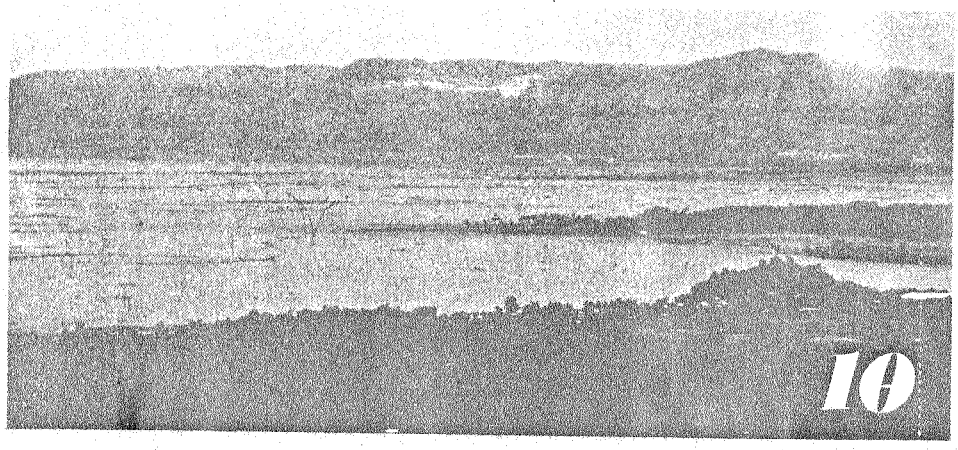

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ROQUE D. LAUDICO
Advertising Director

1007 Romualdez St., Manila
Tel. 50-76-56 to 59

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IN THIS ISSUE

The teaching machine

CECILIO sits cross-legged, intently watching an old teletypewriter machine as it pounds out an arithmetic problem: 379 + 112. Puzzling over the problem for a few moments, Cecilio cautiously pokes at the teletypewriter keys "481." "WRONG" fires back the machine, "TRY AGAIN."

Somewhat chagrined, Cecilio ponders the problem one more time, his face brightens and he confidently types "491." "CORRECT" responds the machine, and Cecilio proceeds to the next problem in his arithmetic lesson.

Though it sounds like something out of a science fiction movie, Cecilio actually has his own "teaching machine," or "computer assisted instruction" as it is known in educational circles. Cecilio is not unlike any of the thousands of other grade school students in Manila, with one exception—he is deaf; profoundly, pre-lingually deaf. But unlike other deaf students, Cecilio has been "mainstreamed" into a regular grade four class at Quezon City's Jose Abad Santos Memorial School (JASMS). Cecilio uses computer assisted instructional drill, of the type illustrated above, to help him "catch up" with his hearing classmates who have the benefit of both a better educational background and normal hearing.

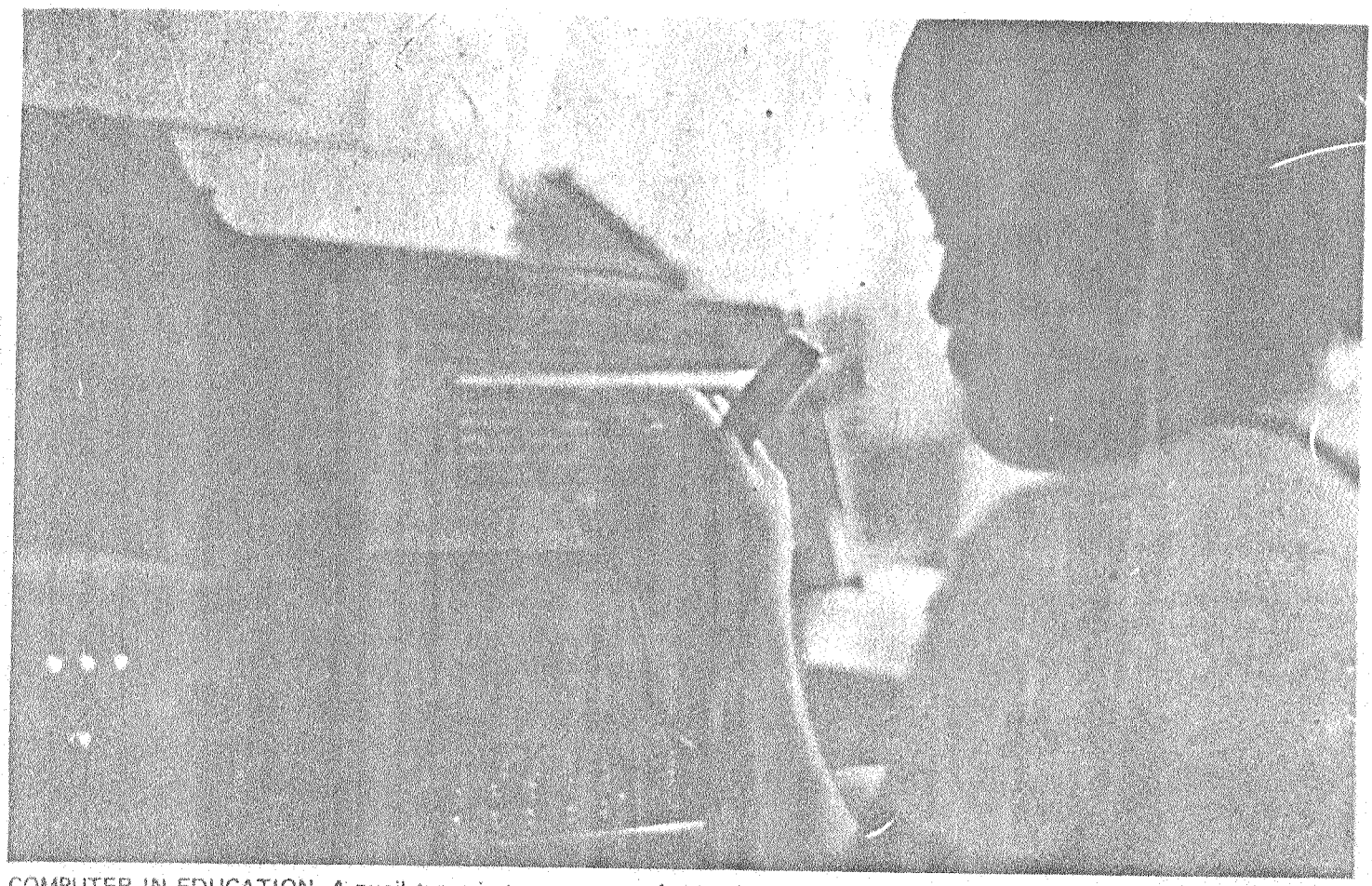
Cecilio is drilled in other areas besides arithmetic; in spelling, for example, the computer asks:

WHICH OF THESE WORDS IS SPELLED WRONG?

1) SLOWELY 2) MISSED 3) PASSED 4) KNOWN

The computer will give Cecilio two chances to determine that "SLOWELY" is misspelled. If Cecilio does not answer correctly after two trys, then the computer gives him the correct answer and proceeds to the next problem. A record is kept of Cecilio's progress so that the level of difficulty can be adjusted as Cecilio demonstrates progress.

Most significantly, for a child with Cecilio's handicap, is that the computer can be "programmed" to drill him in auditory training. Utilizing Cecilio's miniscule residual hearing, the computer asks Cecilio to listen to highly ampli-



COMPUTER IN EDUCATION. A pupil tunes in to a computer-fed teaching machine. It drills students on arithmetic, spelling and other subjects.

fied words, then to repeat those words, so that he can monitor his own voice, and then to identify how many syllables the words contain.

None of these applications of computer assisted instruction are unique, indeed to educational technologists abroad, they would be considered ridiculously trivial. What makes Cecilio's "teaching machine" significant to us in the Philippines is that it is the first of a new generation of electronic computers which are priced within the budget of many schools. An off-shoot of the recent revolution in "integrated circuit" technology, which brought about the ubiquitous pocket calculator, entire computers are now contained on miniture integrated circuit "chips." Cecilio's teaching machine consists of an ALTAIR 8800 computer, manufactured in the United States by MITS, Inc., Albuquerque, New Mexico (distributed locally by DATAPREP, Inc.) which was assembled locally as a kit, and an old teletypewriter machine which provides the "input" and "output" for the computer; this teletypewriter machine is exactly the same type used by local telegraph offices and available on the local surplus market. A cheap cassette tape-recorder contains the computer programs which can be changed in a few moments from a program for audiometric drill to a program for advanced mathematics for college students. The complete system as shown on these pages has a price tag of under P5000! A comparable system a few years ago would cost from ten to a hundred times that much. And a few years from now the price will be a fraction of what it is today!

Making computers "affordable" to educators in the Philippines will, someday, be viewed as perhaps the most significant event in the development of the country—for the prospects are vast and mind-boggling. In a country like ours, with a dearth of trained specialists in such vital fields as engineering, economics, medicine, etc. more and more of the burden of routine work can be assumed by machines of the type described here, thereby freeing people for creative tasks—tasks which machines can't assume. I foresee the day when not only does every barrio have a school-house, but every barrio school-house has a computer. And these teaching machines will be, like educational radio, and other technological advances, an integral part of education in the "new society"—helping to fill the gap between all segments of society.

Computers are not new to education in the Philippines. Over three years ago, with the foresighted cooperation of the School of Engineering, we began at De La Salle College an experimental "computer-oriented" mathematics class in which the computer was used as a learning tool for the first two years of engineering mathematics. — Carl A. Argila