"THAT OLD COMMON ARBITRATOR, TIME"

The Psychology of Time

By Prof. Paul Fraisse. Translated by Jennifer Leith. Pp. vi + 343. (London: Eyre and Spottiswoode (Publishers), Ltd., 1964.) 30s. net.

THE author of this painstaking work on an important subject is professor of experimental psychology at the Sorbonne. He has contributed 27 papers on various aspects of time in the bibliography of this work, which is a valuable source book. Its very numerous references, some 550, have a French and German slant, and even though supposedly revised recently, several important works (for example, Bünning, Gooddy, Harker, Whitrow, and the 1960 symposia at Warm Springs and at Würzburg) are missing. The translation by Jennifer Leith seems too literal and American ("time-structured behaviors") for the subtlety of the ideas of the author.

The Psychology of Time is divided into three parts, each prefaced by a summary of the ideas of the next few chapters. The sections are on "Conditioning to Time", "Perception of Time" and "Control over Time". Prof. Fraisse believes that "under the influence of periodic changes, the organism becomes a physiological clock which provides cues for temporal orientation both in animals and man". It is this ability to reproduce regular sequences that permits us to appreciate durations. It is perhaps in this way that animals adapt to change through "temporally organised behaviour". The section on time perception reviews a great deal of work on the perception of duration, which is summed up as "a function of our attitude". The final section, on the "Control over Time", some 130 pages long, assesses the advantages of man over other animals in being able to consider changes outside the immediate present; though how animals achieve awareness of any form of time is uncertain. We are told: "Animals do not, however, refer explicitly to past events in their behaviour; nor do they have a purpose". We are all animals, and we ourselves may not know about the purposes except of our own species, since the concept of purpose can be discussed only in human language.

The author states: "We live in the present". His theme is to show man's superiority in being able to 'control' past and future time. He also states that periods in the recent past seem longer than similar periods years ago, a statement in great contrast with the almost universal feeling that the times (and spaces) of childhood were so much larger, when later reviewed, than the adult now remembers them to have been. We must disagree with the author here, for we live in the future. Every thought and action is a scheme for the future based on the data of memory, poised on the ever-vanishing springboard of the present. If we did live in the present, both past and future, immediate or remote, would always escape us, memory would serve no purpose, and prediction, our main advantage over other animals, would never be achieved. There could be no perception, no action, no sequence, no language, no process of living. The sign of life is, in Goldstein's fine phrase, an "attitude towards the possible". The present is an extrusion, even an excretion, of nervous activity; and we use it only to check our position on the chart of our world-lines.

If this book is lacking in lucidity and perhaps in clear aim, it may be that the author has attempted too formidable a task, in a field which is only now even beginning to be isolated and defined. He makes us aware of a new realm for scientific exploration, where the thinker and investigator must possess exceptional qualifications in several, at present separated, branches of science. To be successful in that synthesis of ideas expressed by the word 'time', the broad scientific education must be enhanced by an almost superhuman intelligence and technique. Present-day education, with its wasteful

separation into separate streams of sciences and arts, trains the thinker to suppose that precision of meaning and clarity of expression in understandable language are too trivial for the experimentalist to learn. Thus literary expression may falsely seem effete, while private scientific languages prevent the intrusion of the 'simple' man, who is our chief study, into the deliberate abstruseness of scientific study. If we are to advance into the study of the various aspects of human behaviour which are subsumed under the code-word, the algebraic symbol, 'time', we must have a method of defining our objects and explaining our methods of reaching them. 'Time' is of the common man, and must always be studied in direct relation to his form and to his language. W. GOODDY

DOCUMENTATION

Some Fundamentals of Information Retrieval

By John R. Sharp. Pp. 224. (London: Andre Deutsch, Ltd., 1965.) 35s. net.

THIS book, by a librarian, is chiefly concerned with the ways in which documents can be classified or indexed so that they may be stored. This, of course, is merely the reverse of the process by which they may be recovered for consultation. It does not deal at all with storage of fact or with deductions from stored facts, so that fashionable glances at symbolic logic are not very relevant.

Perhaps the chief value of *Some Fundamentals of Information Retrieval* to working scientists is that it serves a warning of what may be in store for them unless they take a more active interest in what the librarians are proposing on their behalf. For one thing, a nasty jargon is being developed and the book is fairly typical of the sort of prose that may be expected now that librarians have moved into the computer belt. A reviewer in *The Times Literary Supplement* has characterized Mr. Sharp's style as 'rebarbative'. Having consulted the dictionary, I would agree with the adjective, which is defined as: crabbed, unattractive, repellent. Librarians are seldom accorded the importance or the salary that the essential nature of their work in a scientific organization warrants; possibly they are now having their revenge.

It is true that the classification and indexing of documents is the most important step if the information they contain is to be processed by computer so that it can be recovered. The book certainly gives a good idea of the difficulties involved in this process. Mr. Sharp, who was senior indexer on the Association of Scientific Libraries and Information Bureaux (ASLIB) Cranfield Research Project, has obviously given a good deal of thought to the matter, and his own particular system, Selective Listing in Combination (it has one of those chi-ohi abbreviations: SLIC), depends on the indexer selecting five key words from the title or content of the paper and feeding these into the computer in all possible combinations in alphabetical order. This system puts at a disadvantage those words that come late in the alphabet.

As for retrieval, there is only very cursory discussion of the various machine procedures, and one of the most fundamental aspects of the matter is not discussed at all—this is a question of cost in time, labour and machinery. The book makes it clear that the indexing job is a skilled one and the final chapter on auto-indexing and auto-abstracting suggests that it would be a long time before the machine can cope with this task. As editors are often lax about ensuring fully informative titles to papers, the indexer may well have to read a paper to decide what information it contains and in what form it should be stored. Obviously a staff of indexers must be enormous to cope with all relevant scientific papers in any particular field—and is the exercise really worth while? To industrial and commercial scientists the answer may well be yes, and it is to these that Mr. Sharp's suggestions may be