

indicating that the driver should either phone or attend the control point where *ad hoc* services are distributed.

(g) Schedules booked on by the program are fitted to the work load, and thus the duty pattern will vary from run to run with the pattern of services submitted. It is a requirement that the patterns of duty attendance for each garage should be identical from day to day, and therefore an alternative procedure is available which provides for fixing an attendance pattern for a garage regardless of the incidence of demand.

(h) It is, perhaps, worth mentioning that the scheduling program takes approximately 15 minutes to allocate a day's services to duty schedules.

(3) Preparation of duty schedules and statistical analyses

(a) The results file from the scheduling process is sorted so that schedule components are in time order within each schedule and each schedule in schedule number order within garage. This file is then used as input to a program which edits the results into the correct format for printing and also compiles comprehensive statistical data about the results of the run.

(b) Full operational schedules are printed on hectographic stationery ready for duplication, and management schedules which contain additional details can be printed if required.

(c) Information about the time, place and duration of idle time is printed in a suitable form to assist the staff of the control point to cover *ad hoc* requirements.

(d) The print output from the suite is governed by control data submitted to the print program and only those details required need be printed.

(e) Operation of the Mark II system also gives management a powerful research tool for investigating new concepts in scheduling. The flexibility and sophistication of the suites enables accurate costing of new schemes to be

calculated at very short notice and the comprehensive statistical data enables thorough control of the fleet to be exercised by management.

Results

During the development of the Mark I system, the London Postal Region asked for letter and parcel services to be separately scheduled to prevent delays in the parcel services reacting on the letter services, and the program was modified accordingly. The segregation of the services, as might be expected, reduced the savings which would have been achieved with integrated services but management were satisfied that the operational advantages, which could never have been achieved under the manual system, adequately compensated the loss.

At the time of writing, negotiations are in train with the Union representing the drivers to introduce the Mark I system. It can be said with confidence that the savings resulting from the system, despite the segregation of the letter and parcel services, have made the exercise worth while.

The Mark II system will not markedly increase the direct savings, unless its greater flexibility is used to develop a partial integration of letter and parcel services at operationally opportune periods of each day. But the indirect savings resulting from improved management data and the facility for operational research, although not estimable at present, will be considerable.

The future

The Mark II system will be further developed to produce the Christmas pressure schedules which have always been a burden on management and consideration will be given to extending the system to a wider area of London than hitherto and to scheduling similar services in the larger provincial cities.

Book Review

Principles of Automated Information Retrieval, by William F. Williams, 1966; 439 pages. (Elmhurst, Illinois: *The Business Press*, \$15.00)

The author of this work sets out to "eradicate an imaginary and rapidly disappearing boundary line between data processing systems and information retrieval systems". Whether he succeeds or not is irrelevant because here is an invaluable compendium of information on both the hardware applicable to retrieval systems and the software of documentation. The problems of the intellectual analysis of information are probably underplayed, with an implication that such problems are diminished by the availability of modern data processing equipment. Nevertheless those parts of the book which deal with information analysis for machine manipulation are a good introduction to the subject for the machine man unfamiliar with this area. The chapters on abstracting, indexing and vocabulary control are particularly useful in this respect, and the treatment of classification is more realistic and more

broadly based than the rather too-narrow view which tends to be held by many classificationists.

The data-processing specialist will probably find much of the information on machines superfluous, but there is a great deal of useful description of the equipment designed specifically for information retrieval purposes, particularly the simpler types, with which he may not be familiar. For the documentation specialist the treatment of this aspect of the subject is very useful indeed, particularly as the equipment is dealt with in a context with which he is familiar.

The book contains a useful glossary and a sampling of the definitions produces little with which one could quarrel. The bibliography, though quite substantial, is rather more suspect, for though no doubt it adequately supports the text it seems to be somewhat unbalanced. British writers are conspicuous by their absence, and it is difficult to understand for instance the exclusion of the works of B. C. Vickery.

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