Mindstorms by Seymour Papert, Harvester Press, 1980, £4.95
ISBN 0-71080-472-5

We begin an occasional series of book reviews by looking at two volumes that examine computing's inner life. Seymour Papert's book reveals how an educational philosophy, and the experience of watching children learn, led to the creation of a new computer language; Tracy Kidder describes the 'strange, half-mad beauty' of computers and the brilliant minds who invented one.

MINDSTORMS

'The Gears Of My Childhood' is Seymour Papert's title for the foreword to *Mindstorms*, in which he explains his book, his ideas and himself. His childhood fascination with the gear-trains in a construction set, and how he discovered the joys of

'A new world of personal computing is about to come into being . . . inseparable from the story of the people who will make it.'

learning through them is the story about which his swirling monologue is declaimed. He fell in love with the gears as a symbol of childhood's promise, and remains infatuated with their modern incarnation — the personal computer in the playroom.

Papert's is a dominating style and personality, but the book is full of the name and the thoughts of Jean Piaget (1896-1980) the most influential educational psychologist of modern times. LOGO, the computer language developed and described

'I use the image of a Mathland — where mathematics would become a natural vocabulary — to develop my idea that the computer presence could bring the humanistic and mathematical/scientific cultures together.'

in the course of this book, is really Papert's *hommage au maitre* — an attempt to make a concrete expression of Piaget's ideas about children as 'the active builders of their own intellectual structures'. In this respect, the book isn't really about LOGO or Piaget or even Papert; its real subject is how computers can create learning spaces — 'microworlds' — in which children can learn to think and reason as happily and as richly as Papert did with his allegorical gears.

Like Piaget and his writings, Papert and LOGO have been lionised by evangelists, and then criticised by revisionists, in the space of only a few years. Piaget's ideas about the different stages of child development have been questioned for their apparent determinism; while LOGO itself is now thought by some to be useful only for teaching geometry and programming, rather than being hailed as the 'philosopher's stone'.

The title, *Mindstorms*, describes and proclaims the book. Papert writes as, no doubt, he thinks — in a marvellously stimulating mixture of cool academic analysis and white-hot mad professorship.

The Soul Of A New Machine by Tracy Kidder, Penguin, 1982, £1.95, ISBN 0-163-11433-X

THE SOUL OF A NEW MACHINE

This is the microworld from the other side of the playpen bars — Piaget's children grown up and working in computers, and observed with puzzled fascination by reporter Tracy Kidder. This is the inside story of the development of Data General's Eagle minicomputer, an undertaking completed from scratch in one astonishing year. The book won the Pulitzer prize for non-fiction in 1982, and is the subject of a film. It has eerie psychological overtones for the Piagetians, from the slightly robot-like faces of the young computer scientists on the book's cover, through the Oedipal echoes of the young computer company's efforts to outdo its giant parent, DEC, to the Svengali figure of West, the project engineer and team-leader. This

'Mechanically, monotonously, the computer . . . was telling an old familiar story — the international, materialistic fairy tale come true.'

is computing's *Moby Dick* — a compelling story, simply told, of strong personalities turning commercial pursuits into personal quests.

The book is technically a splendid read, with graphic descriptions of every stage in the design and building of the 32-bit minicomputer. Kidder was able to observe much of the project's development at first hand, and he retells the explanations for the decisions and actions taken in a lean crystal-clear prose.

The book is fundamentally about the brilliant and somewhat insular existence of the technicians whose microworld is the operating systems that they invent. Kidder is equally fascinated by their personal reactions to the developing machine, by the group's tangled subculture of loyalty, pressure

'It was a different game now. Clearly, the machine no longer belonged to its makers.'

and manipulation, and by the Byzantine company politics that determine the machine's schedule and design. The lightning-rod to all this energy is Tom West, who is pictured in the book's prologue as, literally, 'A Good Man In A Storm'. His dedicated team of young engineers work all night, inspired in part by his example, yet he cynically denies them a crucial test-machine because 'unpaid overtime is cheaper than new plant.' West might be Captain Ahab or he might be Captain America — Tracy Kidder doesn't seem to have made up his mind. But his book has thrown light on a few of the remarkable men behind the machines.