

THE FUTURE ROLE OF DATA CENTRES IN ASTRONOMY¹

G. A. Wilkins

Royal Greenwich Observatory, Herstmonceux Castle, U.K.

There are two main modes of data-centre operation - the passive and the active. In the passive mode the data are received, catalogued and stored, and some are later copied and distributed in response to specific requests. In the past the passive mode has been represented by the many printed volumes of observational data in astronomical libraries, but the techniques of data acquisition are now such that it is often no longer practicable, even if it were desirable, to print the very large amounts of observational data that are now produced by modern instruments. In the active mode of data-centre operation the centre collects data that it considers to be useful, then evaluates, combines and analyses them, and finally publishes the results of this work. In the past the active mode has been common in astronomy, and the general catalogues of stellar data are examples of this mode of operation, but each one has required many years of effort. Modern computer systems can, however, store large amounts of data and can display, manipulate and copy them very quickly; it is now possible to combine data of many different kinds and to analyse them together, with the prospect of giving new knowledge about the systems being studied.

Astronomers have to decide how best to proceed in these new circumstances. Should we merely encourage the development of common standards for the publication of data on, say, magnetic tape, so that each institution can obtain the data that its astronomers wish to study? Or should we aim to develop a small number of very large, passive data centres which will make observational data available on request, and perhaps provide computer facilities to

¹ See also Report of discussions, section 7.

visiting astronomers? Or should we aim to develop a network of specialist, active data centres that will cooperate together, and aim to build up a communal store of evaluated data and derived results? Or can we find some combination of these three approaches that will fit the characteristics of the data and of the astronomers who will use them?