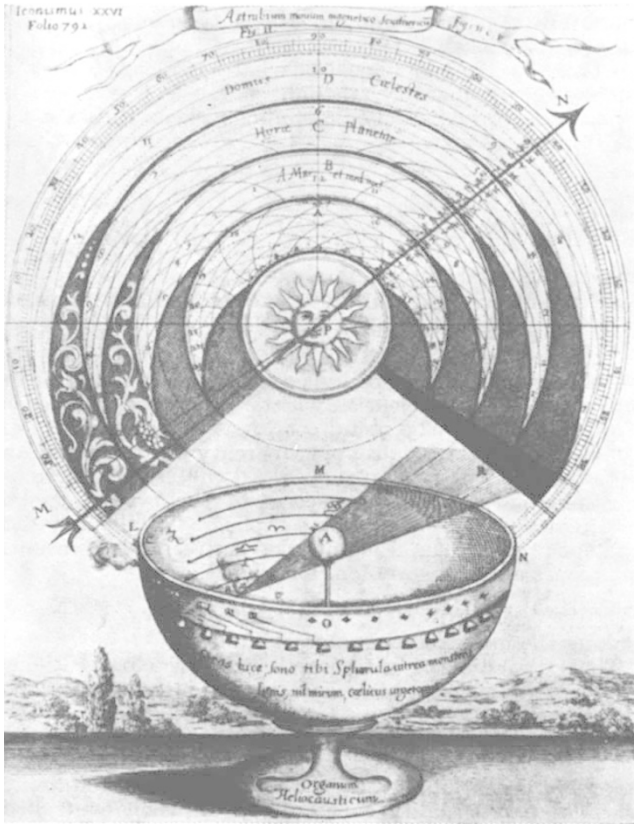
slight preference for all the derivations being within the text.

The arrangement of the subject matter is logical and flows well except for the insertion of chapter six on "Experimental Techniques" between one on "Determination of Formulae and Stability Constants of Complex Metal Ions" and one on "Metal Complex Systems with Behaviour governed by Kinetic Factors". This arrangement seems to me to be illogical.

In the discussion of the calculations of individual complex stability constants a graphical technique is described which would seem ideally suited to computer analysis, but this possibility is not discussed. Throughout, the approach is one in which the emphasis is on the analysis of the experimental data and only sufficient data are given to demonstrate the point under discussion. The references are such that the interested reader can very readily find further information in the original sources. I found this work well written, logical and stimulating, and I am sure that others will reach a similar conclusion.

P. A. Brook

## WEATHER RECORDERS



The first known instrumental observations of the weather were made in India in the fourth century BC, but it was not until the early seventeenth century that the science of meteorology and the development of instruments really began. Dr W. E. Knowles Middleton has traced the early history of the inventions of meteorological instruments and in a new book (*Invention of the Meteorological Instruments*, Johns Hopkins Press: Baltimore and London, August 1969, 114*s*) he describes the fascinating beginnings of such instruments as the barometer, the thermometer, the rain gauge and the atometer, and instruments for measuring the height and motion of clouds and the duration of sunshine. The subject of this last inspired Professor Athanasius Kircher of the Collegio Romano to produce an idea in 1646 for a sunshine recorder which would make use of a burning glass. His idea, reproduced here, shows a crystal ball (or a spherical flask full of liquid) placed centrally in a hemispherical shell, with a sundial drawn in the shell "together with things for burning and making sounds". Kircher suggested that small holes should be made in the bowl, and fuses put in them leading to little bombs to announce the hours.

## OCEANOGRAPHY IN A POND

### A Coastal Pond

Studied by Oceanographic Methods. By K. O. Emery. Pp. 80. (Elsevier: New York and Barking, 1969.) 50*s*.

Oyster Pond, 1,050 m long and with a maximum depth of 6·2 m, is at the edge of the sea only a few miles from the Woods Hole Oceanographic Institution, Massachusetts. The author, with the assistance of a number of his Woods Hole colleagues, has brought the techniques of oceanographic research to bear on this small-scale environment. The pond, as shown by the evidence presented, has a history starting about 14,000 years ago when the retreating ice sheet left a freshwater lake, consisting of two depressions with a shallow sill between them. At that time sea level was about 60 m lower than it is now. It was not until about 3,000 years ago that the level rose sufficiently for the sea to fill up the present Vineyard Sound and eventually spill over into Oyster Pond. The pond then started the marine phase of its existence, and when European settlers colonized the area 350 years ago it provided them with a source of oysters and fish. Subsequently a bar formed at the southern end of the pond, severely restricting its communication with the sea, and it is now passing through a somewhat degenerate and brackish phase.

The various stages in the history of the pond have been traced from studies of its sediments by techniques more usually employed in the ocean. The water in it has also been examined by oceanographic methods, including features such as the seasonal temperature cycle, the water budget, the penetration of light, the chemical composition and the generation of waves and currents. The occurrence of animal, plant and bacterial life has been described and the productivity estimated by several techniques, with somewhat divergent results. Although the processes operating are often basically similar, the results obtained from these studies indicate that in many ways Oyster Pond is very different from a typical marine environment. Its chlorinity is low, varying from between 1 and 2 per mille in the surface waters to 6 per mille in the deepest part. Phytoplankton growth is very high and the transparency is so low that the average depth of visibility of a Secchi disk is only 1·05 m. The major chemical constituents occur in almost the same relative proportions as in seawater, but the concentration of dissolved organic matter is 10 to 100 times as great as in ocean water.

There are many other lakes in the Cape Cod area at varying stages of the sequence through which Oyster Pond has passed. The author points out that studies such as the present one have a direct interest in relation to processes affecting coastal pollution. He suggests that, at the same time, they can have a high educational value in enabling experience of oceanographic techniques to be gained at a low cost in a model environment. K. F. Bowden

## TRIBUTE TO A VOLCANOLOGIST

### Studies in Volcanology

A Memoir in Honor of Howel Williams. Edited by Robert R. Coats, Richard L. Hay and Charles A. Anderson. (Geological Society of America, Memoir 116.) Pp. 678. (Geological Society of America: Colorado, 1968.) $19.25.

This volume, in honour of volcanologist Howel Williams, is a miscellaneous collection of seventeen research papers