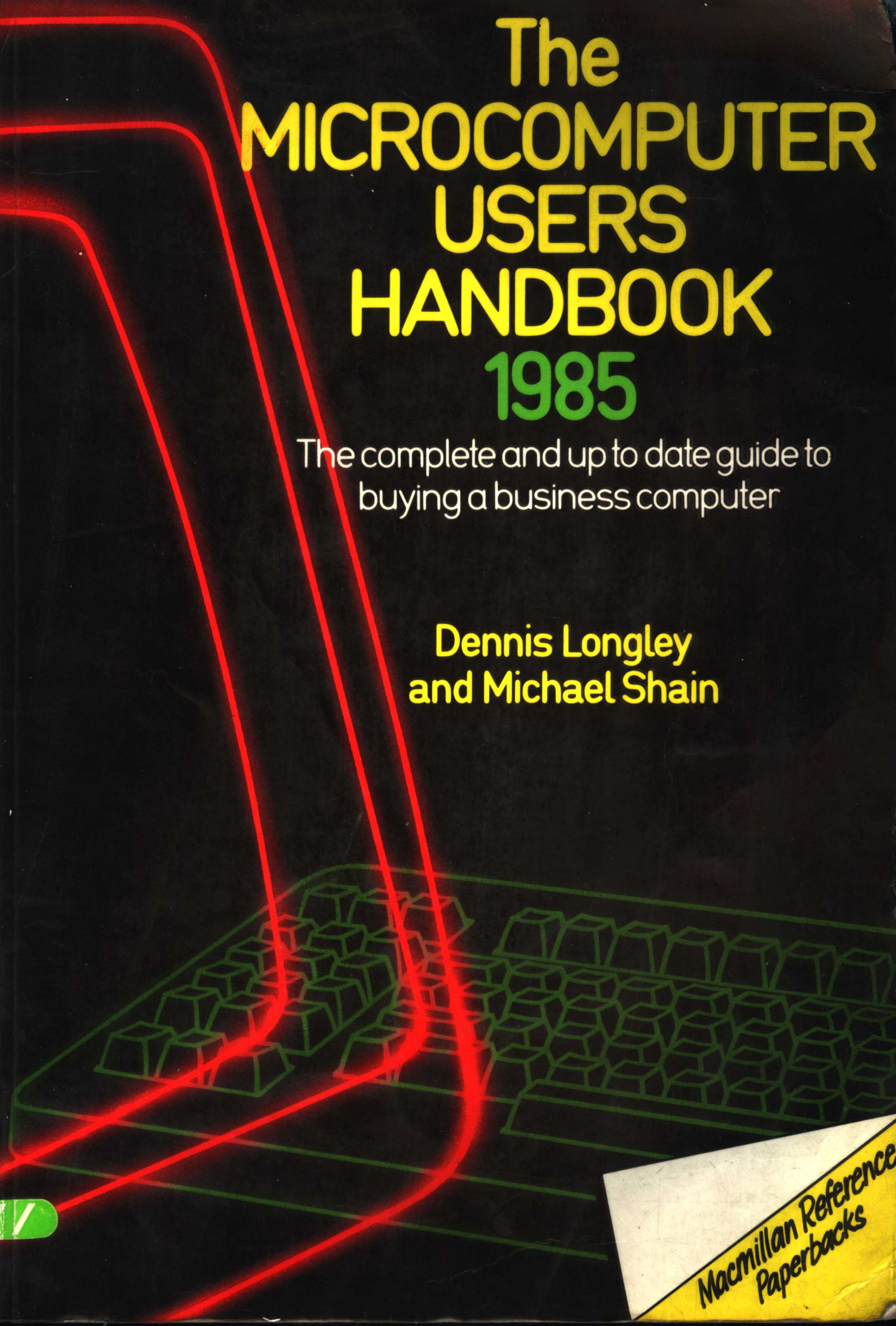
The MICROCOMPUTER USERS HANDBOOK 1985

The complete and up to date guide to buying a business computer

Dennis Longley
and Michael Shain



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The complete and up to date guide to buying a business computer

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INTRODUCTION

The Microcomputer Users Handbook has been written for all business people and professionals who are current or potential users of microcomputer systems. This practical guide will help the reader to select or upgrade the right microcomputer as well as explain how to successfully operate the chosen system.

This *Handbook* will aid a wide range of business people: self-employed people running small businesses, accountants in larger companies, managers of company divisions, DP managers, university lecturers, architects, doctors, and many more. It will, of course, be immensely useful to microcomputer and peripheral computer manufacturers and dealers. Indeed, it is invaluable to all those involved in the computer business who require a comprehensive source of international information.

Many books have attempted to cover this topic but none have described as many makes of microcomputers and peripherals in such detail. The area of microcomputer technology is so rapidly changing that it is understandable why this has not been properly attempted before now. The authors realise that although machines and models will change, the information contained in this *Handbook* will still prove valuable. To help overcome the problem of providing up-to-date information, this *Handbook* will be revised and published every year. The authors welcome readers' and manufacturers' comments and suggestions for amendments and additions for the next edition. These should be sent to:

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HOW TO USE THE HANDBOOK

The Handbook is divided into two parts:

The first part comprising Chapters 1 — 6 assesses and explains the user's needs in choosing the appropriate microcomputer system.

The second part including Chapters 7 — 8 is an in-depth review of over 160 business microcomputers. It also describes in similar detail the peripherals: VDU's, disk drives, printers and monitors currently available.

The paragraphs below further explain which chapters will be of most use to different readers. As the reader can see from the detailed content pages, the chapters and sections within chapters have been largely designed to be self-contained. This will enable each reader to select the appropriate chapters, sections and sequence of reading for his or her own requirements.

The reader seeking a microcomputer within a specific price range should refer to Appendix I which provides a most comprehensive and practical listing of all the microcomputers according to price range. For each model the following information is provided: operating system(s), hard disk availability and whether multi-user or networking is supported.

The user with no knowledge of microcomputers should first read Chapter 1 and the appropriate subsections in Chapter 2 (see below), to set the scene. The sections in Chapter 3 describe important applications of business microcomputers and assumes a general understanding of the role and function of microcomputers as given in the previous two chapters. The reader who is concerned with the problems of installation, and implementation, of the computer system is directed to Chapter 4 where the technical, ergonomic and administrative problems associated with these phases are comprehensively covered. Chapter 5 provides an insight into particular developments in the microcomputer field and will be of most interest to users who already have some microcomputer experience. Chapter 6 gives an account of recent developments in integrated software and will enable the user to build a software library.

The actual details of equipment and manufacturers in Chapters 7 and 8 are preceded with further explanatory notes which provide hints on the relevance of technical aspects from a users' and purchasers' viewpoint. The recurring theme of this Handbook is that the user is primarily concerned with the operation of the total computer system; it is therefore important that those technical factors are kept in their proper perspective.

The appendices provide details of ancillary services and suppliers, a checklist for word processing applications, advice from H M Customs and Excise on VAT aspects, advice on contracts, an overview of microcomputers listed by price and a glossary.

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ABOUT THE CHAPTERS

1. HOW TO BUY A MICROCUMPUTER

by R Anderson, Brighton Polytechnic.

The role of the microcomputer in business is analysed and suggestions are made on the approach to be taken in acquiring a microcomputer, together with questions which should be asked at a demonstration. Due attention is given to the planning for growth, and the importance of maintenance and after-sales support is discussed. Supporting material is also contained in the appendices (see below) where specific advice is given on sources of help, maintenance, finance etc.

2. UNDERSTANDING MICROCOMPUTERS

by D Longley, Brighton Polytechnic.

This chapter comprises eleven sections dealing with the hardware and software of microcomputers. The Chapter may be read in its entirety as a general introduction to the subject but it is also organised to facilitate selection of topics in isolation. Each section is preceded with a few explanatory paragraphs which attempt to place the material in context and most sections provide both an overview, and a detailed account, of the topics. In appropriate cases the concluding paragraphs indicate the interrelationship of other sections in the chapter.

3. IMPORTANT APPLICATIONS

This chapter is mainly concerned with those software packages likely to be of importance to the business user. There is a degree of cross reference between its sections but it has been largely designed so that the reader may select the most relevant application area.

Word Processing by A Warburton, Brighton Polytechnic. This gives a full account of the more important facilities that a word processing package should contain and considers the WORDSTAR package in detail.

Financial Planning by B Elliot, Brighton Polytechnic. The growth of financial modelling on microcomputers is discussed and the more important spreadsheet packages analysed and compared. A full account is presented of VISICALC and its areas of application reviewed.

Scheduling by M Cotterell, Brighton Polytechnic. Scheduling, like Financial Planning, can be used both to formulate a business plan and to monitor subsequent progress. This application covers both critical path analysis, work-in-progress and production control. The asking of 'what if?' questions enables the user to interact with the microcomputer.

Sales Ledger by D Longley, Brighton Polytechnic. Sales Ledger packages have a widespread appeal in the business microcomputer field since they can both reduce the manual effort of a common bookkeeping task and improve the information available on sales and creditors. The main features of such packages are described in this section.

Integraded Accounting Packages by M Shain, NCC. The benefit of a fully integrated accounting system is that a single keyboard entry will automatically update all the relevant ledgers. Budgetary information, variance analysis and trial balances can be produced on a demand basis.

Incomplete Records by B Elliot, Brighton Polytechnic. Incomplete Records is a technique used by accountants in practice to produce year end tax returns for the Revenue. It is a good example of the application of microcomputing in a professional area.

Database Packages by S Fall, Brighton Polytechnic. A database system provides a well defined structure for information, stored on a computer, which both facilitates processing by a variety of application programs and supports a fast response for *ad hoc* enquiries. This important topic is discussed in detail and two microcomputer database management packages are described.

Communications and Networking by A Warburton, Brighton Polytechnic. The various methods by which microcomputers can be linked to share common resources such as disk and printers is reviewed. An account is also given on several proprietory systems.

4. EFFECTIVE USE OF YOUR COMPUTER

by A Warburton, Brighton Polytechnic.

The microcomputer cannot be considered in isolation of the office environment where it is to operate. The correct siting and positioning of the microcomputer, lighting and desktop layout all need to be considered. This chapter reviews the ergonomic and human factor elements involved in the successful integration of the microcomputer into the day-to-day operation of a business. Security procedures, particularly for auditing and file backup purposes, are fully reviewed and codes of practice suggested.

5. CURRENT TRENDS IN MICROCOMPUTING

This chapter reviews recent developments in the design of hardware, software and communication interfaces for the modern microcomputer. These sections will be useful to the reader in establishing the relationship between the microcomputer and the more traditional elements of computing.

MACINTOSH by I Scales, Greenleaf Publishing. The first time user can operate the Macintosh in under 20 minutes. It has a remarkable user interface, but not without some limitations.

GRiD Portable Computer by H Mooney, GRiD Inc. The GRiD is a lightweight (10 lbs), powerful 16

bit machine with bubble memory, plasma display and integral modem. It is representative of the new generation of portables which now account for one third of all microcomputer sales.

Advances in Integrated Spreadsheets by D Longley, Brighton Polytechnic. Packages such as Lotus 1-2-3 and Symphony are powerful productivity tools. In effect, they are programming languages and this section explains why they need to be handled with caution.

Interactive Video Disk by C Jackson, Brighton Polytechnic. Controllers now available for the video disk machine enable it to be used as an interactive peripheral on a microcomputer. The video disk, with its high definition graphics and large storage capacity, has immediate applications in computer based training.

Operating Systems by A King, Microsoft and M Shain, NCC. UNIX, MS-DOS and Concurrent DOS are reviewed and their respective merits compared. Networking and Windowing requirements will influence the choice of an operating system.

Personal Computer Networking by C Oswald, Reuters Ltd. A local area network is required if two or more users need to share the same files. The criteria for network selection are reviewed and leading networking products are compared.

6. INTEGRATED SOFTWARE

by M Shain, NCC, I Scale and G Wheelwright, Greenleaf Publications, C Barker, Which Computer.

This chapter has two objectives: to examine the rising trend in integrated software and act as a purchasing guide to that software. The principle characteristic of integrated software is the ability to transfer data from one application to another, e.g. from communications to spreadsheet to word processing. Most integrated software packages include windowing, help facilities, pointing devices and command simplicity.
Integrated software can be classified into four main families and the packages available within each category are reviewed. All will feature database, word processing, spreadsheet, graphics and communications facilities. The four classes of integrated software are:

(i) Families of Applications, e.g. Perfect series from Perfect Software, Star series from Micro-Pro.
(ii) Multiple Application Packages, e.g. Lotus 1-2-3 and Symphony.
(iii) Standard Operating Environments, e.g. Concept VP from Scienta, Desq from Quarterdeck.
(iv) Modified Applications Environments, e.g. Apple's Lisa and Macintosh, VisiON from VisiCorp and Microsoft's Windows.

7. COMPUTER SURVEY

by S Fineberg and M Shain, NCC

This survey contains details of over 160 microcomputers which can be employed in a business environment. They range from the inexpensive home computers which may be adapted to business applications through the purpose designed Personal Computer to machines capable of hosting networks with power and facilities close to the minicomputer range.

The ultimate selection of a particular microcomputer system demands an interactive approach and the reader will not be able to select the most appropriate hardware by a perusal of this chapter alone. A discussion with a reputable dealer, together with demonstrations, will focus attention on one or two appropriate systems. A study of Appendix I will then provide details of other microcomputers in a similar price range. Chapter 6 will enable the reader to extend consideration to other manufacturers' models which may be equally suitable, probably leading to further discussions and demonstrations. Thus at the point of final decision the purchaser can be reasonably assured that a sensible range of alternatives has been evaluated.

The machines are described in a common format and the abbreviated nature of this survey necessitates the use of technical terms. However the glossary and Chapter 2 will provide some clarification of these technical aspects within the context of the Handbook.

The information in this chapter has been gleaned from a variety of sources, including manufacturers' literature, and every reasonable attempt has been made to confirm the accuracy of its contents. However it must be emphasised that this data is subject to rapid market and technological developments and details must be checked with the appropriate dealer before any final decision on system acquisition is made.

8. PERIPHERAL SURVEY

by M Shain, NCC.

The peripherals represent both the interface between the user and the processor and also the means of storing data and software between computer runs. The first time purchaser is advised, in Chapter 1, to acquire a total system geared to his business requirements and warned of the dangers inherent in the isolated purchase of the individual components. Nevertheless the user must pay careful attention to the performance of peripherals both on first purchase and on subsequent expansion of the system. The user will therefore be very concerned with the ergonomics of the input output devices and the reliability and capacity of backing store. The sections in this chapter provide a discussion on the relevant technical factors, from a user and purchaser viewpoint, of four types of peripheral- printers, monitors, disk storage and terminals plus information on a range of manufacturers' models.

9. APPENDICES

There are many aspects of microcomputer purchase, installation and maintenance that are of crucial importance to the user but are, all too often, unavailable to the newcomer. These appendices attempt to remedy this deficiency; they provide useful details of advice and ancillary services in

addition to a glossary and an overview of the microcomputer market.

Appendix A: Checklist for Word Processing.
Appendix B: Checklist for Microcomputer Consumables.
Appendix C: Sources of Advice.
Appendix D: Checklist for Computer Contracts.
Appendix E: VAT—Customs and Excise Requirements.
Appendix F: Financial Services.
Appendix G: Insurance Services.
Appendix H: Maintenance Services.
Appendix I: Microcomputer Prices.
Appendix J: Glossary of Terms.

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CONTENTS

The following contents listing has been expanded to include all sections and sub-sections as well as the chapters. This has been done to help the reader to find easily all relevant areas of interest in the Handbook.

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1 HOW TO BUY A MICROCOMPUTER

1.1 ROLE OF THE MICROCOMPUTER IN BUSINESS

1.1.1 Introduction: What You Need To Know

Chapter 1 of the Handbook describes, without unnecessary technical detail, how microcomputers are used and how to set about introducing a microsystem. It is aimed primarily at business and professional people who have no knowledge and experience of computers and who are looking for some guidance before considering the feasibility of installing a microcomputer, or before deciding on a proposal which has been presented to them. It also offers advice to those who have had unsatisfactory experience with computers in the past, and to those who feel a general need to improve their knowledge in an era when microcomputers are helping teach infants to spell.

Section 1.1 discusses the use of microcomputers in business and gives illustrations of some of the major applications. Section 1.2 gives a simple explanation of the various items of equipment and program elements which make up a computer installation and shows how one may set about acquiring this hardware and software. Section 1.3 looks at the computer after it has been installed and discusses the provision of maintenance services and after-sales support. Section 1.4 emphasises the importance of looking beyond initial requirements to anticipate and avoid any problems arising from the inevitable growth and change in business needs. In Section 1.5 the factors which are critical to the successful implementation of computer plans are examined; in particular, it looks at the nature and extent of staff participation in selection and installation processes. Section 1.6 is concerned with the crucial function of equipment and system demonstrations in purchase decisions and indicates the kind of questions the prudent purchaser should ask.

These sections are arranged in such a way that the reader seeking general information can acquire a reasonable understanding of how to buy a computer by following through each section in sequence. However, it is not necessary for those looking for help on particular topics to read through the whole of the narrative; each section is self-contained: for example, the reader having specific interest in questions of maintenance can go directly to the relevant section.

Chapter 1 is also intended to show what the prospective purchaser of a microcomputer does not need to know. Thus it seeks to assure the businessman that there is no necessity to become a computer expert to make sound decisions about computers or to run a computer system successfully.

In the following paragraphs, which discuss the role of the microcomputer in business, the principal aim is to provide food for thought; to open a window to the potential uses of microcomputers in a world which is changing rapidly under the influence of microelectronic technology. Microsystems are already well established in accounting and general business administration, and in handling complex calculations and other technical problems. Many other ways of using the technology are being found and this section, by giving some illustrations, seeks to expand the horizons of the potential microcomputer user.

Some words of caution are added. However exciting the technology, there is no point in having a computer unless it does provide value for money.

1.1.2 The Importance of Microcomputers for Business Users

First of all it needs to be said that there is no difference in principle between the characteristics of the microcomputer and of the larger minicomputer or mainframe computer. The distinctions are only approximate divisions by size and, to some extent, use. All types of computer have essentially the same kinds of electronic circuitry and comprise similar elements of programming, storage, input, and output. The differences between categories and models of computer are largely matters of facilities available to users, of data handling, processing, storage capacity and speed, and consequently, of cost.

The special importance of the microcomputer to business users has arisen through the lowering of the threshold at which computer techniques become viable, brought about by advances in computer technology which have made it possible to produce extremely powerful machines at low cost. This process of rapid development has reached the point where we can say that there is very little business activity which would not justify the use of a computer.

When computers first came into general use for business, in the early 1960s, the types of machine which were then available were only capable of economic operation by organisations having large volumes of data to process or complex calculations to resolve. In contrast, the computer can now offer economic facilities for a wide range of tasks to every size of organisation including the 'one man' firm. A business microcomputer, with all its software, can still cost so very much less than the investment in employing one person that it may be used effectively as a tool just to support an individual task as well as in the wider context of processing and storage of information in business systems.

Although much of the market for microcomputers

is among the small businesses which may not have been able to justify using any kind of computer previously, the scope is also very large among major business undertakings where microcomputers can fulfil roles complementary or subsidiary to bigger systems, operating autonomously in appropriate areas or linked to other systems in communications and processing networks.

What uses can be found for the microcomputer in business? It can be used as a calculating machine, as an information store, as an automatic monitoring or control device, or as a data processing machine to handle routine business transactions. It might be used in any one or a combination of these roles; a single microcomputer might be dedicated entirely to one task or its capacity shared among a number of tasks, or among a number of users. It might be used as a personal support to an individual or it might be an integral part of a larger system involving a group of people carrying out associated tasks.

1.1.3 Types and Uses of Microcomputers

As indicated in the previous section, the term 'microcomputer' is not very meaningful as a descriptive heading for the smallest computers because all modern computers are essentially composed of microcomputers. To confuse the issue further, a machine which is sold as a microcomputer may itself contain several computers. There have been moves recently to establish the term 'personal computer' as a generic heading for these systems. This term probably owes something to the influence of IBM who, because of their dominance of the computer industry, have been responsible for much of the computer jargon. 'Personal computer' does describe aptly many of the uses of microcomputers and also the way in which they are used by the operator. An alternative term 'desk top' has also some relevance in that many of the microcomputers are machines which sit on a desk top in the same way as would a typewriter.

However, although 'personal computer' may be appropriate for the system used exclusively by one person, a microcomputer can be connected to other input/output points and to other computers to expand capacity and range of tasks beyond that of an individual. The autonomous, purely personal microcomputer is often described as a stand alone or single-user system; in contrast, where a number of people are using the same computer through separate, but linked terminals the description multi-user is applied.

It is, of course, possible for a computer to be used for more than one task; in a microcomputer with appropriate facilities, several programs for different applications may be running side by side. A microcomputer system where several people were using one computer for a number of different tasks would be described as a multi-user and multi-task system.

For simple or small scale applications, a business microcomputer system might comprise an autonomous, stand alone processor with keyboard for entry of original data, screen for monitoring stored information and printer for hard copy output; for complex tasks a system might be used which has facilities for adding input and output devices, extra storage capacity and telecommunication links to other computer facilities and systems.

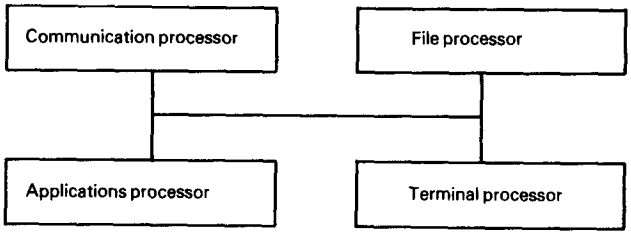

Fig. 1 'A microcomputer may itself contain several computers'

1.1.4 Accounting Systems

Some of the most popular applications to date for microcomputers in business have been for routine accounting and other data processing tasks which are to be found, with appropriate variations, in any kind of business undertaking: the keeping of records of customers' accounts, of stocks of goods or materials for sale or use within the business, and of records of suppliers and expenses in purchasing and nominal accounts.

The microcomputer offers the attractions of traditional manual bookkeeping or electrical accounting machine systems which permitted immediate access to ledger accounts, without any of the disadvantages of having to divide each accounting system into a number of separate processes linked by forms and intermediate records. In a typical microcomputer sales accounting system, for example, records would be kept which would provide ready access to information about credit customers, their orders, payment history and balances. This data could be sorted and edited as required to produce invoices and statements, listing of ledger balances, and periodic sales analyses and account totals. In addition to this routine record keeping, a computer accounting system would offer a user the ability to obtain, with minimal effort, other information valuable for management of the business; information which, from manual systems, is likely to be costly and tedious to produce. Thus, a customer file could be used to provide account status information for credit control purposes, to highlight abnormal occurrences, to anticipate possible bad debt risks, and to provide analyses and projections in suitable form to assist in cash management and sales planning.

1.1.5 Financial Planning

Microcomputer systems for financial planning and general management of business resources also have proved to be extremely attractive to the small business which, in its own way, has just as much need as has the large business for management tools to help it to a better understanding of its activities and to promote better business decisions. In its financial management, any business needs not only to have up-to-date historical information about cash flow and about the profitability of its activities, but also to project this information forward to show a picture of future cash requirements and future profitability.

Microcomputers can provide program facilities for

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