck in fowls: S. D. WILKINS and R. A. DUTCHER. Many theories and beliefs are extant relative to the primary causes of limberneck in poultry. Attempts have been made at the Minnesota Station to produce limberneck by the following methods: (1) Dietary treatment. (2) Feeding and injecting *B. botulinus* and its toxin. (3) Feeding spoiled foods. (4) Feeding salts and brines. (5) Feeding inorganic poisons. (6) Feeding larvæ of certain flies (*Lucilia cæsar*). (7) Feeding maggots from various sources. Negative results were obtained in all trials except when larvæ of *Lucilia cæsar* were fed. These larvæ were obtained from ova deposited on limberneck carcasses.

The relation of vitamines to the development of sex organs in cockerels: S. D. WILKINS and R. A. DUTCHER. White Leghorn cockerels of uniform age and weight were divided into two groups. Group I. received a diet of polished rice only, while Group II. received a diet of polished rice, supplemented by 2 grams of green alfalfa, daily. The testes were found, after 30 days, to have atrophied, in Group I., in spite of the fact that some birds had not lost in weight, showing that atrophy of organs is not necessarily accompanied by general inanition. In Group II. the testes were found to be practically normal for birds of that age and breed.

Effect of vitamine deficiency on various species of animals. I. The production of xerophthalmia in the rabbit: V. E. NELSON and A. R. LAMB. A diet deficient in the fat-soluble vitamine will produce a disease of the eyes of rats which is called xerophthalmia. This condition has been repeatedly produced in rats, and is said to have occurred in children, but has not been reported in any other species. We have begun a study of the relative requirements of various species for this substance. On a ration deficient in fat-soluble A young rabbits grew for a few weeks, but at the end of 60 days lost weight and became nearly blind. Butter-fat effected a cure. It is suggested that herbivorous animals may require more of this vitamine than the rat.

The rôle of vitamines in the growth of yeast. I. Are vitamines essential? E. I. FULMER, V. E. NELSON, F. F. SHERWOOD. Evidence indicates Water Soluble B is unnecessary for yeast growth. Yeast

has been growing months in a vitamine free medium at two thirds the rate manifested in wort. Alcoholic extract of alfalfa stimulates growth. Heating the extract with alkali does not destroy this effect. Alcoholic extracted malt gives results like untreated malt. The ammonia content of the medium influences growth. There is an optimum concentration variations from which materially decrease the crop. One is unwarranted stating this or that substance is indispensable until the best synthetic medium is developed.

A correction of two previous papers: 1. Rate of recovery from the action of fluorite rays. 2. Sensitization to heat due to exposure to light of short wave lengths. The graphical representation of hydrogen ion concentration. Notes concerning formol titration of nitrogen: W. P. BOVIE.

<div align="right">CHARLES L. PARSONS,
Secretary</div>

<div align="center">(*To be continued*)</div>

THE SUMMER MEETING OF THE AMERICAN MATHEMATICAL SOCIETY

THE twenty-seventh summer meeting and ninth colloquium of the American Mathematical Society were held at the University of Chicago on September 7–11. The meeting was preceded on September 6 by a meeting of the Mathematical Association of America and extended over three sessions, lasting until noon on September 8. On the afternoon of that day the colloquium opened. The colloquium consisted of two courses of five lectures each, on ''Dynamical Systems'' by Professor G. D. Birkhoff, of Harvard University, and on ''Topics from the theory of functions of infinitely many variables'' by Professor F. R. Moulton, of the University of Chicago. The attendance at the colloquium was eighty-eight, exceeding by nearly twenty the previous record for attendance at a colloquium.

The attendance at the regular sessions of the Society included more than one hundred and twenty persons among whom were nearly one hundred members of the society. One hundred and sixteen persons were present at a joint dinner of the society and the association held on the evening of September 7. Excellent accommodations had been provided at Hitchcock and Beecher Halls, and at the Quadrangle Club, which was most generously put at the disposal of attending members. A resolution expressing to the department of mathematics of the University of

Chicago the society's appreciation and gratitude was unanimously adopted.

Upon recommendation of the council, the society voted to raise the annual dues from five to six dollars and the life-membership fee from fifty to seventy-five dollars. Thirteen new members were elected at this meeting: Dr. R. F. Borden, Brown University; Dr. Tso Chiang, Nan Kai College, Tientsin, China; Professor H. M. Dadourian, Trinity College, Hartford, Conn.; Mr. J. Douglas, Columbia University; Mr. P. Franklin, Princeton University; Mr. C. F. Green, University of Illinois; Captain R. S. Hoar, Ordnance School, Aberdeen, Md.; Professor Jessie M. Jacobs, University of Texas; Mr. E. L. Post, Columbia University; Professor C. D. Rice, University of Texas; Mr. L. G. Simon, New York City; Professor J. E. Stocker, Lehigh University; Mr. Tsao-Shing Yang, Syracuse University. Twenty-one applications for membership in the society were received.

Vice-president Richardson presided at the sessions of Tuesday and Wednesday forenoons; Professor M. W. Haskell presided on Tuesday afternoon. The following thirty-four papers were read at this meeting:

On the projective generation of cyclides: ARNOLD EMCH.

A generalization of the strophoid: J. H. WEAVER.

On the relative distribution of the real roots of two real polynomials: C. F. GUMMER.

The polyadic expansion of a number: A. A. BENNETT.

On the location of the roots of the jacobian of two binary forms: J. L. WALSH.

On the transformation of convex point sets: J. L. WALSH.

On Kakeya's minimum area problem: W. B. FORD.

On completely continuous linear transformation: T. H. HILDEBRANDT.

Integral equations in which the kernel is quadratic in the parameter: ANNA J. PELL.

Annihilators of modular invariants: OLIVE C. HAZLETT.

Construction of multiple correspondences between two algebraic curves: VIRGIL SNYDER and F. R. SHARPE.

Note on a method of proof in the theory of Fourier's series: DUNHAM JACKSON.

On the drift of spinning projectiles: J. W. CAMPBELL.

Functions of infinitely many variables in Hilbert space: W. L. HART.

A property of continuity: D. C. GILLESPIE.

Periodic orbits of type 2/1: L. A. HOPKINS.

Note on the median of a set of numbers: DUNHAM JACKSON.

An application to Weierstrass's function of the generalized derivative of type (C1): C. N. MOORE.

A method of graduating curves: L. R. FORD.

Note on a generalization of a theorem of Baire: E. W. CHITTENDEN.

On classes of functions defined in terms of relatively uniform convergence: E. W. CHITTENDEN.

On the relation between the Hilbert space and the calcul functionnel of Fréchet: E. W. CHITTENDEN.

A generalization of the Fourier cosine series: J. L. WALSH.

Note on a class of polynomials of approximation: DUNHAM JACKSON.

Reciprocal subgroups of an abelian group: G. A. MILLER.

Characteristic lines of transformations: E. R. HEDRICK, L. INGOLD and W. D. A. WESTFALL.

Pseudo-differentiation of a summable function: W. L. HART.

Five notes on Einstein's theory of gravitation: EDWARD KASNER.

On the convergence of certain trigonometric approximations: DUNHAM JACKSON.

Note on the Picard method of successive approximations: DUNHAM JACKSON.

Symbolic notation in the theory of modular invariants: OLIVE C. HAZLETT.

On the Fourier coefficients of a continuous function: T. H. GRONWALL.

A sequence of polynomials connected with the n-th root of unity: T. H. GRONWALL.

Upper bounds of the coefficients in conformal mapping: T. H. GRONWALL.

ARNOLD DRESDEN,
Acting Secretary