position in the crook of the J, the feed-tube is lowered into the reservoir, and the stopper is forced home. The filling of atmometer and tube is completed by turning the whole apparatus upside down and then alternately back and forth, in a manner which a little experimentation will readily suggest, due precautions being taken during this operation that the mercury retains its position in the side-arm. This same simple expedient is adopted at any time when it is desired to ascertain whether air bubbles are present in the atmometer and for getting rid of them. Any difficulty in persuading air bubbles to emerge from the atmometer into the feed-tube can be overcome by tapping the base of the instrument or by variously shaking the whole apparatus.

The Musch atmometer mounting has been thoroughly tested under various conditions, both by the writer and by others. It has already been adopted by several investigators for field work during the past season and appears to have given uniformly satisfactory results. The chief objection to which it may be open seems to be this: that during a heavy or protracted rain (or when left under a tap) there may be an initial absorption of water from without amounting to as much as 0.6 cc.[4] This absorption is due to the fact that the mercury valve does not remain stationary before the downward-pressing water column but retreats a short distance up into the short arm of the J. During a period when the weather at relatively brief intervals is alternately wet and dry it is conceivable that an error of several cc. might be introduced by the intermittent fluctuation back and forth of the mercury column; but ordinarily the error would be relatively inconsequential and could be corrected with reasonable accuracy if desired. The most obvious advantages of this style of mounting are (1) that it is possible to detect the presence of air bubbles in the atmometer by simply turning the whole apparatus upside down, and to get rid of them without even taking the cork out of the reservoir bottle; (2) that bubbles can not accumulate in the feed-tube; (3) that any objections which may arise from the use of glass wool are eliminated; and (4) that the mounting is always ready for immediate use. The contrivance can readily be made by any one adept at glass-working or it can be secured from at least one dealer in apparatus and supplies for about fifty cents.

In conclusion, brief attention is called to a modification of the Musch mounting which has been devised by Dr. F. C. Gates (see Fig. 1, *B*). This modified model recommends itself in being somewhat easier to construct and somewhat more compact and also in the fact that the mercury runs more readily back and forth between arm and valve curve than in the original model. This latter feature, however, while of advantage in some respects, may prove a disadvantage when it comes to the rapid filling of atmometer and mount, except where this is done under water (the practise followed by Dr. Gates) or by the suction method: the replacement of long air columns and large bubbles of air is interfered with by the very ease with which the mercury slides back and forth.

G. E. NICHOLS

YALE UNIVERSITY

[4] The amount of absorption may be greater if too short a column of mercury is used.

## THE INDIANA ACADEMY OF SCIENCE

THE Indiana Academy of Science held its thirty-eighth annual meeting at Hotel Lincoln, Indianapolis, on Thursday and Friday, December 7 and 8, 1922. The officers of this meeting were as follows:

F. M. ANDREWS, Bloomington, *President.*
C. A. BEHRENS, LaFayette, *Vice-president.*
W. N. HESS, Greencastle, *Secretary.*
H. F. DIETZ, Indianapolis, *Assistant Secretary.*
W. M. BLANCHARD, Greencastle, *Treasurer.*
F. PAYNE, Bloomington, *Editor.*
F. B. WADE, Indianapolis, *Press Secretary.*

The meeting was unusually well attended and the program presented was as follows:

GENERAL SESSION

*Estimating the wealth of Indiana as compared with other states.* STEPHEN S. VISHER, Indiana University.

*A photographic study of architectural acoustics.* ARTHUR L. FOLEY.

*Francis Galton, life and work.* ROBERT HESSLER.

*Paleolithic Stone Age in Indiana.* S. FRANK BALCOM.

*The archeological survey of Jefferson County.* GLENN CULBERTSON.

*The smog problem.* ROBERT HESSLER.

*Life and mind.* ROBERT W. MCBRIDE.

*Frank B. Wynn: In memoriam.* ROBERT W. MCBRIDE.

*Alexander Smith: In memoriam.* R. E. LYONS.

*Address of the retiring president: Some problems of plant physiology.* FRANK M. ANDREWS.

*Earl Jerome Grimes: In memoriam.* HARRY F. DIETZ.

*The scientific work of the conservation commission. By title.* STANLEY COULTER.

*The southern Ute Indians of the Pine River Valley, Colorado. By title.* ALBERT B. REAGAN.

*Indian funerals. By title.* ALBERT B. REAGAN.

*Twinkling star. By title.* ALBERT B. REAGAN.

SECTIONAL PROGRAM

*Geology and Geography*

*History of the lakes near Laporte, Indiana.* WILLIAM MOTIER TUCKER.

*Mineral resources of Indiana.* W. N. LOGAN, Indiana University.

*Goniobasis livescens Menke, a pleistocene shell in Furnassville Blowout, dunes of Porter County.* MARCUS W. LYON, JR.

*Valley-heads and sheet-wash erosion.* CLYDE A. MALOTT.

*The rôle of sheet-wash in erosion.* CLYDE A. MALOTT.

*A Pennsylvania scorpion from Clay County, Indiana, with notes on its relationship and geological significance. By title.* JOHN IRVIN MOORE.

*Some contrasts among the geographic subdivisions of Indiana.* STEPHEN S. VISHER.

*Abandoned channels in Randolph and Delaware Counties, Indiana.* FREDERICK J. BREEZE.

*The Muncie esker.* FREDERICK J. BREEZE.

*The entrenched meanders and associated terraces in the Muscatatuck River, near Vernon, Indiana.* BURTON J. MALOTT. Indianapolis.

*A new pleistocene gastropod from Maryland. By title.* ERNEST RICE SMITH.

*Archeology in Posey and Vanderburg Counties* (Indiana). ANDREW J. BIGNEY.

PHYSICS AND CHEMISTRY

*Chemistry*

*Qualitative analysis—tin group.* RALPH W. HUFFERD.

*Qualitative analysis—iron group.* RALPH W. HUFFERD.

*The normal system in quantitative analysis.* E. G. MAHIN.

*The effect of non-metallic impurities on cementite distribution in steel.* G. B. WILSON.

*Some toxic soils of Indiana.* R. H. CARR.

*A study of, and a modified method for, Vogel's reaction for cobalt.* F. J. ALLEN and A. R. MIDDLETON.

*Thiocyanotocobaltous acid and its alkali salts.* F. J. ALLEN and A. R. MIDDLETON.

*Evaporation of solutions in burettes.* M. G. MELLON.

*The use of solutions of inorganic salts as permanent color standards.* M. G. MELLON, Purdue University.

*An improved murexide reaction.* SAMUEL E. EARP.

*Fog formation in air which has passed through a silent discharge.* F. O. ANDEREGG and K. B. MCEACHRON.

*A type of silent discharge involving catalysis.* F. O. ANDEREGG and E. H. BOWERS.

*A further study of pressure reversals in the corona discharge.* F. O. ANDEREGG.

*The peculiar properties of water in reference to its molecular structure.* F. O. ANDEREGG.

*Physics*

*Some untenable acoustic theories.* ARTHUR L. FOLEY.

*Improved designs of sound "condensers." Lantern.* ARTHUR L. FOLEY.

*Locomotive whistle experiments.* ARTHUR L. FOLEY.

*Energy losses in railroad track hammers. Lantern.* EDWIN MORRISON.

*Scattering of light by small particles.* EDWIN MORRISON.

*Spectrum of phosphorescent mercury.* E. K. CHAPMAN.

*A method of measuring the amplification of two or more stage amplifiers.* R. R. RAMSEY.

*A method of securing accurate high frequency standard.* R. R. RAMSEY.

*An oscillographic study of an induction coil with high frequency load.* F. O. ANDEREGG and K. B. MCEACHRON.

*An investigation of the Foley telephone mouthpiece.* JAMES E. BROCK.

*Diffraction of light through circular openings.* MASON E. HUFFORD.

BIOLOGICAL SCIENCES

*Zoology*

*Some genes modifying crossing-over.* F. PAYNE.

*The occurrence of secondary parasitism in frog parasites. By title.* GEORGE ZEBROWSKI, Purdue University.

*Relation of insects to human life and to the natural sciences.* JOHN J. DAVIS.

*Content of first course in zoology.* R. A.

GANTZ, Indiana State Normal School, Eastern Division.

*Notes on mammals of the dune region of Porter County.* MARCUS W. LYON, JR.

*Notes on the termites of Indiana, II.* HARRY F. DIETZ.

*A heritable character affecting the blood serum of the guinea pig. By title.* ROSCOE R. HYDE, Johns Hopkins University.

*Photoreceptors of Lumbricus terrestris.* WALTER N. HESS.

*The spermatogenesis of the Louisiana earwig.* W. P. MORGAN.

*A hygrothermograph puzzle.* W. H. LARIMER.

*A study of the Virginia opossum.* W. H. SHEAK.

*Bacteriology*

*Nagana (Trypanosoma Brucei). The course of the disease in laboratory animals when injected with cultures grown in-vivo and in-vitro.* CHARLES A. BEHRENS.

*Acid production by colon-typhoid group.* P. A. TETRAULT.

*Soil bacterial types and green manuring.* I. L. BALDWIN.

*A simple method of determining the thermal death-point.* JAMES B. KENDRICK and MAX W. GARDNER, Purdue Agricultural Experiment Station.

*Botany*

*Further notes on the unusual stipules of acer nigrum michx.* FLORA ANDERSON.

*Unusual branching in cladophora.* FLORA ANDERSON.

*Plants new to Indiana. XI.* C. C. DEAM.

*Attack of fungi on the lids of water culture jars.* F. M. ANDREWS.

*The effect of pressure on seedlings.* F. M. ANDREWS.

*The convolvulaceae of Indiana.* TRUMAN G. YUNCKER.

*New Indiana weeds.* ALBERT A. HANSEN.

*Wild corn as a weed problem in Indiana.* ALBERT A. HANSEN.

*List of Indiana plants, chiefly from Putnam County, collected 1911-'15 by Earl Jerome Grimes. By title.* MRS. EILEEN W. GRIMES.

*Polyembryony in species of osmunda and dryopteris.* DAVID M. MOTTIER.

*Embryonic selection in certain species of nut-bearing pines.* DAVID M. MOTTIER.

*Phytophthora rot of tomato, eggplant and peppers.* JAMES B. KENDRICK.

*Clover mildew.* E. B. MAINS, Purdue Agricultural Experiment Station.

*Notes on microtechnique.* M. S. MARKLE.

*Chloroplasts of martynia fragrans.* F. M. ANDREWS.

*Quantitative aeration in leaves.* F. M. ANDREWS.

*Indiana plant diseases, 1922.* MAX W. GARDNER, Purdue Agricultural Experiment Station.

*Indiana fungi. VII.* J. M. VAN HOOK.

*Stem rust of wheat and the barberry in Indiana, 1922. Lantern.* K. E. BEESON (introduced by H. S. Jackson), Purdue Agricultural Experiment Station.

*An unusual iris.* F. M. ANDREWS.

*Second blooming of a snowball bush in the same year.* F. M. ANDREWS.

*The status of the hot-water treatment of wheat in Indiana.* CHARLES GREGORY.

*Some peculiar effects of formaldehyde treatment of onion for smut.* CHARLES GREGORY.

*Plants of White County.* V. LOUIS F. HEIMLICH, Purdue University.

*The microscopy of flour. By title.* HAROLD E. TURLEY.

At the annual banquet the following officers for the year 1923 were elected:

C. A. BEHRENS, Lafayette, *President.*

F. PAYNE, Bloomington, *Vice-president.*

W. N. HESS, Greencastle, *Secretary.*

FLORA C. ANDERSON, Bloomington, *Assistant Secretary.*

W. M. BLANCHARD, Greencastle, *Treasurer.*

J. J. DAVIS, Lafayette, *Editor.*

H. F. DIETZ, Indianapolis, *Press Secretary.*

The meeting closed with a general program to which the public was invited.

GENERAL PROGRAM

*The fundamental principles of radio transmission and reception.* R. R. RAMSEY.

*The scientific propagation of black bass in ponds as conducted at the Riverside Station in Indianapolis. Two reels motion pictures.* G. M. MANNFIELD.

*The artificial propagation of pike-perch. One reel motion pictures.* G. M. MANNFIELD.

During the general business session an important change in the constitution of the academy was approved whereby the executive committee is now authorized to select the place at which the annual meeting of the following year is to be held instead of always holding this meeting in Indianapolis as the constitution previously required.

HARRY F. DIETZ,
*Press Secretary.*