The purpose of the present paper is to record the discovery in January, 1920, of a hitherto undescribed form of *Paramecium*. It has now been extensively studied in pedigree cultures for more than a year and during this time it has bred true. I therefore definitely designate it a new species, *Paramecium calkinsi*, in recognition of the fact that Professor G. N. Calkins of Columbia University introduced students of the Infusoria to exact, daily isolation, pedigree culture methods.

The general body form of the new species places it at once in the bursaria-putrinum group, but its micronuclei both in structure and number are identical with those of *Paramecium aurelia*. In brief, *Paramecium calkinsi* represents the '*aurelia*' type of micronuclear complex in the '*bursaria*' group of species.

Details of the structure and life history of *Paramecium calkinsi* will appear in the *Biological Bulletin*.

65 (1647)

The yeast test as a quantitative measure of vitamine.

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The details of this paper will be reported in full in another publication. The experiments reported covered the following points:

1. A comparison of yeast test results (Funk[1] technique) with the material used by Osborne and Mendel[2] in a feeding test with rats. The test was shown to merely approximate the results of the feeding test but when the dilution of the extracts were such that the content of one gram was present in 250 c.c. of water the agreement was much more exact. This result agrees with Funk's findings that the extract test must fall within the steep part of the curve of stimulation if it is to be used comparatively.

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[1] Funk, C., and Dubin, H., *Journ. Biol. Chem.*, 1920, xliv, 487. Ibid., PROC. SOC. EXPER. BIOL. AND MED., 1920, xvii, 175.

[2] Osborne and Mendel, *Journ. Biol. Chem.*, 1920, xli, 451.

2. A report of the result of 284 determinations on varying dilutions of an extract of alfalfa meal which in its highest concentration contained the extract of 400 grams of meal in 1,000 c.c. of water. This shows that the curve of stimulation is a curve with a definite shape which rises steeply from the control point to an optimum and then gradually declines to the right of the optimum. It also shows that there is greater variability in the region to the right of the optimum in the individual determinations. These results indicate clearly that if vitamine B is a factor in the test it is only one of several and that critics of the test are right in saying that comparisons cannot be made between the extracts of equal weights of extracted material at the present itme.

3. A series of studies on other sources showing that dilution produces similar results to those in alfalfa extracts but that the optima and shape of the curve of stimulation differ with each substance tested though in general they show a steep rise, an optimum and in some cases a decline to the right of the optimum. These results confirm the conclusions of 2 and make clear that it will be necessary to find a basal diet for yeast which is optimum in all except vitamine before the results of tests can be made comparative. In the group of tests presented in this connection were included extracts of pancreas and other organs made with acidified and with neutral alcohol. The results fail to confirm the contentions of Swoboda[1] in regard to failure of pancreas to yield the test or to support his vitaminogen speculation.

4. Experiments are given to show that when the Medium F of Fulmer, Nelson and Sherwood[2] is substituted for Nageli solution in the alfalfa series the control values are markedly higher but that the alfalfa extract still exerts a stimulatory influence in every concentration used. These results fail to confirm their contention that the stimulatory effect is due purely to salt optimum and quality. They do indicate that the yeasts are extremely sensitive to such salt concentrations and that vitamine B is not the only factor in the test.

5. Experiments are presented to show the effect of alkali on the stimulatory power of the test. In every case we obtained a

[1] Swoboda, F. K., *Journ. Biol. Chem.*, 1920, xliv, 531.

[2] Fulmer, Nelson and Sherwood, *Journ. Am. Chem. Soc.*, 1921, xliii, 186 and 191.

marked diminution of power by alkali treatment but never any where near so complete removal of the power as was obtained with adsorbent agents. With yeast autolysate the reduction was marked. With alfalfa extract it was not nearly so marked and in some concentrations the results justify Fulmer, Nelson and Sherwood's view that alkali does not affect the stimulus. Their conclusions would undoubtedly have been different had they tested enough concentrations to see the trend of the curve.

6. Experiments are given to further confirm the effect of known vitamine B precipitants and adsorbents upon the stimulatory power of extracts and a new reagent for use in this connection, viz., a carbon specially activated by Professor McKee, of the Department of chemical engineering of Columbia University, which was developed to adsorb basic substances. This substance has the power to remove the stimulatory power from an extract with the same efficiency as the Lloyd reagent, and when first washed free of all adherent matter with water can by boiling with glacial acetic acid be made to yield again its stimulatory material.

From these experiments it seems to follow that the test is not specific for Vitamine B as conducted by any of the methods now cited in the literature. On the other hand it seems also to follow that the vitamine B is not yet ruled out as one of the factors in the stimulation and to justify further investigation to secure an optimum medium for yeast comparable to those used in rat-feeding experiments.

66 (1648)

The antiscorbutic property of raw, dried and cooked apples and bananas.

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Apples and bananas are the two most generally used of all the fruits consumed by man in this country. The use of these foods is advocated not only for healthy adults and infants[1] but

[1] Pease, M. C., and Rose, A. R., *Am. J. Dis. Child.*, 1917, xiv, 379.