

Series. Part IV.—5-Bromonarcotine, 5-Bromocotarnine, 5-Bromohydrocotarnine and 5-Bromonarceine and their Derivatives. DUHKHAHARAN CHAKRAVARTI: *Synthesis of Coumarins from Phenols and β -Ketonic Esters. Part III.*—Use of Various Condensing Agents. PHULDEO SAHAY VARMA AND K. S. VENKAT RAMAN: *Nitration. Part V.*—Nitration of Monohalogen Derivatives of Xylenes. PULIN BEHARI SARKAR: *The Chemistry of Jute-Lignin. Part VIII.*—Methylation of Lignin. PULIN BEHARI SARKAR: *The Chemistry of Jute-Lignin. Part IX.*—Acetylation of Lignin. S. M. MEHTA AND (MISS) OLIVE JOSEPH: *The Viscosity of Titanium Dioxide Sol in Presence of Electrolytes.* R. PADMANABHAN: *A Modified Photographic Method for Substances of Small Rotatory Dispersion.*

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benzaldehyde. U. S. KRISHNA RAO AND B. L. MANJUNATH: *On the Supposed Occurrence of Acids with Uneven Number of Carbon Atoms in Vegetable Oils and Fats. Part II.*—The Acid Fraction of Mean M.W. 354 from the Seeds of *Butea frondosa*, Roxb. JAGRAJ BEHARI LAL: *Metallic Uranium in Organic Synthesis—Part II.* PRIYADA RANJAN RAY AND HARIBOLA SAHA: *A Short Note on the Chromium Biguanide Complexes.* DUHKHAHARAN CHAKRAVARTI AND BAIDYANATH GHOSH: *Synthesis of Coumarins from Phenols and β -Ketonic Esters. Part IV.*—Coumarins from 4-Chloro and 2-Nitroresorcinols. HIRENDRA NATH DASGUPTA: *Heterocyclic Compounds containing Arsenic in the Ring—A Preliminary Note.*

The Indian Botanical Society:

September 1935. T. ERAMBARAM AND I. M. RAO: *Studies in Absorption and Respiration—II.* R. E. COOPER AND S. A. PASHA: *The Osmotic Pressure and the H-Ion Concentration of Sea-Weeds in Relation to those of Sea-Water.* S. C. DIXIT: *The Charophytes of the Bombay Presidency.* J. F. R. D'ALMEIDA: *On the Occurrence of Gymnogramme calomelanos Kaulf. in India.*

October 1935. R. H. DASTUR AND M. R. RAUT: *Carbohydrate Nitrogen Ratio of the Shoots of Some Tropical Trees.* P. ABRAHAM: *Occurrence of Extracarpellary Ovules on the Floral Axis in Cotton.* A. B. SARAN: *The Effect of Wounding on Respiration in the Starving Leaves of *Aralia guilfoylei*.* D. B. MUKHERJEE: *Notes on a Collection of Plants from Mahendragiri.* T. C. N. SINGH: *Notes on the Teratology of Certain Indian Plants—VIII.* P. MISRA: *On the Peg of the Seedlings of *Cucurbita maxima* Duchesne.* B. N. SARKAR: *Note on the Movements of *Basella cordifolia* Lamk.* M. B. RAIZADA: *Recently introduced or otherwise imperfectly known plants from the Upper Gangetic Plain.* A. C. JOSHI: *Number of Chromosomes in *Suaeda fruticosa* Forsk.*

Industrial Outlook.

Fermentation of Molasses: Use of Pure Yeast Acclimatised to Antiseptic.

THE fermentation process with pure yeast is different from that with ordinary yeast because one knows when it commences and when it ends. It is a logical operation—almost mathematical.

For each vat of fermentation the leaven is changed so that the operation is always commenced with vigorous pure yeast. It is easy to understand that in this condition, the bacteria which are in the molasses are entirely subordinate to the yeast. This factor is more marked because pure yeast can tolerate large doses of antiseptics in the special apparatus, whereas the bacteria are completely paralysed by the antiseptics in the apparatus and in the large vats of fermentation. Similarly, if any mistakes occur during the operation of the yeast-apparatus or during its sterilisation, these

are negligible owing to the action of the antiseptics.

Yeast which is continually changed enters the fermentation room with the maximum of strength and of diastatic power. The inversion of saccharose is effected in a short period and the transformation of the glucose into alcohol is complete.

The apparatus is so arranged that it is possible to clean it thoroughly twice a day without interruption of the process. This is not possible with the ordinary method of pure yeast culture.

A recent process developed by a French firm adapts laboratory methods of pure yeast culture for industrial purposes, and prevents the "negative phenomena" which up to now have paralysed its development.

DESCRIPTION OF PURE YEAST APPARATUS.

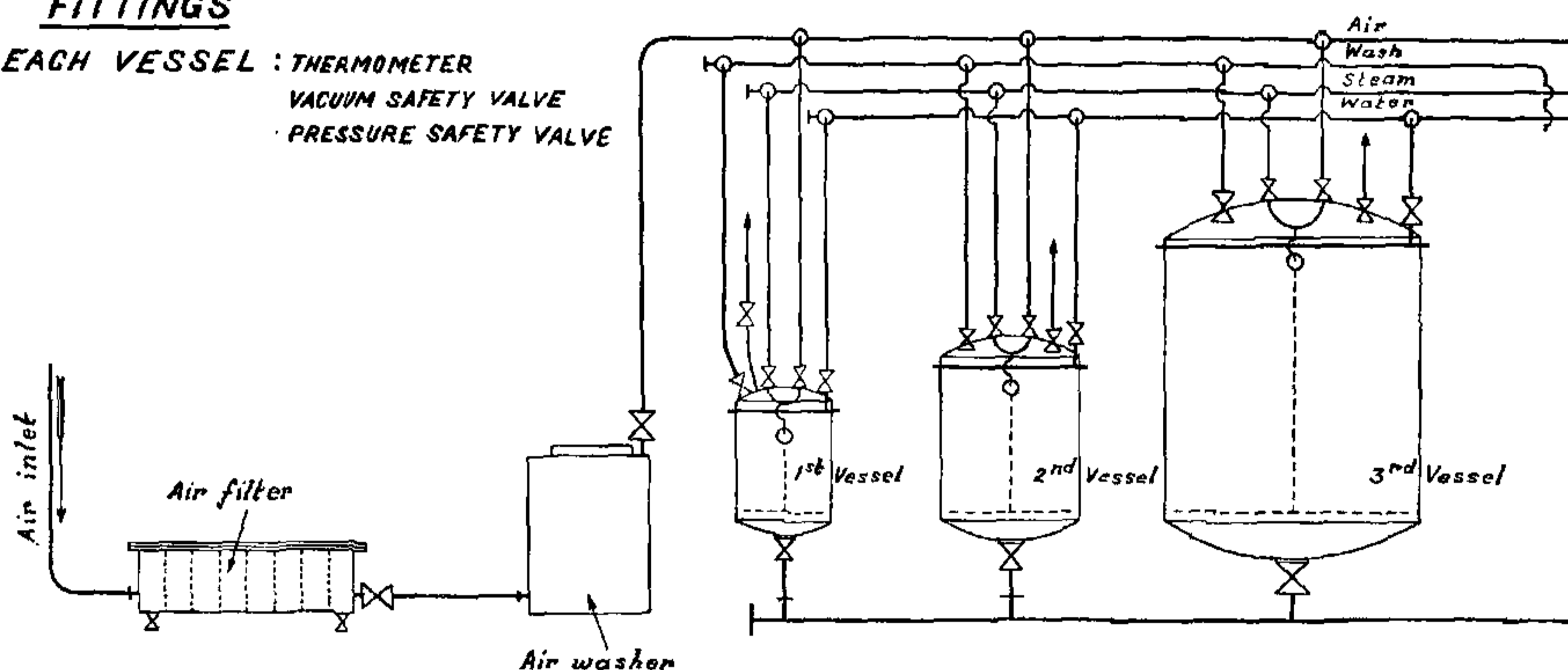
The pure yeast apparatus has an auxiliary equipment which supplies it with a current of purified air.

Supply of pure air which is an essential factor is secured with a pump which sucks air from above the roof of the distillery, and sends it into a filter of steel sheets filled with salycilic-cottonwool. Below the filter is placed a washer, two-thirds of which is filled with clean stones to distribute the air in the antiseptic liquid, kept in the apparatus.

Basins for Culture.—Three basins are available for the culture. They are made of red-copper, tinned inside and have a

FITTINGS

EACH VESSEL : THERMOMETER
VACUUM SAFETY VALVE
PRESSURE SAFETY VALVE

**DIAGRAMMATIC ONLY**

capacity of 22, 55 and 330 gallons. As each of the three basins must be sterilised, aerated, cooled and connected with each other, they are fitted with 4 sets of pipes. Each basin is fitted with a pipe to convey the sterilised air, and a coil to carry either steam for sterilisation or water for cooling.

On the top of each basin is a manhole, a pipe with a valve for the escape of the gases, and two safety valves. A thermometer fitted to each apparatus enables the variations in temperature to be watched.

The basins are connected with each other

at the bottom by a pipe which can serve (1) as an outlet for the yeast, (2) as an inlet for the wash, (3) for cleaning the apparatus, and (4) as an inlet for water and steam. The piping can be sterilised completely in an easy manner.

Each basin is fitted with two cocks for withdrawing samples, with a view to watching the fermentation.

It is easy to visualise with the help of the accompanying diagram how this equipment (manufactured by Ateliers Pingris and Mollet Fontaine Reunis, Lille, France) is operated to furnish a steady supply of pure yeast by progressive multiplication in the three basins.

The high content of the antiseptic and the strength of the yeast permits of the stoppage of the development of bacteria until the vat is filled. During this period, the yeast apparatus continues to furnish fresh yeast and every 14 hours a pitch tank will be ready for a new fermentation.

If the yeast apparatus is correctly operated, it can run continuously without changing the yeast for a period of 3 to 4 months, and the efficiency from actual experience in India, reaches more than 90 per cent. of the theoretical.

Ninth Conference of the Indian Mathematical Society.

THE Editor, *Mathematics Student*, writes:

We beg to remind our readers of the Ninth Conference of the Indian Mathematical Society which meets at Delhi at the invitation of the Delhi University between the 19th and 21st of December (both inclusive) this year. It is hoped that a large and representative body of members will participate and ensure its success. Those who intend attending the Conference are

requested to communicate with Dr. Ram Behari, M.A., Ph.D., Professor, St. Stephen's College, Delhi, who is the Chairman of the Local Committee. As the programme will soon be printed, it is requested that abstracts of papers intended for the Conference be sent to Dr. A. Narasinga Rao, Professor of Mathematics, Annamalai University, Annamalainagar, without delay.