Peripheral	—Interrupts from peripheral controller via the store access controller.
Virtual store	—Access requested to a legitimate page or segment which is not in virtual store.
Timer	—Interval timer.
Program error	—Interrupt due to illegal use of instructions or data.
System call	—Use of a system call descriptor in CALL or EXIT instruction.
OUT	—A software generated interrupt.
Extracode	—To allow the execution of selected instructions by software.
Event pending	—
Instruction counter	—Interrupt when IC goes negative.

Book reviews

Introduction to Communication Command and Control Systems, by D. J. Morris, 1977; 350 pages. (*Pergamon Press*, £15·00)

This book brings together the many aspects of communication command and control in an orderly and authoritative manner. In an easily understood and pleasing style the author introduces his subject and gives the reader an overview of system design concepts. We are soon aware that people are an important part of any communication system whether they are the sponsors, the designers or those responsible for the day-to-day running of the network. It is pleasing that this is made clear early in the book and as the author states 'the system should be introduced in stages and not with a sudden revolutionary change', which has relevance to all parties concerned with the implementation.

There are particularly good chapters on sensor base data collection and data transmission theory, the former perhaps better understood as telemetry. However, these are just part of a large subject and the author takes us by stages through the advantages and disadvantages of various multiplexor and concentrator systems until we understand the principle of operation.

We are given an introduction to switching centres and the facilities they can provide and communications network heirarchy which provides much food for thought, but needs to be taken slowly.

There is an interesting chapter on loop transmission, a more recent approach to the design of digital data networks; some of the problems posed and the potential for increasing the data content of transmissions. This is followed by a description of computers in command and control systems and, quite apart from the communications aspects, this is a useful study of computer systems.

Of interest to management (and perhaps the focal point of the book) will be the chapter on distributed computer resources, describing how computer power, peripheral equipment, files and libraries might be shared by many sites in a network; the centralised and distributive techniques and some of the social and political problems to be overcome.

There is a great deal more including the ever-present subjects of secrecy, security and privacy, in fact much to interest a wider readership than the prospective system designers and management personnel to whom this book is directed.

The book is well organised and amply provided with clear diagrams, references and indexes and should prove to be a useful work of reference.

In conclusion it can be observed that we are told not only the benefits of communication command and control, but are frequently warned of the pitfalls along the path to successful implementation, and for this we should be grateful.

R. W. Billett (Dunstable)

Queueing Systems, Volume 2: Computer Applications, by L. Kleinrock, 1976; 549 pages. (*Wiley-Interscience*, £18·00)

The second volume of Professor Kleinrock's text on queueing systems far exceeds the image formed in this reviewer's mind's eye by the spectacle of Volume 1. In essence it presents a range of resource allocation and sharing problems, the meat of operational research, arising from the operation and design of computer systems; problems, moreover, which fall within the context of a queueing theoretic approach for their formulation if not solution. The operational research student and practitioner, for whom the text is eminently suitable, will achieve a double benefit: he will feel on the one hand the challenge of problem areas, in a field with which he is undoubtedly nominally familiar, bristling with thorny unsolved problems; on the other he will obtain an improved understanding (in some cases an initial understanding) of the difficulties of computer system design not least in receiving initiation into the mysteries of that vocabulary and symbolism which makes communication between computer specialists and other mortals sometimes an impossibility. For the computer scientist and systems analyst too the book has much to offer. His problems are expounded in the possibly unfamiliar language of mathematics and he may be put into the position of realising for the first time to whom he should turn for first discussion and consultation in the case of certain difficulties which he may have felt intractable.

This volume has been written in such a way as to stand alone. It is of course expensive enough, but one does not have to buy Volume 1 as well. On the other hand an owner of Volume 1 must feel ownership of Volume 2 to be an almost irresistible allure. Basic results in queueing theory are collected summarily in Chapter 1. Chapter 2, of particular interest independently of computing matters, deals with some approximate methods, in particular with diffusion models and the heavy traffic situation. Chapter 3, concerned with aspects of priority systems, to which the author has made notable original contributions, completes the introduction to the major two thirds of the book. This contains a further three chapters; Chapter 4 deals with time sharing and multiaccess; Chapter 5 deals with communication, network analysis and design; Chapter 6 with measurement, flow and traps. Those concerned with the provision of computing resources, and faced with the mounting costs of communication, will find here not only an absorbing account of technology but material for profound reflection.

In dealing at such a level with computer networks the book is probably unique and derives much from the experience, enthusiasm and involvement of the author. This is enlightening, contagious and irresistible. This reviewer imparts a high commendation.

Brian Conolly (London)