Marketing Questionnaire "A Discipline of Programming."

1.   Title: A Discipline of Programming.

2.   Author: Edsger W.Dijkstra (Ph.D., Amsterdam), Burroughs Research
                 Fellow and Professor Extraordinarius at the Technological
                 University Eindhoven, the Netherlands.

3.   About the book: Presents programming for automatic computers as a
                 scientific discipline. Stresses the formal aspects of cor-
                 rectness proving and program derivation as well as the in-
                 formal aspects of problem solving.

4.   Outstanding features:

      1.   It introduces "predicate transformers" as a means for defining
                 the semantics of programming langauges.

      2.   About alternative and repetitive constructs theorems are
                 derived which are of actual assistance in the act of program
                 composition.

      3.   It stresses total correctness over partial correctness.

      4.   The treatment is not restricted to fully deterministic
                 programming languages.

      5.   In a series of worked-out examples great attention is given
                 to the intertwined processes pf problem solving and program
                 development; for a longer program that solves a more difficult
                 problem, the true design history is fully recorded.

      6.   It uses a sober but well-chosen notation technique for programs
                 and the reader, whose attention is no longer side-tracked by
                 a wealth of fancy programming language features, can now
                 concentrate upon the more fundamental aspects of the programming
                 task.

5.   Teaching and learning aids in the book:
                 The book does not contain the usual type of confusing diagrams
                 (it contains, as a metter of fact, hardly any illustrations).

6.   Supplementary teaching material: None.

7.   Table of contents: Preface. Executional abstraction. The role of pro-
                 gramming languages. States and their characterization. The
                 characterization of semantics. The semantic characterization
                 of a programming language. Two theorems. On the design of
                 properpy terminating constructs. Euclid's algorithm revisited.
                 The formal treatment of some small examples. On non-determinacy

being bounded. An essay on the notion: "The scope of variables".
Array variables. The Linear Search Theorem. The problem of
The Next Permutation. The problem of The Dutch National Flag.
Updating a sequential file. Merging problems revisited. An
excercise attributed to R.W.Hamming. The pattern matching
problem. Writing a number as the sum of two squares. The
problem of the smallest prime factor of a large number. The
problem of the most isolated villages. The problem of the
shortest subspanning tree. Rem's algorithm for the recording
of equivalence classes. The problem of the convex hull in
three dimensions. Finding the maximal strong components in
a directed graph. On manuals and implementations. In retro
spect.

8.   Competing books: Richard Conway, David Gries, "An Introduction to
Programming" (Winthrop Publishers Inc., 1973) paperback,
460 pp. $??,??. More than 220 pages are devoted to the descript
of the ideosyncrasies of the programming language of their
choice, leading to complicated treatment of simple problems,
compared to Dijkstra's simple treatment of complicated
problems.

Niklaus Wirth, "Systematic Programming: An Introduction"
(Prentice-Hall, 1973), hard cover, 167 pp. $??,??. Only one
sixth (25 pp) of this book deals explicitly with the act of
programming, and much of its space is devoted to truly intro-
ductory material, in contrast to Dijkstra's more advanced
treatment, that does not deal with things such as number
systems, the ASCII Character Code, etc., which can be found
in any other book on computers and programming.