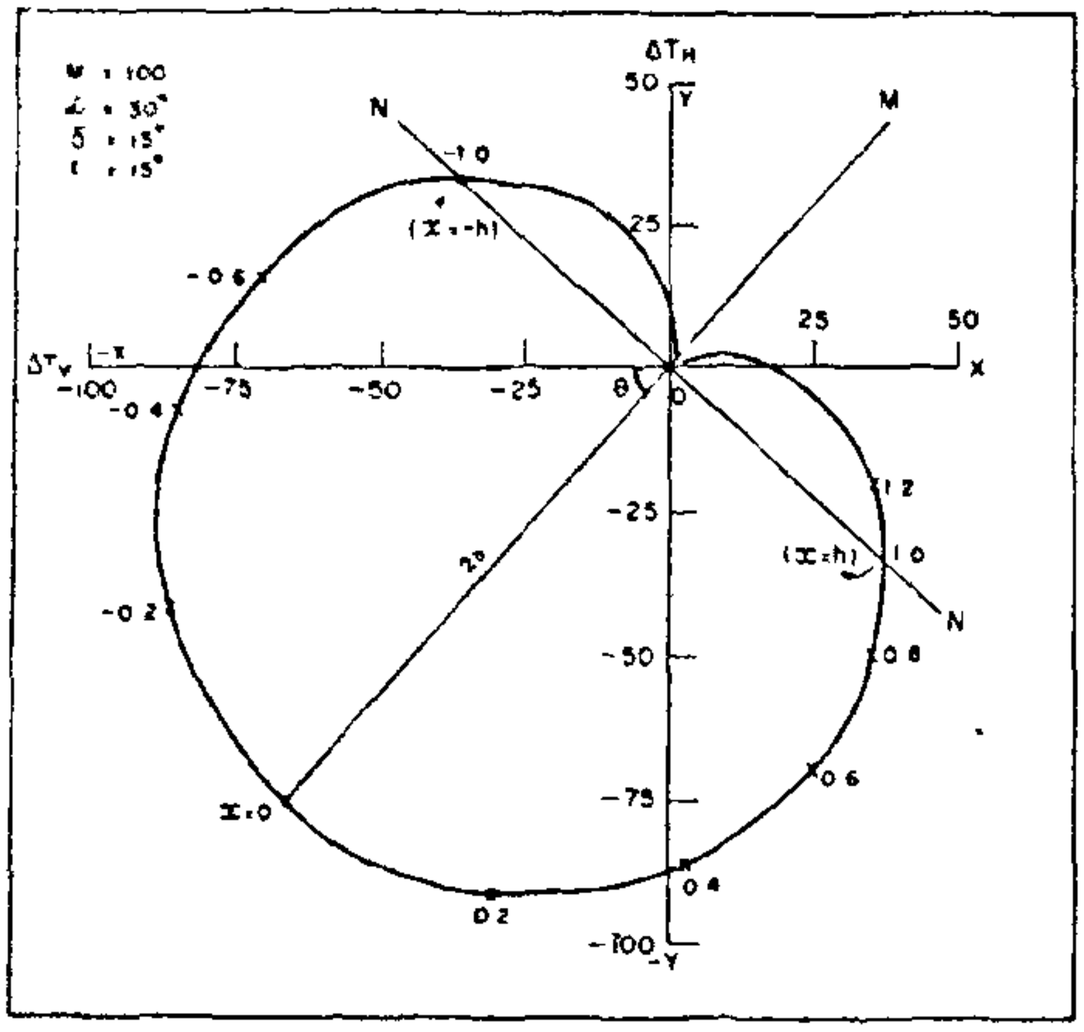

Figure 2. Relation figure resulted due to the plot of ΔT_H versus ΔT_V in the case of a thin sheet (Cardioid).

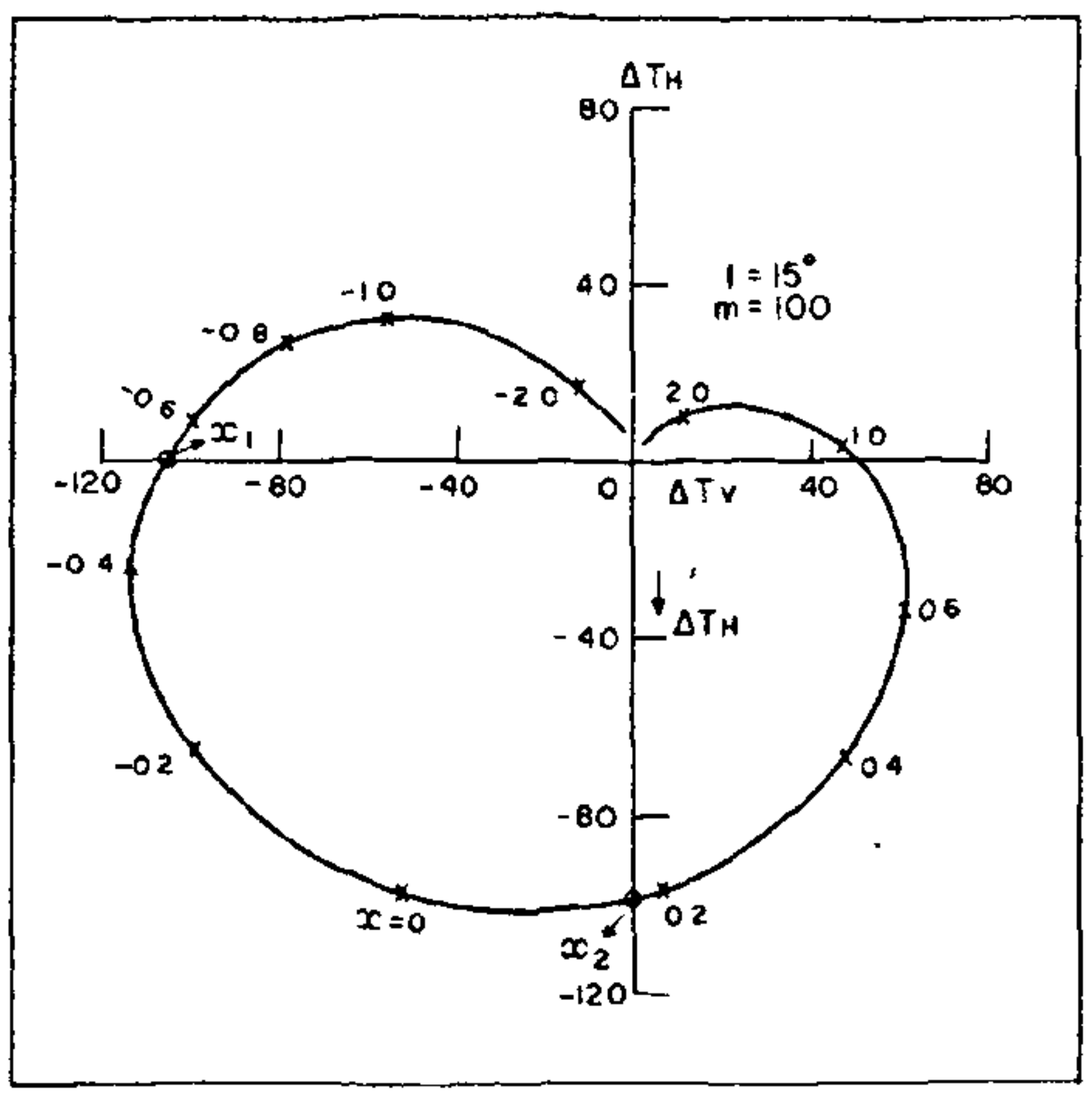

Figure 3. Relation figure resulted due to the plot of ΔT_H versus ΔT_V in the case of a single pole.

$-\Delta T(x-\Delta x))/2\Delta x$. And the vertical gradient can be calculated either by using the Hilbert transform[1] method or $\sin x/x^2$ method. The dip of the thin sheet can be determined by knowing i and α and by the following relation $\theta = Q = 2I - \delta$ where θ is the angle which the new coordinate system MON makes with XOY as shown in figure 2. Depth to the top of the body is the 'x' value on the cardioid where the axis ON cuts this relation figure.

In the case of single pole, the asymmetrical loop resulted due to the plot of ΔT_H and ΔT_V is used to determine depth to the top of the causative source. In this case 'h' is given by the following relations

$$h = \frac{-3x_1 \tan i \pm (8\sec^2 i + \tan^2 i)^{1/2}\, x_1}{2} \text{ when}$$

$\Delta T_H = 0$

and

$$h = \frac{3x_2 \cot i \pm (8\,\mathrm{cosec}^2 i + \cot^2 i)^{1/2}.x_2}{4} \text{ when}$$

$\Delta T_V = 0$.

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1. Green, R. and Stanely, J. M., *Geophys. Prospect.*, 1975, **23**, 18.
2. Murthy, I. V. R. and Rao, C. V., *Bull. Di Geofisica Teorica Ed Applicata*, 1974, **16**, 223.

MICROBIAL DEACETYLATION OF CHOLESTEROL

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THE use of microbes for the transformation of steroids dates back to 1937. Since then a lot of reactions, *viz* hydroxylation, dehydrogenation, degradation, resolution of dl-nor-steroids, esterification, de-esterification etc have become possible with microbial enzymes. Attempts were made in our laboratory to transform cholesterol acetate by micro-organisms isolated from soil samples. Indeed, a bacterial strain isolated from a Dioscorea orchard soil could transform cholesterol acetate under liquid culture conditions.

Cells were grown in Erlenmeyer flasks (250 ml capacity) containing 100 ml of sterilised medium (composition G/L: glucose-20, peptone-1, cornsteep

liquor-2, Na_2HPO_4-3, KH_2PO_4-0.9, pH-7) for 24 hr in a rotary shaker at 28°C. The substrate cholesterol acetate 200 μg/ml (dissolved in alcohol) was added to the growing cells and was allowed to incubate for another 24 hr. One control which received no substrate was also maintained. The culture filtrate was extracted with methylene chloride (3 × 100 ml). Methylene-chloride extracts were washed with aqueous sodium bicarbonate (5%, w/v) followed by washing with distilled water, and drying over anhydrous sodium sulphate and finally the solvent was evaporated. A semi-solid mass was obtained only from the experimental flask while control flasks yielded only an oily residue. The semi-solid mass was then purified by column chromatography and crystallised (solvents: benzene 30%, pet-ether 70%). The bioconverted mass was also acetylated by pyridine and acetic anhydride and purified.

The homogeneity of the bioconverted material was tested on silica gel G plates which showed single spot having R_f of 0.64 different from that of the starting material which had an R_f of 0.75 and the control furnished practically nothing. The purified bioconverted material showed m.p.-148°C, quite similar to cholesterol, hence the bioconverted material was acetylated. The purified acetylated material showed single spot on TLC having R_f of 0.75, identical to that of authentic cholesterol acetate. Hence to ascertain the identity of the bioconverted product the m.p. of acetylated product was determined on H_2SO_4 bath, which was 115°C, exactly identical to that of the authentic acetylated product. On the basis of these observations the product was identified as cholesterol thus establishing the fact that cholesterol acetate was completely deacetylated to cholesterol by a bacterial strain belonging to Bacillus group. Such de-esterification performed by bacterial enzymes seems to be quite interesting and promising.

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1. Mamoli, L. and Vercellone, A., *Ber.*, 1931, **70**, 470.
2. Vogel, A. I., *A text book on practical organic chemistry*, 3rd edition, ELBS and Longman, 1956.

EFFECT OF RELATIVE HUMIDITY ON SURVIVAL OF SUSPENDED POLLENS OF *TYPHA ANGUSTATA*

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POLLENS of anemophilus plants are subjected to various stress conditions during their transit through atmosphere. Very little information is available on the effect of various factors on suspended pollens[1,2]. In this communication, the effect of humidity on survival of suspended pollens of *Typha angustata* is presented.

Fresh *T. angustata* male inflorescences, at dehiscing stage were used as source of pollens. A sealed glass and wood-stirred settling chamber of 60 × 30 × 68 cm was employed for suspension of pollens[3]. This chamber was adjusted to 100% RH by exposing it to water trays overnight and to 0% RH by exposing it to unhydrous $CaCl_2$ trays (BDH, Glaxo Lab., Bombay) overnight. Pollen samples (25 mg) are introduced from the port situated at the top of chamber, and stirred for 2 min by the fan, fitted to the chamber. Samples of settling pollens are collected by exposing sticky microscope slides through the sampling port.

Pollen viability is determined by using 1% 2,3,5-triphenyl tetrazolium chloride[4] reaction (TTC). Pollens collected on the slides are washed with distilled water, concentrated by low speed centrifuge (1000 rpm) for 5 min and treated with 1% TTC for 1 hr, recentrifuged and observed under microscope. Stained (viable) and unstained (non-viable) pollens are counted. The results are tabulated in table 1 and figure 1.

Table 1 *Survival of pollen (% viability) under atmospheric humidity* (62% RH), 100% & 0% RH

Time of sampling (hr)	% viability (average of 3 trials)		
	RH 0%	Atmospheric	100% RH
1	96.2	89.7	87.5
2	92.6	74.3	66.9
3	89.9	66.8	47.8
4	85.0	54.2	35.7
5	80.7	39.8	22.4

As can be seen from data presented *T. angustata*, pollen survival is directly affected by RH changes. Possible explanation can be that at 0% RH values, metabolic activities of pollens are suppressed due to loss of moisture and thus increasing the survival rate.