# BOOK REVIEWS

## BRITISH HYDROGRAPHY

### The Admiralty Hydrographic Service 1795–1919

By Vice-Admiral Sir Archibald Day. (Ministry of Defence.) Pp. 378 + 13 plates. (London : H.M. Stationery Office, 1967.) 105*s*.

In 1885 Commander L. S. Dawson published *Memoirs of Hydrography*, a description of the growth of marine surveying in Britain from 1750 until the time when he was writing. Concentrating mainly on work done in the field, he gave a detailed account of surveys undertaken under naval auspices at home and abroad from the pioneering days of the Mackenzies and Captain Cook until the mid-nineteenth century when British ships had charted about three-quarters of the world's coastlines.

For some years after its foundation in 1795, the Hydrographic Office had little influence over surveys and it was not until Hurd's term of office (1808–23) that hydrographers began to have some say in choosing new projects. Gradually the department developed from its modest beginning as a clearing house for hydrographic material sent to the Admiralty by officers who took an interest in such work to the organization principally responsible for all surveys carried out by HM ships and for the production of charts which were available not only to the navy but to the general public.

When this happened the history of the Hydrographic Department and the progress of marine surveying became inseparable, and Admiral Day in *The Admiralty Hydrographic Service* has used the original departmental papers to produce a book specifically designed to supplement and continue Dawson's account, by describing the internal development of the Hydrographic Office, to which Dawson paid little attention, until 1884, and then carrying up to 1919 both the department's history and that of the surveys carried out under it. In this latter part of the book Admiral Day follows Dawson's original pattern, devoting a chapter apiece to the four hydrographers who held office between 1884 and 1919.

This chronological scheme precludes a sustained discussion of any single subject, but many themes run right through the book, notably the development of the concept of the department's role by successive hydrographers and their struggle to extend both its scope and its means. Notwithstanding repeated opposition from the Treasury in the form of cuts, as in 1851, and from the Navy Board, which was prone to object that the service "locks up" ships and men in its activities, it grew from the small office set up under Dalrymple in 1795 at an estimated cost of £470 per annum to an organization employing 350 people (on land) and spending nearly £150,000 per annum by 1919.

Admiral Day shows how, at the same time, the work of the surveyors changed, the broad sweeps of the early nineteenth century giving way to more painstaking coverage with techniques of increasing accuracy. The atmosphere of the service was so altered that in 1891 Wharton recommended increased pay for the crews of survey ships because they no longer had the "glamour of exploration" to compensate for their hard work. Increasingly their exploration was of a more scientific nature with contributions to many branches of science, especially oceanography and meteorology.

Admiral Day's book is much more than the story of the Hydrographic Department. It is a work of reference giving information both on its organization and on the many-sided activities which came under its control. It follows the progress made in producing Admiralty charts at all stages from the drawing board to their issue to the fleet and is illustrated with examples of the work of different periods, some of it of extreme beauty. It tells, with facts and figures, of what lay behind the exploits of the great surveyors of the nineteenth century which Admiral Ritchie described in *The Admiralty Chart* (1967), to which Admiral Day's book is, as he points out, complementary. *The Admiralty Hydrographic Service* is a most valuable addition to the growing number of books about the discovery of the oceans and its value would be enhanced if a reprint of Dawson's original *Memoirs* could be produced to accompany it. MARGARET DEACON

## ASTRONOMERS OF OLD

### Their Majesties' Astronomers

A Survey of Astronomy in Britain between the Two Elizabeths. By Colin A. Ronan. Pp. 240 + 20 photographs. (London : The Bodley Head, 1967.) 30*s*. net.

The title of this book might suggest that it chronicles the activities of Astronomers Royal or governmental: the sub-title gives a better idea of its contents, though, of course, the survey could not possibly have been restricted to the work of British astronomers. Actually, it will serve to provide the general reader with a lucid account of the onward sweep of the science of the heavens during the past four hundred years.

A brief introductory chapter covers developments up to the mid-sixteenth century when the new Sun-centred cosmology began to inspire the English Copernicans, Recorde, Dee, Thomas Digges and the rest. Next, the urgent problems of navigation, hastening the foundation of the Royal Observatory, introduce the reader to Flamsteed and his immediate successors, to Harrison and his chronometer, and, through the beginnings of lunar theory, to Newton's achievements in celestial mechanics and in optics. Advances in the technique of telescope making lead on to the pioneer work of the Herschels and Lord Rosse in stellar and nebular astronomy. Following a chapter devoted to "The Neptune Scandal", Mr Ronan traces parallel developments in precise astronomy (revealing the phenomena of aberration and parallax) and in spectroscopy. He has been permitted to draw on the personal recollections and to consult the private papers of Mr William Christie, grandson of Sir W. H. M. Christie, the eighth Astronomer Royal. The concluding two chapters respectively survey the modern revival of interest in cosmology (in the fullest sense of the word) and endeavour to chart "The Way Ahead".

The reader of this book will encounter certain imprecisions. The stars do not all exhibit their maximum aberrational displacements northward or southward at the same time of year (page 139). The point about Gill's determination of the solar parallax at Ascension Island was not that he had "a base-line of some fourteen hundred miles to Greenwich", but that a calculable base-line was marked out by the Earth's rotation and orbital motion between evening and morning observations (page 153). The stellar distance cited on page 151 requires three more ciphers. There are not 86,000 but 86,400 sec in one day (page 198). Samuel Molyneux, Bradley's colleague, is confused with his father William (page 93); "the elder Cassini" is confused with his son Jacques (page 137). Lockyer's first name was Joseph, not John (page xi and facing page 176). There are, indeed, besides obvious misprints, many mistakes in the spelling and initialling of proper names in both text and index, and several wrong dates. The book requires, and deserves, a thorough revision before proceeding to a second edition. A. ARMITAGE