produce an effect, though the effect is delayed for one generation.

The hypothesis here suggested may be made clearer by the following elaboration. Let the recessive gene for the sinistral character be represented by *l*, and its dominant allelomorph for the dextral character by *L*. Then any heterozygote, Ll, will produce by self-fertilization three types of offspring—LL, Ll and ll. Since all the eggs contained the gene L before reduction, all these individuals will be dextral in somatic appearance; but the ll individuals will themselves produce only sinistral offspring. If an ll individual of this family mates, as a female, to an LL, the offspring will all be sinistral (since the mother carried no L); but they will be Ll in constitution and will therefore produce only dextral offspring. Further combinations may easily be worked out.

It is probable that dextral snails can not mate with sinistral ones; this being the case one might expect that heterozygous individuals would quickly disappear from the colonies, in which case no such results as recorded would be obtainable. The paper under discussion gives a clue as to why the heterozygotes do not disappear. In families that were expected to be purely sinistral a dextral individual occasionally appeared. If such individuals are due to some environmental cause and are genetically sinistral, they will of necessity mate with dextrals and produce new families of heterozygotes. This interpretation is borne out by Lang's results with Helix, where the occasional cases of reversed symmetry were found not to be inherited at all.

Further data on the case of Limnaea will be awaited with interest, for it seems likely that we shall have here a model case of the Mendelian inheritance of an extremely "fundamental" character, and a character that is impressed on the egg by the mother.

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VOICE AS A FACTOR IN THE MATING OF BATRACHIANS[1]

CHORUSES of frogs and toads form one of the impressive sounds of nature. Nevertheless, little or no significance has been attributed to voice in the mating of batrachians. It is stated not to control the direction of migration towards the breeding grounds, or the movements of individuals on the grounds (Boulenger,[2] Cummins[3]). It is generally believed that "courtship does not take place in any of the tailless batrachians. The female is seized by the first comer, . . . "[4] Some years ago it was pointed out by Courtis[5] and later by Miller[6] that the toad responds to sound readily during the breeding season, and that the female may even be attracted towards the calling male. But Cummins[7] has recently shown that in the case of frog material the "*voice does not direct* the movement of the frogs into the pond" and "that sex 'recognition' . . . results from the differential behavior of the two sexes when clasped, . . . "

During the past season I have studied the problem with tree frog material. Such material is especially favorable because their breeding grounds are generally less crowded than in the case of the other species, and direct observation of individuals is possible. This method of direct observation was unfortunately not employed by Cummins.

The species most thoroughly studied by me was the little-known *Hyla andersonii*. At Lakehurst, N. J., the males begin calling in early May. They call from the ground and generally from concealment. Later in the month they call from the tops of bushes or from trees several feet from the ground. The breeding does not occur simultaneously throughout the region, or even in the same bog. Individual males that were kept under observation by means of flash lamps throughout the night were seen to leave their high calling stations and make their way to nearby sphagnum-choked ditches or to slow-flowing streams in the bog. Each took up an isolated position near one of these basins and began to call again. Females were first discovered making their way across the bog. In three instances their movements were closely followed. They proceeded directly across the marsh, over ditches and puddles toward particular males. In all three cases the calling males paid no attention to the approaching females. In one case the female leaped directly upon the back of the male. He threw her off and continued calling. She leaped on his back again, but again he threw her off. This time, however, he turned and before she could spring again had embraced her. In the second case the female leaped at the calling male but receiving no attention, she circled twice around him, nudging him with her limbs as she endeavored to draw as near to him as possible. In the third case the calling male paid no attention to the female and amplexus did not occur. In the former cases oviposition took place in the adjacent water. Oviposition in *H. andersonii* differs from that of other American species of Hyla, in that the eggs strike the body of the male and are thrown to the bottom of the ditch, where they may or may not adhere to the sphagnum or other vegetation.

[1] Summary of a paper read before the Linnaean Society of New York, November 14, 1922.

[2] Boulenger, G. A., 1912, *Proc. Zool. Soc. London*, p. 22.

[3] Cummins, Harold, 1920, *Jour. Exp. Zool.*, XXX, pp. 325–343.

[4] Boulenger, G. A., 1897, "The Tailless Batrachians of Europe," p. 68.

[5] Courtis, S. A., 1907, *Amer. Nat.*, XLI, p. 678.

[6] Miller, Newton, 1909, *Amer. Nat.*, XLIII, p. 650.

[7] *Loc. cit.*, p. 342, italics his.

Later in the season I made a single observation on the Gray Tree Frog, *H. versicolor,* which would tend to prove that in that species, too, the female is attracted by the call of the male. In this instance a female was seen to approach a calling male from behind. The approach was very rapid and the female leaped without hesitation on his back. The male broke off his call at once, turned and embraced the female.

When the movements of individuals of other species have been studied during the breeding season, I believe it will be shown that voice plays a considerable part in bringing the two sexes together. The problem of sex retention is another one, and need not be considered here. Many, perhaps most batrachians in the tropics, breed in isolated pairs. If there were no mechanism for bringing the two sexes together, these frogs and toads would have little chance of breeding.

G. K. NOBLE

THE AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK CITY

THE MILWAUKEE MEETING OF THE AMERICAN CHEMICAL SOCIETY

THE sixty-sixth general meeting of the American Chemical Society was held in the auditorium, Milwaukee, Wisconsin, Monday, September 10, to Friday, September 14, 1923.

Opening addresses were given by Clare H. Hall, chairman of the Milwaukee Section of the American Chemical Society; Honorable Daniel W. Hoan, mayor of Milwaukee; Honorable Emmanuel Philipp, president Milwaukee Association of Commerce, and Rev. Albert C. Fox, President Marquette University. Dr. E. C. Franklin responded on behalf of the Society.

Two general addresses were the feature of the Tuesday morning session as follows:

Charles F. Burgess, director of the Burgess Laboratories. "Marketing Chemical Discoveries."

Arthur I. Kendall, dean of the Medical School, Northwestern University. "Bacteria and the Chemist."

The previous custom of having general addresses in the afternoon session was abandoned and instead thereof three special meetings of the more fundamental divisions of Physical and Inorganic Chemistry, Organic Chemistry and Chemical Education were held with papers especially selected to meet the needs of all chemists present.

On Tuesday evening a complimentary dinner and entertainment was given to the members and guests by the Milwaukee Section. Approximately one thousand sat down to this dinner. The program consisted of songs, dancing and instrumental music.

On Wednesday at 8 p. m., a reception was held at the Marquette University gymnasium followed by public addresses by Mrs. Thomas G. Winter, president General Federation of Women's Clubs, and the annual address of the president of the society. President Franklin took as his subject, "Systems of Acids, Bases and Salts." Past President Edgar F. Smith presented the Priestley Medal *in absentia* to Professor Ira Remsen.

On Thursday evening group dinners and college reunions were held and the members also attended a very interesting and lively amateur boxing contest at the Milwaukee Athletic Club.

A special program consisting of dinners, automobile drives, etc., was arranged for the ladies and a complimentary dinner was given to the wives of the councilors on Monday evening.

Wednesday and Thursday were otherwise given up wholly to divisional meetings.

The following Divisions and Sections met: Divisions of Agricultural and Food Chemistry, Biological Chemistry, Cellulose Chemistry, Dye Chemistry, Fertilizer Chemistry, Industrial and Engineering Chemistry, Leather Chemistry, Chemistry of Medicinal Products, Organic Chemistry, Petroleum Chemistry, Physical and Inorganic Chemistry, Rubber Chemistry, Sugar Chemistry, Water, Sewage and Sanitation; Sections of Chemical Education, Gas and Fuel Chemistry, and History of Chemistry.

The divisions elected officers as follows:

DIVISION OF AGRICULTURAL AND FOOD CHEMISTRY: *Chairman,* C. H. Bailey; *Vice-chairman,* E. F. Kohman; *Secretary,* C. S. Brinton; *Executive Committee,* G. E. Holm, J. W. Read, R. H. Carr.

DIVISION OF BIOLOGICAL CHEMISTRY: *Chairman,* W. T. Bovie; *Secretary,* R. A. Dutcher.

DIVISION OF CELLULOSE CHEMISTRY: *Chairman,* G. J. Esselen, Jr.; *Vice-chairman,* Louis E. Wise; *Secretary-Treasurer,* L. F. Hawley; *Executive Committee,* The Officers ex-officio and Harold Hibbert, A. W. Scharger.

DIVISION OF DYE CHEMISTRY: *Chairman,* W. J. Hale; *Vice-chairman,* R. E. Rose; *Secretary,* R. Norris Shreve; *Executive Committee,* L. A. Olney, L. F. Johnson.

DIVISION OF FERTILIZER CHEMISTRY: *Chairman,* F. B. Carpenter; *Vice-chairman,* R. N. Brackett; *Secretary,* H. C. Moore; *Executive Committee,* H. J. Wheeler, C. H. Jones, E. W. Magruder and A. J. Patten.

DIVISION OF INDUSTRIAL AND ENGINEERING CHEMISTRY: *Chairman,* D. R. Sperry; *Vice-chairman,* W. A. Peters; *Secretary,* E. M. Billings; *Executive Committee,* W. K. Lewis, C. E. Davis, E. R. Weidlein, C. S. Miner, C. E. Coates.

DIVISION OF LEATHER AND GELATIN CHEMISTRY: *Chairman,* John Arthur Wilson; *Vice-chairman,* F. P. Veitch; *Secretary,* Arthur W. Thomas; *Executive Committee,* I. D. Clarke, L. M. Tolman.