CONCLUSIONS.

The results of the various experiments are obvious from the records. It need merely be pointed out that in none of the duplicates were we able to repeat the gas figures exactly and that for quantitative measurement the test needs further standardization to be efficient in comparing solutions. The great variability of the yeast loopfuls obtained in this method would easily give rise to considerable variation and experiments are being made along this line to be reported later.

As a means of studying presence of "B" Vitamine in large or small quantity and as an index more reliable than rat feeding experiments the test offers such marked advantages in sensitiveness and in speed of observation that it seems well worth while to devote more time to its improvement.

32 (1492)

Two sex-linked lethals of simultaneous appearance in Drosophila obscura.

By **D. E. LANCEFIELD** (by invitation).

[*From the Zoölogical Laboratory, Columbia University, New York City.*]

A pair mating in *Drosophila obscura* (Fallén) produced a sex ratio of 106 females to 22 males. This was about a 1:4 ratio and indicated a case of two sex-linked lethals, or lethals at two loci on the X-chromosome. Both lethals (l_1 and l_3) appeared simultaneously in the same culture from a female whose mother did not carry a sex-linked lethal, as was shown by the normal sex ratio produced by her; and the father could not have carried such a lethal and lived.

Three daughters inherited both lethals in the same chromosome with a sex-linked gene producing the character "short" wing veins. These three females produced a total of 352 females to 40 normal and 50 "short" males. Such a count suggested that the gene for "short" was between the two lethals, which were far enough away from it for each to segregate almost independently from it,

that is, giving approximately 50 per cent. crossing over between each lethal and "short." This shows more crossing-over than is known to occur in the X-chromosome of other species of *Drosophila* and may correspond to the greater length of the X-chromosome in *obscura*.

Further breeding tests showed the presence of two separate sex-linked lethals and agreed with the original assumption as to their loci. One (l_2) was found to be very close to the locus for "beaded" and gave 10 cross-overs with it in 155 males. "Beaded" was already known to be far enough from short to show no appreciable linkage to it. The other lethal (l_3) was independent of "beaded" but showed some linkage to "short" by a ratio of 21 "short" to 34 "not-short" males, while the number of "beaded" and "not-beaded" males was equal. That established its locus in the other end of the chromosome from (l_2) with "short" between.

33 (1493)

New methods for the analysis of cytoplasmic structures. With demonstrations.

By ROBERT H. BOWEN (by invitation).

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The year 1898 marked the recognition of two fundamental cytoplasmic structures,—mitochondria and the Golgi apparatus. The mitochondria soon became of interest to every biologist through Meves' theories concerning their importance in cellular differentiation and inheritance, but we are still very much in the dark regarding many features of their behavior. The Golgi apparatus, on the other hand, was almost forgotten and until recently even its status as an independent cytoplasmic element was in doubt. The last few years have witnessed in Europe a revival of interest in these and other cytoplasmic inclusions, an interest not yet fully reflected in this country. It would seem, then, an opportune time for calling the attention of biologists to these structures, so little reckoned within our physiological concept of the cell.