contained none of these rats, Dr. Castle kindly sent several for breeding tests.

A mating of the mutant female with one of Dr. Castle's pink-eyed yellow males gave young of the wild gray type; with a black-eyed yellow male the offspring were all black-eyed yellows. The types of young produced in the F_2 generation of these crosses proved conclusively that the mutant female was a "cream" or non-agouti form of the black-eyed yellow rat. The formula for the mutant is aarr, when A is the agouti and R the normal dominant color factor in black-eyed yellow.

The parents of the mutant produced a total of six litters containing 57 young, of which five individuals, two males and three females, were creams; 14 creams was the number to be expected. The mother of the mutant when mated with another male from the black stock cast only black young.

The sire of the mutant was mated with three other females taken at random from the black stock. Two of these females produced a total of 76 young, among which there were thirteen male and six female creams; the other female cast 30 young that were all black. This male was later mated with three of his black daughters: two cast only black young; the other produced six male and seven creams in a total of 34 young. The four females that produced creams among their offspring cast a total of 167 young, among which there were only 37 creams, although one fourth of the number, or 42 creams, were to be expected.

Several matings were made between black sibs of the mutants, but only black young were obtained. No other matings in the black strain have, as yet, given any of the creams.

The black sire of these mutants was born in July, 1921. When taken for breeding he appeared to be pure black, but as he grew older marked color changes appeared in his coat. Patches of hair on the sides of the body became ticked, like the hair of wild Norways, and on the posterior part of the back the hair was dark brown; around the head the hair remained black. None of the females that cast cream young showed any pronounced changes in coat color. The male developed pneumonia early in 1923 and would no longer breed. An autopsy showed that one testis was atrophied; the other appeared normal and will be examined cytologically by Dr. Ezra Allen.

The appearance of cream young among the offspring of black parents indicates that both parents must have been heterozygous for the cream factor, otherwise cream, being recessive to black, would not have appeared in the offspring. When and how the mutant factor originated can only be a matter of conjecture. It may have existed in the germ cells of the wild Norway male from which the black strain was derived, and failed to affect the coat color of any of the offspring because matings were not made between individuals heterozygous for this factor. This supposition seems untenable, since the strain was closely inbred and a large number of individuals reared. It seems more probable that the cream factor appeared in the germ cells of a black rat only two or three generations back, and that the chance mating of heterozygous individuals brought out the mutant form.

HELEN DEAN KING
THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY

THE OHIO ACADEMY OF SCIENCE

THE thirty-third annual meeting of the Ohio Academy of Science was held at Oberlin College, Oberlin, March 30 and 31, 1923, under the presidency of Professor Albert P. Weiss, of Ohio State University. Fifty-five members were registered as in attendance.

Dr. T. C. Mendenhall presented an appreciative memoir of Emerson McMillin, of New York City, whose death at the age of seventy-eight occurred on May 31, 1922. A member since 1892, and elected to fellowship in 1920, Mr. McMillin was always intensely interested in the work of the academy, although, so far as is known, he was never able to attend a meeting. Although he was personally unknown to the great majority of the present members, his generous contributions to the research fund, continued through a quarter of a century, have been a constant stimulus to the research spirit of the academy and the research work of its membership. Dr. Mendenhall's memoir appears in the May–June number of the *Ohio Journal of Science*.

Twenty-five new members were elected, and the following eight members were elected to fellowship: William Letchworth Bryant, Walter C. Kraatz, Paul Marshall Rea, Septimus Sisson, Warren N. Thayer, Roy Curtis Thomas, Lewis Hanford Tiffany, Edward L. Wickliff.

Officers for 1923–24 were elected as follows: *President,* K. F. Mather, Denison University; *vice-presidents—zoology,* W. M. Barrows, Ohio State University; *botany,* H. H. M. Bowman, Toledo University; *geology,* J. E. Carman, Ohio State University; *physics,* W. C. Devereaux, U. S. Weather Bureau, Cincinnati; *medical sciences,* B. M. Patten, Western Reserve University; *psychology,* H. A. Aikins, Western Reserve University; *secretary,* W. H. Alexander, U. S. Weather Bureau, Columbus; *treasurer,* A. E. Waller, Ohio State University.

The annual geological excursion, under the direction of the incoming vice-president for geology, Professor J. Ernest Carman, has been reported somewhat

fully in SCIENCE for June 15. The party visited the Pennsylvanian and Permian formations of Muskingum County, Ohio, on May 25, 26 and 27.

The scientific program was as follows:

PRESIDENTIAL ADDRESS

The aims of social evolution: ALBERT P. WEISS.

PUBLIC LECTURE

Trees as witnesses in boundary disputes—an instance of applied ecology: HENRY C. COWLES.

SYMPOSIUM ON GEOGRAPHICAL DISTRIBUTION

Geological factors in animal and plant distribution: G. D. HUBBARD.

Some factors in plant distribution: H. C. COWLES.

The distribution of vegetation in relation to physiographic provinces: E. LUCY BRAUN.

The places of origin of the several families of Anura: M. M. METCALF.

Factors which determine local distribution of spiders: W. M. BARROWS.

Some problems in the distribution of dragonflies: CLARENCE H. KENNEDY.

SYMPOSIUM ON CURRENT PROBLEMS OF OHIO GEOLOGY

Early Paleozoic stratigraphy: W. H. SHIDELER.

Middle Paleozoic stratigraphy: J. ERNEST CARMAN.

Stratigraphy of the Carboniferous formations: J. E. HYDE.

Paleozoic faunas and their correlation: A. F. FOERSTE.

Some work yet to be done in Ohio physiography: GEO. D. HUBBARD.

Economic geology: J. A. BOWNOCKER.

Structural geology: W. H. BUCHER.

PAPERS

Weather and human conduct: WILLIAM H. ALEXANDER.

Some Old World botanic gardens: A. E. WALLER.

Some features of the park area of the Cleveland metropolitan park district: E. L. FULLMER.

The Cleveland Museum of Natural History: P. M. REA.

An eagle observatory at Vermilion; results obtained in 1922: FRANCIS H. HERRICK.

A contribution to our knowledge of the life history and physiology of Euglena: W. J. KOSTIR.

The so-called allelocatalytic effect in the reproduction of Protozoa: W. J. KOSTIR.

The persistence of archaic parasites through many geologic periods: MAYNARD M. METCALF.

The origin of American opalinids: MAYNARD M. METCALF.

Two new cestode parasites in black bass of Ohio; life history, distribution, etc.: RALPH V. BANGHAM.

Life history studies of Homoptera: HERBERT OSBORN.

Jumping mouse, Zapus hudsonius, in Ohio: H. A. GOSSARD.

The geographic distribution of Arctic Bryozoa: RAYMOND C. OSBURN.

The inheritance of the nail-biting habit: W. M. BARROWS.

A case of extra digits in the manus of the pig: STEPHEN R. WILLIAMS.

On the origin of some embryonic abnormalities: R. A. BUDINGTON.

Comparative physiology as an undergraduate study: CHAS. G. ROGERS.

Physiological evidences of animal relationship: CHAS. G. ROGERS.

Lorain County Polyporaceae: F. O. GROVER.

The vegetation of Ohio: E. N. TRANSEAU.

Studies on the genus Ampelopsis: GRACE GILMOR.

Variations in the root system of the common everlasting, Gnaphalium polycephalum: HELEN GUHMAN.

Soil reactions and plant succession: E. LUCY BRAUN and SYLVIA GEISLER.

Importance of resistance of the host in the control of plant diseases: W. J. YOUNG.

Observations on the sexual state of various plants: J. H. SCHAFFNER.

The time of sex determination in plants: J. H. SCHAFFNER.

Some chemical changes accompanying growth and reproduction in Spirogyra: L. H. TIFFANY.

Flora of the muck land of Delaware County, Indiana: BLANCHE MCAVOY.

Notes on the distribution of sea grasses: H. H. M. BOWMAN.

Prairie openings on the Little Miami River: M. MILDRED IRWIN.

Concerning some ostracoderms from Ohio: J. ERNEST CARMAN.

The temperature and brightness of tungsten lamps: W. E. FORSYTHE.

Effect of tension on change of resistance and thermo-electromotive force by transverse magnetization: ALPHEUS W. SMITH.

DEMONSTRATIONS

Methods of recording bird migration: LYNDS JONES.

Drawings of penes of dragonflies: CLARENCE H. KENNEDY.

Preserved skin specimen of jumping mouse, Zapus hudsonius: H. A. GOSSARD.

A cent found in the pharynx of a cat from the comparative anatomy laboratory: STEPHEN R. WILLIAMS.

Microscopic slides illustrating paper on cestode parasites of black bass: RALPH V. BANGHAM.

Roots of the common everlasting, Gnaphalium polycephalum: HELEN GUHMAN.

Thorns of honey locust, Gleditsia triacanthos: F. E. BEGHTEL.

Twigs as a basis for winter tree study; a method of mounting: E. LUCY BRAUN.

Rainfall and vegetation map of Asia: GEO. D. HUBBARD.

Drawings of opalinids: MAYNARD M. METCALF.

Distribution maps of opalinids and their hosts: MAYNARD M. METCALF.

EDWARD L. RICE,
Secretary, 1922–23

DELAWARE, OHIO