pyrum), or coincident with extensive elaboration of hemicellulose.

W. E. TOTTINGHAM
E. J. LEASE
UNIVERSITY OF WISCONSIN

OCCURRENCE OF UNIOVULAR TWINS IN MULTIPLE BIRTHS

ALTHOUGH there is no *a priori* basis for their non-existence, the presence of uniovular twins in the multiple births of laboratory mammals is for obvious reasons usually difficult to detect. Wright,[1] describing an eight-factor cross in guinea pigs, reported two pairs which may have been identical twins, but since the number was no greater than that expected by chance their status remained uncertain.

In the back-cross generation of a mouse species cross, involving *Mus musculus,* with the recessive genes d, b and a, and *Mus bactrianus,* with the corresponding dominant allelomorphs D, B and A^w, eight color combinations are expected in equal numbers. With but slight deviations this has been realized.[2] In a litter of a given size the expected frequency of like-sexed pairs, due simply to chance, can be computed by the elementary rules of probability. For example, in a sub-litter (like-sexed litter mates) of two, the probability that both will be of the same color is $\frac{1}{8}$, while in a sub-litter of three the expectation for a pair is $\frac{1}{4}$, etc. Then by the appropriate multiplication and combination of probabilities, the approximate total number of pairs of like color in sub-litters of every size encountered can be obtained. In the summary given the relatively few instances of three litter mates of the same sex and color were disregarded, although the two examples of a pair and three and the single one of a pair and five were considered as two pairs and three pairs, respectively.

SUMMARY OF OBSERVATION ANE EXPECTATION. UNDEPLETED LITTERS ONLY

Mating	Size of sub-litters	No. sub-litters	No. mice	No. mice in like-colored pairs: Observed	No. mice in like-colored pairs: Expected	Deviation
F_1 ♀ × dba ♂	2–9	174	626	206	165 ± 7.4	+ 41
dba ♀ × F_1 ♂	2–7	100	312	76	68 ± 4.9	+ 8

In the back-cross offspring of F_1 females there is a significant excess (5.5 P.E.) of litter mates of the same sex and color, while in the progeny of F_1 males the observed numbers are but little greater than the expected. Since the hybrid females are characterized by large litters and paucity of still births[3] it seems probable that this excess can be accounted for by uniovular twins which the unusual vigor of the mother has permitted to survive but which ordinarily would never have begun development or would have succumbed in prenatal competition. If this surplus consists of such twins, more like-colored pairs of the same sex than of different sex should be found. Such was the situation, for, compared with the 103 like-sexed in pairs in mice from F_1 females, there were only 79 pairs of unlike sex, while the comparable figures for back-cross animals from F_1 males were 38 and 40, respectively.

C. V. GREEN
JACKSON MEMORIAL LABORATORY
BAR HARBOR, MAINE

[1] Wright, *Genetics,* 13: 508–531, 1928.
[2] Green, *Am. Nat.,* 66: 87–91, 1932.
[3] Green, *Proc. Soc. Exp. Biol. and Med.,* 28: 55–57, 1930.

A BLUE MOON

THE writer observed a blue moon at Santa Barbara, California, on September 15, 1934, and a search for records of this phenomenon indicates that it is rare and worth recording. The stage of the moon was about the end of the first quarter. At 6:15 P. M., about eight minutes after sunset, the moon was plainly visible through a bank of thin rose-colored clouds, apparently cirro-cumulus. Around the cloud bank the brightly-illuminated western sky was a brilliant deep blue. Four witnesses were called by the writer and all agreed that the moon was blue. Two weeks later an attempt was made to remember the colors and to find their designations in Ridgway.[1] The results of this belated comparison are that the sky was spectrum blue; the cloud bank, begonia rose; the moon, sky blue.

Reference is made by Stimpson[2] to a blue moon seen on December 10, 1883, and to many observers who saw one in Ireland in 1927, during a total eclipse of the sun. He states also that "moons of unusual colors, such as green and blue, have been seen after certain violent volcanic explosions, and also occasionally through smoke-laden fogs."

Of related interest are references by Talman[3] to blue and green suns. Such suns were widely observed during the summer and autumn of 1831, in the northern hemisphere, and after the eruption of Krakatoa in 1883. No satisfactory explanation of the colors has been advanced.

PEREZ SIMMONS
FRESNO, CALIF.

[1] R. Ridgway, "Color Standards and Nomenclature," 1912.
[2] G. W. Stimpson, "Nuggets of Knowledge," 427 pp., 1929. See discussion of "How did *once in a blue moon* originate?"
[3] C. F. Talman, *Science Service Feature* (mimeograph), 1 p., April 17, 1930.