SECONDARY SCHOOLS AND COMPUTING

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Pioneering efforts in teaching computing at the high school level started in 1960. By the end of 1961, courses (mainly in programming, coding, and answer-getting) were becoming widespread, and a few secondary schools had acquired machines. By far the most successful efforts (both in quality and quantity) were those of Richard Andree at the University of Oklahoma and George Heller at Bethesda, Maryland. Each of these men are currently introducing the subject to some 300 high school students per year.

The movement into the high schools is almost exactly a decade behind the movement into the colleges. That latter movement was unplanned and haphazard, resulting in a strange mishmash of "computing" courses given in departments like Dairy Sciences, Astronomy, and Soil Physics, often by men who were more eager than knowledgeable.

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There are some 11,000 high schools in this country with a student population of over 1,000. Under certain assumptions, the introduction of computing technology and the computers themselves into our secondary schools stands a good chance of being orderly.

1. Courses will be given under the sponsorship of the mathematics or science departments.

2. Suitable textbooks will be available. At least two texts, aimed at the high school level, are in progress.

3. The instructors will be trained. At the very least, the training of the high school teacher will probably be better than was even possible ten years ago for the college man. He will probably have some experience with an actual machine.

4. The machines used, though probably old, will be mass-produced, with a wealth of software behind them. In addition, each teacher can seek expert help, if needed, from local industry.

The real wave of such courses will probably not come until 1963 or later. It is already quite clear, however, that this is not a fad. For one thing, an introduction to computing might properly belong at the secondary school level—there seems to be a strong analogy to the learning of a foreign language and it has become obvious that the latter subject is best taught to the young. For another thing, since computing
skills cut across every discipline, we can reason that we owe it to the college-bound student to prepare him for intelligent use of this tool prior to his college freshman year.

What can we expect to happen in this area during 1962? Quantity will surely increase; more courses will be given at more schools (sheer bandwagon effects, if nothing else). But we can also expect to see much more intelligent effort devoted to the fundamental problems. Committees, both in the educational world and in computing circles, will be exploring pertinent questions:

1. What should we teach, and to whom? Do we want to furnish, say, the college-bound youngster with answer-getting ability (e.g., FORTRAN), or is he better served with overall knowledge of computers, basic programming, and an introduction to numerical analysis?

2. How shall we go about training the required teachers?

3. What steps are required to keep the process (the introduction of computing and computers to the high schools) orderly? We would want to avoid, it seems to me, a duplication of the events of a decade ago, wherein computers were all too often used as a money-making device, with training and research subservient, if non-existent.

4. How is the program best financed? Is government subsidy at any level necessary or desirable?
Since the movement is inevitable, these questions will be answered. Whether we arrive at answers we will be proud of in 1971 depends on the efforts applied in 1962.