The value of x at the beginning of the experiment may be taken as being so small as to be negligible. The high value, 0.31×10^{-4} ohms^{-1}, or more, which Becking and Gregersen give for their initial reading, is probably due to convective effects incident to setting up the experiment and may be neglected. The same influences probably account for the high value of x at the end of the first hour. In making these calculations the values of x were divided by the values of $\frac{\Lambda}{\Lambda_0}$ appropriate to the presumable concentrations; this correction was neglected by Becking and Gregersen.

The results of such calculations are given in Table I, and show that the theoretically correct formula gives results as accurate as could be expected, since no precautions were taken to minimize convective effects. It is accordingly unnecessary to have recourse to Becking and Gregersen's empirical formula with its many arbitrary constants.

TABLE I

Values of K in the equation $K = \frac{1}{t} \log \frac{a}{a - 2x}$ when $a_0 = 50 \times 10^{-4}$ and $x_0 = 0$.

t observed	$x \times 10^4$	$\log \frac{a}{a-2x}$	K
hours	ohms^{-1}		
1	6.49	1.0267	.0114
2	9.48	1.0394	.0084
3	13.38	1.0567	.0080
4	17.93	1.0773	.0081
5	23.43	1.1035	.0086
6	28.88	1.1306	.0089
7	36.08	1.1687	.0097

The second and more serious fault in Becking and Gregersen's argument lies in the fact that according to their data the conductance of the solution in the lower compartment into which KCl is supposed to be diffusing, increases when the apparatus is illuminated, but decreases when the illumination is over. If all changes in conductance are to be interpreted as due to passage of KCl through the lecithin membrane, then KCl must be supposed to diffuse out of the lower cell against the concentration gradient after each period of illumination. It is hardly to be supposed that water diffused into the more dilute solution, although this does occur under certain conditions (negative osmosis). Either of these explanations seems relatively improbable and one is driven to inquire whether the changes in conductance occurring during and after illumination can not be attributed to some cause other than changes in KCl concentration. Although it is stated that "temperature fluctuations during illumination kept within $\pm 1°$ C.," this still allows us to assume that an increase of 2° C. might have occurred during illumination, which would increase the conductivity by 4.6 per cent.[3] This is nearly two thirds of the largest increase in conductance which was observed, and suggests the need for further information as to whether the temperature of the solution *between the electrodes* was measured, as can be done by means of a thermocouple, or whether, for example, the measurements refer to air temperatures taken by a mercury thermometer, the bulb of which was inside the asbestos box enclosing the apparatus. Only in the former case could we be sure that the whole effect was not due to change in the temperature of the solution in the conductivity compartment.

These criticisms do not preclude an increase in the permeability of lecithin-collodion membranes upon illumination; but the hypothesis that such a change occurs is evidently in need of further experimental support.

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[3] Kraus, C. A. "The Properties of Electrically Conducting Systems." New York, 1922, p. 147.

THE MINERALOGICAL SOCIETY OF AMERICA

THE fifth annual meeting of the Mineralogical Society of America was held at Cornell University, Ithaca, New York, on Wednesday, December 31, 1924. Officers for 1925 were elected as follows: *President,* Arthur S. Eakle, University of California, Berkeley, California; *vice-president,* H. P. Whitlock, American Museum of Natural History, New York City; *secretary,* Frank R. Van Horn, Case School of Applied Science, Cleveland, Ohio; *treasurer,* Alexander H. Phillips, Princeton University, Princeton, New Jersey; *editor,* Walter F. Hunt, University of Michigan, Ann Arbor, Michigan; *councilor,* 1924–28, William F. Foshag, U. S. National Museum, Washington, D. C.

The following papers were presented:

The modern study of minerals: Presidential Address: HENRY S. WASHINGTON (jointly before Mineralogical Society and Geological Society).

Bentonite as a one-dimensional colloid: EDGAR T. WHERRY.

A tabulation of the aluminum silicate minerals: EDGAR T. WHERRY.

Bentonite and Montmorillonite: CLARENCE S. ROSS AND EARL V. SHANNON.

A new theory of the composition of the zeolites: A. N. WINCHELL.

Studies in the mica group: A. N. WINCHELL.

The temperature-pressure conditions during the formation of smoky quartz and amethyst: EDWARD F. HOLDEN.

Electrical conductivity of ore minerals: PAUL F. KERR AND CHARLES K. CABEEN.

A computing and direct reading Jolly balance: EDWARD H. KRAUS.

A calcified log from the Pittsburgh coal near Morgantown, West Virginia: CHARLES R. FETTKE.

Camsellite from California: ARTHUR S. EAKLE.

Foshagite, a new calcium silicate from Crestmore, California: ARTHUR S. EAKLE.

Note on the crystallization of thaumasite: ARTHUR S. EAKLE.

Preliminary report on the crystal structure of some metallic sulphides: LEWIS S. RAMSDELL.

The characteristics of primary calcite in igneous rocks: T. L. WALKER AND A. L. PARSONS.

Evanescent pink sodalite, or hackmannite, from near Bancroft, Ontario: T. L. WALKER AND A. L. PARSONS.

X-ray diffraction measurements upon the diopside-like pyroxenes and their bearing upon the nature of augite: R. W. G. WYCKOFF, H. E. MERWIN AND H. S. WASHINGTON.

The space group of diopside: R. W. G. WYCKOFF AND H. E. MERWIN.

The crystallography of sucrose: A. F. ROGERS.

An interesting and useful property of zones: A. F. ROGERS.

A new type of sand calcite crystals from Monterey County, California: A. F. ROGERS AND R. D. REED.

A fulgurite from South Amboy, New Jersey: W. M. MYERS AND ALBERT B. PECK.

THE WESTERN MEETING OF THE AMERICAN MATHEMATICAL SOCIETY

THE twenty-second western meeting of the American Mathematical Society was held at the University of Chicago on December 26, 1924. Fifty-two members of the society were present.

It was announced that at the April meeting of the society in Chicago Professor W. D. MacMillan would give a symposium lecture on "Some of the mathematical aspects of cosmology."

At the scientific sessions, presided over by Professor T. H. Hildebrandt, vice-president of the society, the following papers were presented:

Sense relations between the pairs of corresponding triangles of a Desargues configuration: F. E. WOOD.

Bundles and pencils of nets on a surface: E. P. LANE.

A theory of a general net on a surface: V. G. GROVE.

On the polynomial of the best approximation to a given continuous function: J. A. SHOHAT.

The figuratrix in the calculus of variations: P. R. RIDER.

Theorems concerning transversals of the $(n+)$—hedron in n—dimensional space: H. F. MACNEISH.

A new theory of the rational equivalence of linear transformations or pairs of bilinear form: L. E. DICKSON.

Rational theory of pairs of bilinear forms in the singular case: L. E. DICKSON.

On the solution of diophantine equations by means of ideals: G. E. WAHLIN.

Subgroup composed of the substitutions which omit a letter of a transitive group: G. A. MILLER.

The transform in the abstract definitions of groups: W. E. EDINGTON.

Asymptotic distribution of characteristic numbers in the problem of the elastic bar: H. T. DAVIS.

Surface transformations applied to special dynamical problems: H. BETZ.

The frequency law of a function of several variables with given frequency laws: E. L. DODD.

Note on isogonal trajectories of geodesics: L. INGOLD.

The parameter group of a continuous group in function space leaving a manifold invariant: I. A. BARNETT.

Existence theorems for differential equations: H. J. ETTLINGER.

Polynomials and their residue systems: A. J. KEMPNER.

Depreciation and other economic problems involving maxima of functionals: H. HOTELLING.

On certain linear algebras: J. B. SHAW.

The papers by Professors MacNeish, Wahlin, Betz, Dodd and Ettlinger were read by title.

ARNOLD DRESDEN,
Assistant Secretary

MEETING OF THE UTAH ACADEMY OF SCIENCES

A MEETING of the academy was held at the Agricultural College, Logan, on October 31 and November 1, 1924. A brief business session was held at which a number of new members were admitted to membership in the academy. The program consisted of the following papers:

Acid tolerance of strawberry plants: LAVAL S. MORRIS.

Piracy on the Provo and Weber rivers: WILLIAM PETERSON.

Capillary potential in relation to irrigation and drainage: O. W. ISRAELSON.

Wheat straw studies: THOMAS L. MARTIN.

Some anomalous results in the measurements of capillary potential function by the vapor pressure method: L. B. LINFORD and WILLARD GARDNER.

The precision of the porous cup method of measuring the capillary potential: WILLARD GARDNER and C. A. CHAMBERS.

A new concept of light carrying medium: LLOYD GARRISON.

Advantages to be derived from locally developed sugar beet seed: DEAN A. PACK.

Contribution to the geology of the southern Wasatch: MURRAY O. HAYES.

Sound intensity measurements: ORIN TUGMAN.

Occurrence of nematode and crown wart in alfalfa fields in Utah: B. L. RICHARDS.