

Experiment 6: Radioactivity (Rate of flow of water from a burette)

In this experiment, you are required to investigate how the height of a liquid column in a container varies with time as the liquid flows out of the container through a narrow tube.

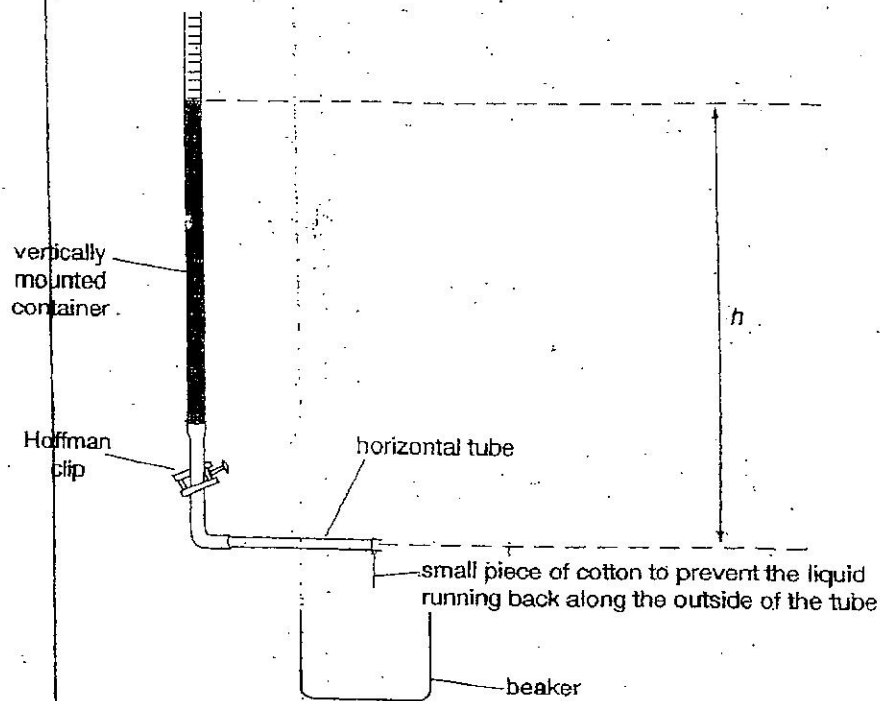


Fig. 2.1

The container and tube are shown in Fig. 2.1.

It is suggested that the height h of the liquid column and time t are related by the expression

$$h = h_0 e^{-kt},$$

where h_0 is the height of the column at time $t = 0$ and k is a constant.

- (a) By making appropriate use of the apparatus which is available, design and carry out an experiment to test the validity, or otherwise, of the equation given above. The rubber tube should not be disconnected from the narrow tube or the container.
- (b) On page 8, write a short account of your experiment. You should explain how you measured the height h of the liquid column in the container, and how the available apparatus was used in performing the experiment.

Page 10 is to be used to record all your results.

Page 11 is to be used to plot a suitable graph from your results.

Any conclusions you have reached concerning the validity of the suggestion should be stated on page 12.

- (c) Suggest, with reasons, two possible improvements which you would make to the design or execution of your experiment if you had to repeat it using either existing apparatus or standard laboratory equipment.