

method of measuring specific surface consists in determining the resistance to the flow of fluid through a plug of powder. Again the technique is not easy, but R. R. Sullivan and K. L. Hertel carefully point out the limitations of the method as compared with existing alternatives. These articles fortunately contain sufficient experimental detail to render them useful as working guides in the laboratory.

Differential adsorption has been brought to a high state of perfection in chromatographic analysis. But there is nothing in principle to prevent the method being more universally utilized, and A. Tiselius describes the modification of the technique for dealing with colourless solutions. The analysis, by refraction, of the concentration gradients of the emergent solution enables the several solutes to be separated and recognized. The method was specially developed for amino-acids and peptides; its success here is proof of its sensitiveness and powers of discrimination.

The mechanism of detergent action, discussed by J. W. McBain, is of increasing importance in many technical processes. There is still much to be done to the theory because the search for new detergents is almost wholly empirical in character. The particular aspect of detergent action discussed is the increase in solubility of hydrophobic substances in water brought about by the addition of these agents.

High polymers rightly assume their proper place in colloid science and consequently in this volume. K. H. Meyer discusses in some detail the structure of starch and shows how purely chemical methods have thrown a flood of light on the way in which the glucose units make up the relatively complex molecule. At the other extreme R. E. Powell and H. Eyring survey the possible application of statistical methods to the physical behaviour of high polymers and their solutions. Owing to the complicated nature of the subject only broad generalizations may at present be formulated. Perhaps one of the more interesting is the conclusion that, in the flow of molecules in the molten polymer, segments of 20–25 carbon atoms move as a whole, which movement is independent of the chain-length of the polymer. Much can be learned of the shape of dissolved or dispersed particles by examining the streaming birefringence of their solutions. Again, enough is given of the technique and of the theory to make this article by J. T. Edsall a good starting-off point for those interested in studying the subject further.

A good indication of recent advances in colloid chemistry in the classical sense of the term is furnished by the elucidation of the structure of the gels of metallic hydroxides by following the process of their formation by examination of their X-ray diffraction patterns. H. B. Weiser and W. D. Milligan thereby add another chapter to the investigation of inorganic colloids. Some of the principles of the coagulation of colloidal solutions now find direct practical application to the concentration and precipitation of rubber from latex. G. E. van Gils and G. M. Kraay describe a systematic investigation of those factors which govern the preparation of concentrated and stable rubber latex which now has—or perhaps had—so many important applications in industry.

E. A. Hauser brings forward his pendent drop method for the measurement of surface tension and further discusses rather too briefly some of the anomalies of the surface tensions of solutions.

The removal of ions from natural water is of funda-

mental importance in the supply of suitable water to boilers, for the efficient utilization of detergents and indeed for most industrial processes (R. J. Myers). Cations are perhaps the most troublesome, and the base exchange zeolites—natural or artificial—provide one of the best methods of coping with this problem. Zeolites are not, however, unique in this respect, since certain phenol formaldehyde resins contain a sufficient percentage of hydroxy groups to react in a manner similar to that of the zeolites. Progressing a stage further, acid-exchange resins from aniline and formaldehyde allow of the removal of anions and their replacement by hydrogen ion. There is thus theoretically the possibility of removing both anions and cations from water by a two-stage process—in fact, it now is a commercial proposition for the preparation of 'ion-free' water.

It appears to be a far cry from colloid science to electron optics, but the fact is that the electron microscope bids fair to become a useful tool for the investigation of disperse matter lying in the range 0.01–10 μ . T. F. Anderson gives enough in his article to whet the appetite for more and to convince the colloid chemist that an electron microscope is even more useful than the ultramicroscope of classical colloid chemistry.

H. W. MELVILLE.

MUSEUM PRESENTATION OF GEOLOGY

Geology in the Museum

By Dr. F. J. North, C. F. Davidson and Lieut. W. E. Swinton. (Published for the Museums Association.) Pp. viii+104+6 plates. (London: Oxford University Press, 1941.) 5s. net.

POST-WAR reconstruction promises to extend to museums, demanding from them not only rehabilitation after the neglect of the war years but also extended activities along both recreational and educational lines. Aims must be re-examined, collections overhauled or replaced, and exhibitions devised anew. Museum officials, amply supplied with textbooks on systematics, have hitherto been forced to delve laboriously in professional journals in search of papers on museum problems of preservation and presentation. For their especial needs, the Museums Association is publishing a series of handbooks, and that under notice surveys geology in the museum.

Dr. North deals with the general problems of the introduction of geology to a varied public; Dr. Davidson contributes a section on mineralogy; and Dr. Swinton completes the trilogy with one on palaeontology. Notes on what to collect are followed by others on treatment and preservation, on registration and storage. The exhibition aspect of geology is prefixed by a discussion of aims, of what to show and how to show it, together with a consideration of layout and labelling, of diagrams, models and other adjuncts. Details of materials and instruments, recommended by past experience for future use, and the sources from which they can be obtained are given in text and footnote. Consideration is given to furniture and equipment, both for exhibition gallery and for staff laboratory. The bibliographies are carefully selected and up-to-date. While this little volume cannot make a curator a geologist, it will help to make a geologist a curator. D. A. A.