Per litre:
Total iron—5·5282 gms.
Combined vanadium (V_2O_5)—3·1832 gms.
Combined iron—1·9540 gms.
Free iron—3·5742 gms.
Viscosity of the sol (30° C.)—0·00864 gms.
Viscosity of water (30° C.)—0·00803 gms.
Water bound—0·3519 gms.
Empirical formula—9 Fe_2O_3.10 $FeVO_4$.6H_2O.

The amount of bound water per litre of the sol was calculated from the Hatschek's[2] equation expressed in the following form:

$$\text{Bound water per litre} = \frac{1000}{A} = 1000\left(\frac{\eta_t - \eta_w}{\eta_t}\right)^3$$

where A is the ratio of the total volume of water in the sol to the volume of the water bound, η_w is the viscosity of the water at 30°C. and η_t is the viscosity of the sol at the same temperature (*cf.* Prakash).[3]

Detailed procedure of the study of the sol will be published elsewhere.

I am indebted to Dr. Satya Prakash for his valuable guidance and advice.

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July 4, 1945.

1. Mushran, *Current Science*, 1945, **14**, 123. 2. Hatschek, *Kolloid. Z.*, 1911, **8**, 34. 3. Prakash, *Ibid.*, 1932, **60**, 184.

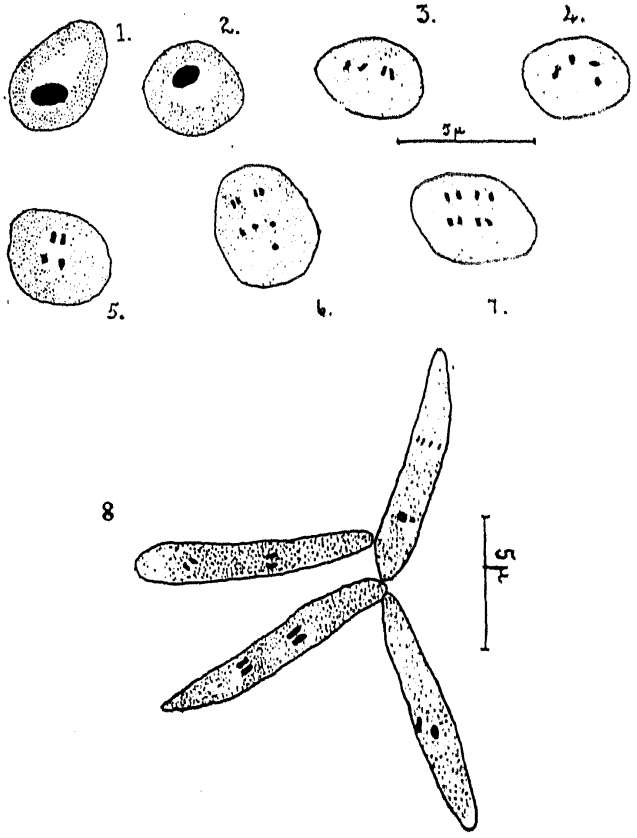
INDUCTION OF POLYPLOIDY IN *SACCHAROMYCES CEREVISIAE*

BAUCH[1,2] claims the production of new races of yeast by treatment with camphor and acenaphthene. Since these new races were bigger than the original strains he tentatively suggests that the chromosome numbers ought to have been doubled, tripled or quadrupled. However, no cytological confirmation seems to have been attempted. Since this line of attack offered interesting possibilities some experiments were conducted in this direction.

Sterile test-tubes of wort were inoculated with a loopful of Sc 9 (N.C.T.C. 3007) from a wort-agar slant and a few cyrstals of acenaphthene were added to the tubes. The time of treatment was arbitrarily fixed at 6 hours in order to have sufficient material for smearing. At the end of the above period the material in the tube was centrifuged and smears were made at definite intervals to get the mitotic figures. The slides were fixed in Carnoy and stained in Heidenhain's hæmatoxylin.

The pictures obtained were very interesting. Long thread-like mycelial growths are common, the cells measuring 9-10 μ in length and 1·5-2·0 μ in width (Fig. 8). Resting cells vary in dimensions from 3·5 μ to 5·5 μ and have a clear cytoplasm having a large vacuole and a stained nucleus (Figs. 1 and 2).

What strikes one is the large number of cells having four chromosomes disposed in various ways (Figs. 3, 4 and 5). Cells showing eight such chromosome-like structures are also common (Figs. 6 and 7). The measurements of the chromosomes are not given since the equipment at my disposal does not enable accurate measurements to be made. However, they appear to be far smaller than those



of the control strain (see Subramaniam and Ranganathan[3]). This disparity in the size of the chromosomes in different strains might have been the cause for the controversy concerning the identification of certain structures seen in the yeast cell during vegetative division, as the chromosomes (see Subramaniam and Ranganathan[4]).

What appears to be a tetraploid strain has been isolated by planting and this is now being purified. Uptill now all the cultures have been kept in the vegetative condition. Whether these strains would retain their chromosome constitution after repeated sporulation and whether they have any economic importance can only be judged after extensive tests.

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1. Bauch, R., *Naturwissenschaften*, 1941, **29**, 503-504. 2. —, *Woch Brau*, 1941, **59**, 1-7; 9-11. 3. Subramaniam, M. K., and Ranganathan, B., *Curr. Sci.*, 1945, **14**, 78-79. 4. —, *Ibid.*, 1945, **14**, 131-132.