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Sections from a BUSINESS WEEK article, "The Software Gap" appear on the following pages. The article was illustrated by photos taken in CUC's New York Office at 655 Madison Avenue. This excerpt was printed with special permission of BUSINESS WEEK, Copyright 1966 McGraw-Hill, Inc.
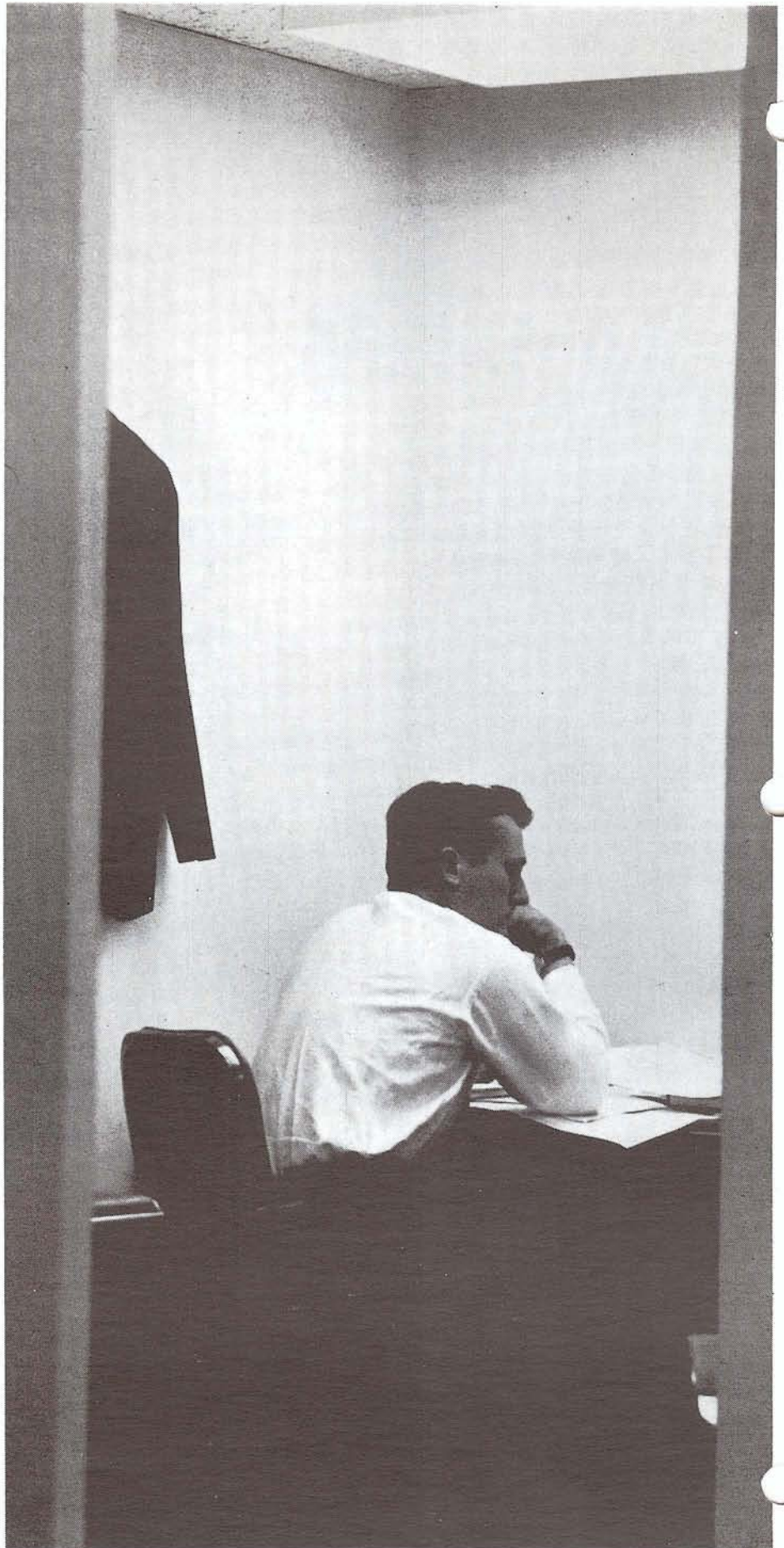

Programmer Ray McCraw of Computer Usage Co. (right) gets task . . .

. . . discusses it with rest of staff . . .

. . . consults company library on new techniques, computer specifications.

Lonely concentration is backbone of programmer's job. Complexities of modern computer demand precisely thought-out programs, carefully stated logic.

Software gap– a growing crisis for computers

Shortage of programmers—and the fruits of their solitary art—is stunting growth of computer use and costing industry hard cash

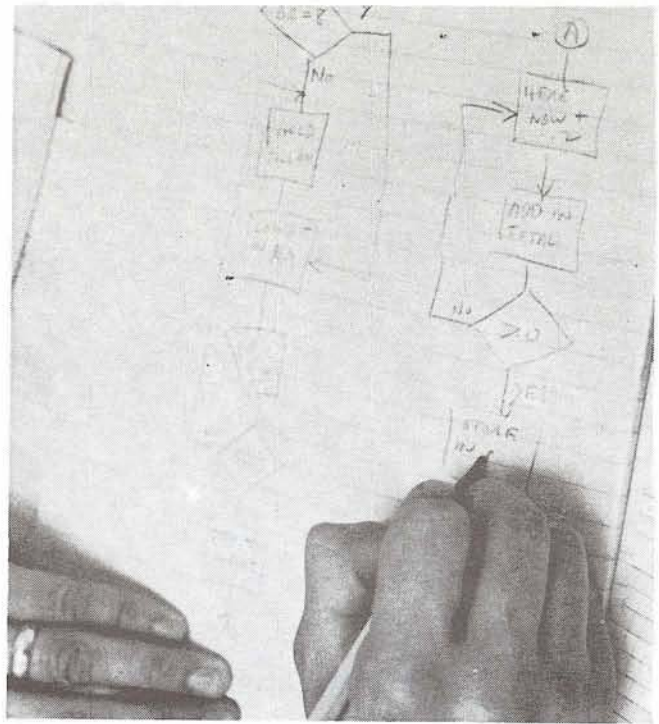**Flow-chart** shows the program steps computer will perform.

The computer, man's most complex industrial product, can be cranked out in quantity by mass-production techniques. But it is powerless to solve problems, sort data, or store information without instructions.

The process of writing instructions—or programs—is a new human intellectual art, not a mechanical or electronic skill. And this factor is setting limits on the usefulness of the computer far below those imposed by electronic technology.

"To understand the software problem you have to understand the programmer and programming," says Carl H. Reynolds, president of Computer Usage Development Corp., and formerly head of programming at International Business Machines Corp. "This is difficult for the outsider; it's an intellectual activity unlike any other kind of manufacturing." Typically, he says, businessmen fail to grasp the significance of programming or anticipate its cost. Even the computer makers failed to anticipate the cost and time needed to develop complicated systems programs that control the computer's memory and peripheral equipment.

Special type. Programming is a young profession, born only a dozen years ago when computer makers first began to turn the fuzzy outlines of business problems into the precise electronic language of the machine. Since then, the number, power, and widespread application of computers has far outstripped the supply of programmers. Delays and extra costs have been the price to both users and computer makers.

To top it off, the computer has gotten so complex it is demanding

Debugging on software company's own computer works out flaws, misstatements in program, so it will perform jobs client wants when run on his computer.

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