

equipment and stationery. Reliability of existing equipment was thought to be suspect, more particularly by those who could foresee no use for this equipment within their own organization.

Over 80% of the replies considered that mark sensing was a useful adjunct to Character Recognition, although less than 10% thought it was a complete solution to their problem. Just over 60% showed an interest in equipment for reading constrained or stylized handwriting.

There appears to be considerable resistance to the use of E13B because of its poor legibility, and the unfortunate impact the characters have upon the public. As far as the characters appear on cheques the public regard them as a part of the design and of no significance. But any applications where the public would be expected to read these characters would be fraught with difficulties.

CMC7, however, now coming into use on the Continent, has a more readable font. In addition, this has been produced on a line-printer, although only with the use of expensive ribbons and with the printer running at lower speeds.

Replies generally favoured optical Character Recognition, on account of visual legibility, the facility to produce machine-readable carbon copies, and perhaps eventually on cost grounds.

There was, however, support for the use of magnetizable ink characters for purposes of security.

Summary

The replies suggest that the principal requirements of a Character Recognition system are:

- (i) Range of characters not restricted to numeric.
- (ii) Characters acceptable to the eye.
- (iii) Characters easily produced.
- (iv) Reading speed of data at least comparable to that of card readers.
- (v) Accuracy at least as good as that of card readers.
- (vi) Cost to make the whole operation economic, printing and stationery, as well as equipment costs, being taken into account.

Some of these requirements can already be met with existing techniques and machines, but, in general, the machines are not completely versatile and their use so far has been confined to business applications requiring only a limited amount of coded information to be read

from fixed fields on documents, without complex editing.

Data conversion based on normal punched-card or paper-tape methods can often be a major element in the running costs of an ADP system, and Character Recognition will sometimes enable these costs to be reduced substantially. The cost of keying-in characters can be—for an average case—of the order of five times that of reading by Character Recognition equipment.

Where suitable conditions apply and a standard format for reporting information can be devised, use can be made of mark-scanning or page-reading techniques, the documentation for which is often prepared as quickly as normal typewritten or written documents, and which allow accurate reading at reasonable speeds.

However, for a long time to come there seems to be considerable scope for the development of Character Recognition equipment as such. The Computer Age is with us, but original information must still be expensively spoon-fed to the machine and cannot always be derived in normal computer-input form as a by-product of another operation. Means of remote on-line communication with computers, with full operator correction and editing facilities, will be appropriate in some circumstances, and will doubtless be developed further; but there will still be large areas of work where perhaps a cheap form of electric typewriter—without a data-capturing attachment—will provide the most economic method of preparing basic information for computer processing. Such information will have to be read by rather more complex machines than exist today, especially if the advantage of proportionally-spaced and easily-read fonts are also to be retained for visual reading purposes.

Nevertheless, the Character-Recognition equipment available offers many possibilities and, if some features fall short of the ideal, ingenuity can often triumph. After all, if Character Recognition is to move forward, the co-operation of users is essential in identifying its virtues as well as shortcomings. Manufacturers, on the other hand, must look at the market and develop equipment which more closely meets the requirements of users. There must be a better appreciation of what is required and what might be done perhaps to a greater extent than this report reveals. The ultimate development and standardization of equipment and its uses, however, will take time and money, but will be influenced by a realistic approach by both sides, and the willingness to use existing apparatus and its adaptations.

Editorial Board—Corrigendum

Through a misunderstanding between the printers and the several honorary officers who deal with proof checking and make-up of this *Journal* in parts, usually at different dates, an earlier forme was incorrectly used for recent listings of the Editorial Board; the names of the following members were thus inadvertently omitted:

J. A. Goldsmith	H. P. Voysey
J. C. P. Miller	P. H. Walker

The honorary editors regret the error and acknowledge the continued assistance of these gentlemen and other members of the Board in the stimulation and refereeing of submitted papers. A full list of the Editorial Board appears on page 146 of this issue.