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Feeding experiments with fat-free food mixtures.

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The question as to whether fats are, like proteins and carbohydrates, in some measure indispensable components of the diet has never been adequately determined. Stepp[1] has lately maintained that the so-called "lipoids," in distinction from true fats, are necessary for adequate nutrition. His experiments were conducted with mice. Following the methods employed by the writers[2] it has been possible to induce rats to grow at a normal rate with food mixtures containing only purified proteins, carbohydrates and inorganic salts. The problems suggested by the possibilities of this method of investigation are obvious.

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The masking of a Mendelian result by the influence of the environment.

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As reported (Oct., 1911) a mutant of *Drosophila* appeared with a dominant sex-linked character, viz., abnormal abdomen. Typical Mendelian ratios are found in the F_2 offspring if an abundance of food and of moisture is present. As the culture grows older the flies that emerge later gradually change over to the normal type. As a result the Mendelian ratio completely disappears from the surface phenomena. That Mendelian inheritance has actually occurred, but is temporarily masked, is shown by testing the F_2 flies, when the expected number is found (under wet

[1] Stepp, *Zeitschrift für Biologie*, 1911, LVII, p. 135.

[2] Osborne, T. B., and L. B. Mendel, "Feeding Experiments with Isolated Food-Substances," Carnegie Institution of Washington, Publication 156, 1911.

conditions) to transmit the abnormal abdomen. This is best demonstrated by linking the factor for abnormal abdomen *A* with another sex-linked factor, such as the *b* factor in the yellow mutant, or the *c* factor in the white mutant, or to both together as in the two examples given below.

YRA ♂ × *GRA* ♀ / *GWN* ♀ × *GWN* ♂ =	*GRA* ♀	95	56	3
	GRN ♀	0	4	32
	GWN ♀	88	49	34
	GWN ♂	98	49	19
	YRA ♂	81	47	7
	YRN ♂	1	2	25

YRN ♀ × *GRN* ♀ / *GWA* ♂ × *YRN* ♂ =	*GWA* ♂	50	21	9
	GWN ♂	1	24	24
	GRA ♀	76	3	0
	GRN ♀	5	49	60
	YRN ♀	45	93	61
	YRN ♂	49	29	30

The tables show that in the expected classes for abnormal abdomen *A* this character at first appears but later is replaced by the normal character *N*. When the normal flies (of the last sort) were tested they were found to transmit abnormality. The other classes that are genotypically normal remain so in the next generation. Cultures that had produced only abnormal flies for nine generations under wet conditions were allowed to dry out when all the later-hatched flies became normal. These were then placed under moist conditions, and all of their offspring were as abnormal as their ancestors had been.

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Sources of error in serological work.

By **WILFRED H. MANWARING.**

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I have been engaged for some time in attempts to determine the approximate chemical nature of certain bactericidal substances obtained from horse leucocytes. My earlier attempts to isolate and identify these substances were characterized by inconstant and inconsistent results. This led to an examination of the