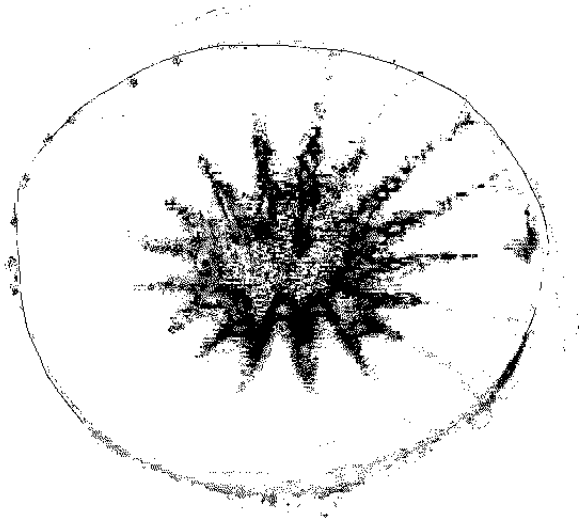
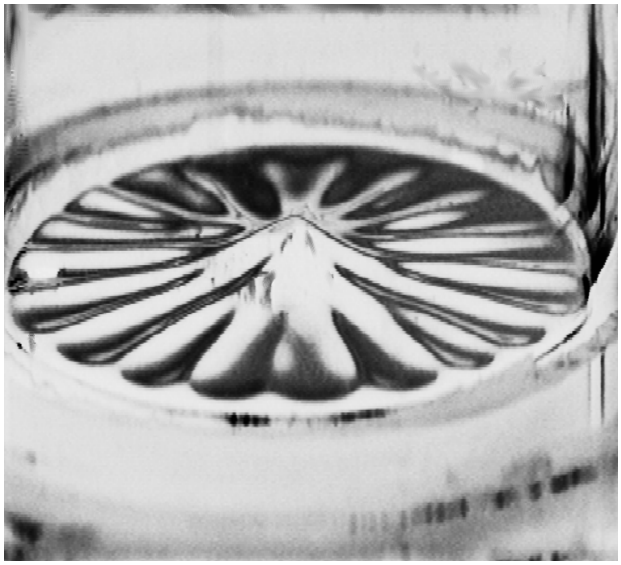
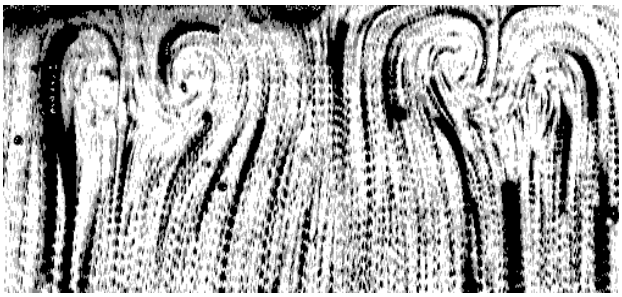
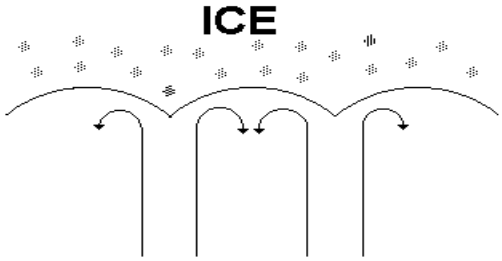
Lid cooled glass cylinder
TLC visualised temperature distribution and ice shape observed at the top wall.



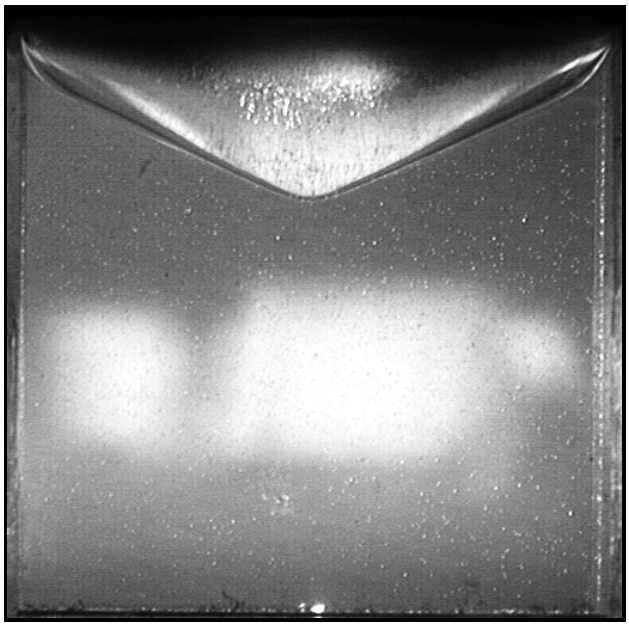


Flow circulation observed underneath cooled lid

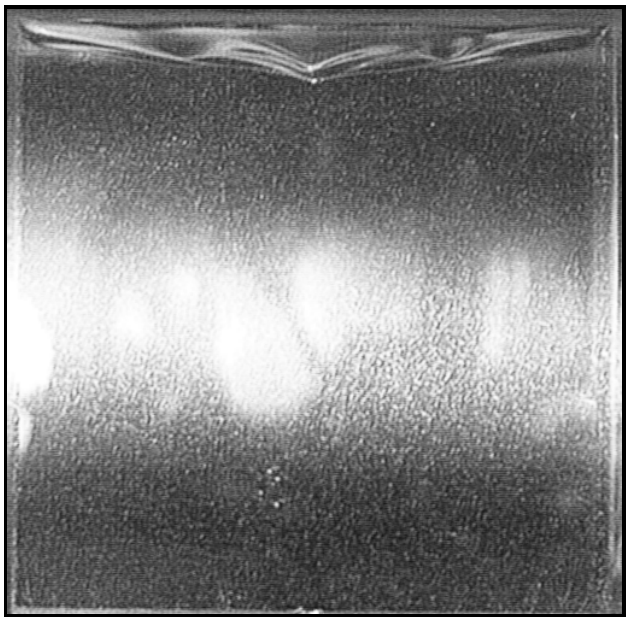




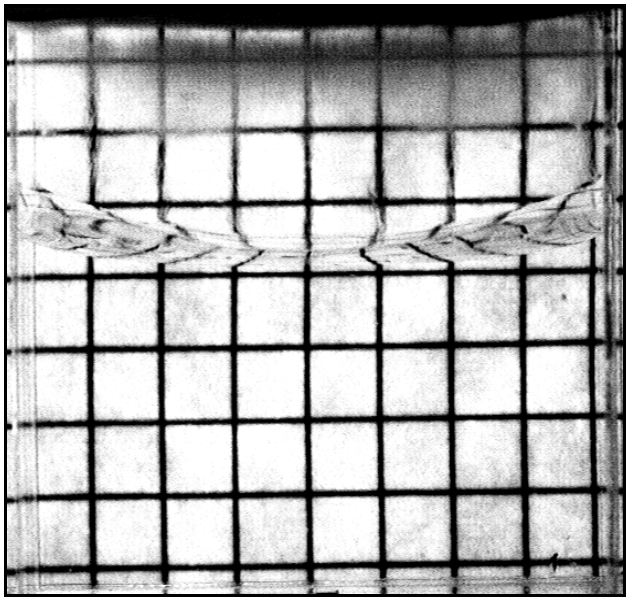
Ice structure in lid cooled cube cavity, T_c=-10^{o}C



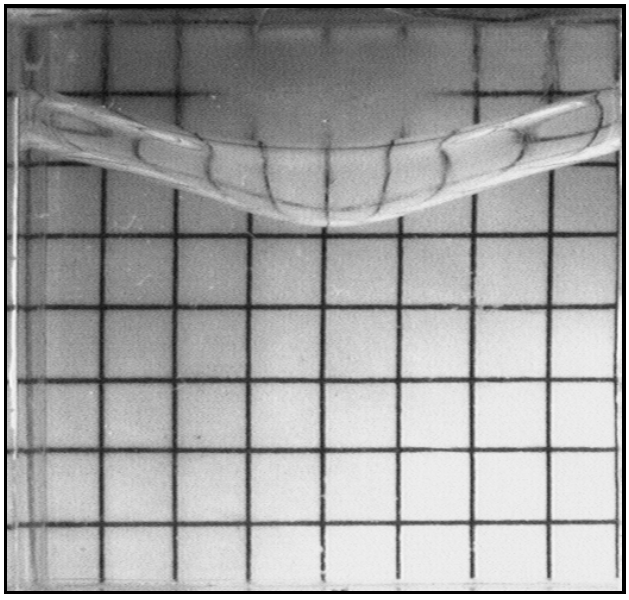
(a)



(b)



(c)



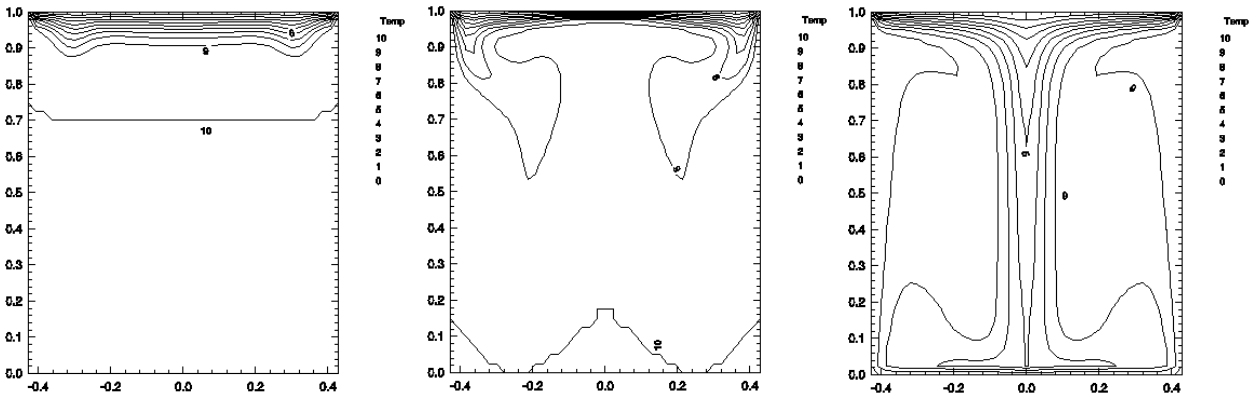
(d)

(a) - glass walls, T_h=10^{o}C; (b) - glass walls T_h=20^{o}C;

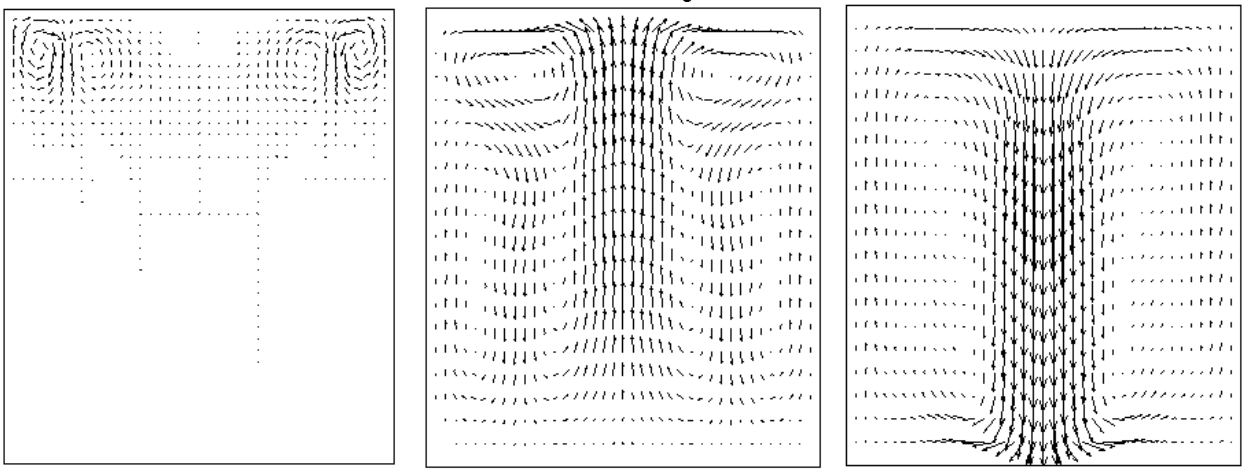
(c) - plexiglass walls T_h=10^{o}C, (d) - plexiglass walls T_h=20^{o}C.

Lid cooled glass cylinder
Calculated onset of convection: T_h=10°C, T_c=0°C.

Isotherms

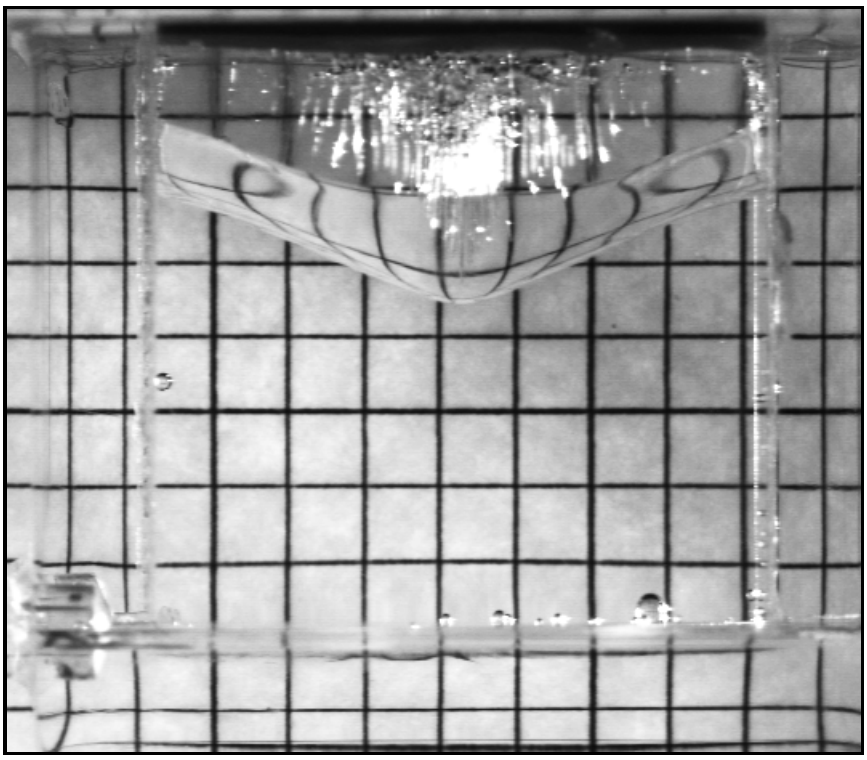


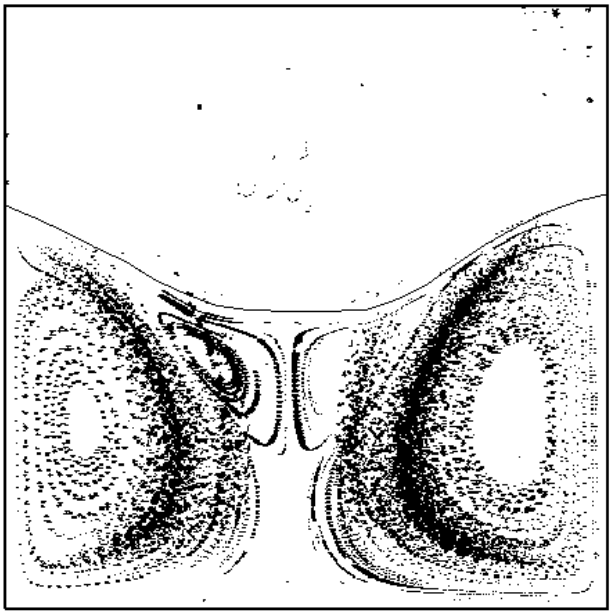
Velocity



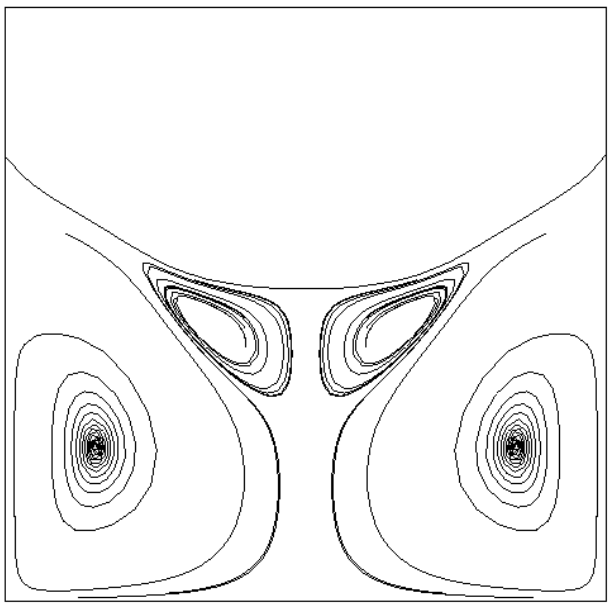
t=20s t=60s t=200s

Ice structure in plexiglass cavity, T_h=20°C, T_c=-10°C.



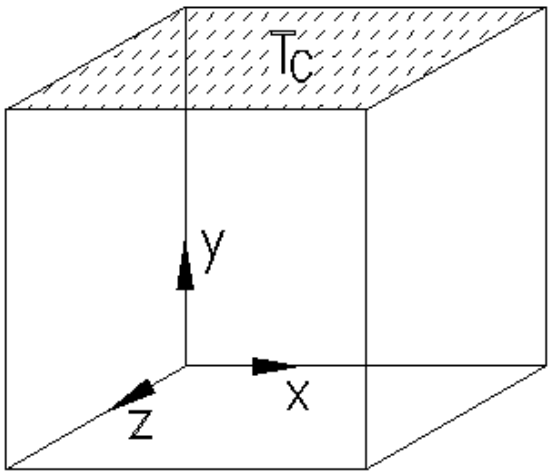


(a)

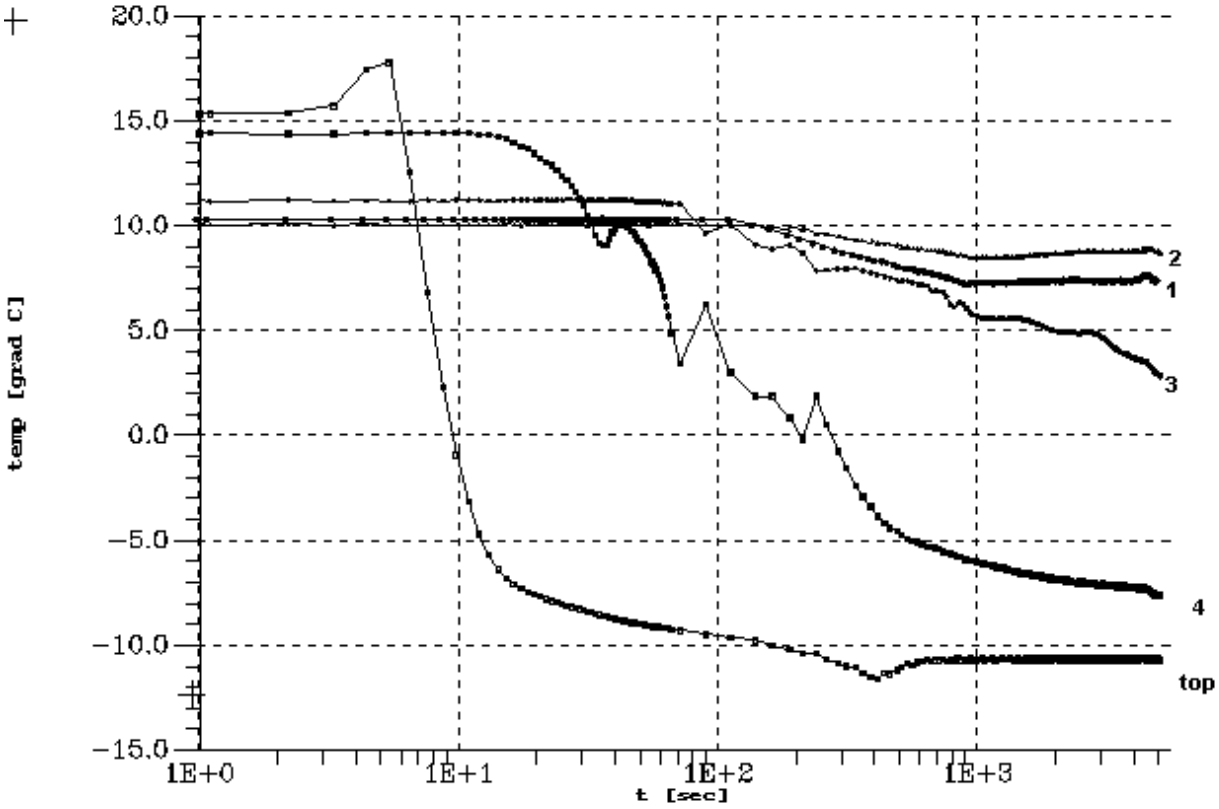


(b)

Particle tracks underneath ice in the plexiglass cavity: (a) - observed. (b) - calculated..



Lid cooled cavity - „cold start”



Temperature variation recorded by thermocouples located in the side wall of cube cavity at:
1 - lower-front corner, (x=0, y=0, z=0.95)
2 - symmetry plane bottom (x=0, y=0, z=0.5)
3 - symmetry plane centre (x=0, y=0.5, z=0.5)
4 - symmetry plane top (x=0, y=0.95, z=0.5)
Top - top wall temperature.