In The Queue

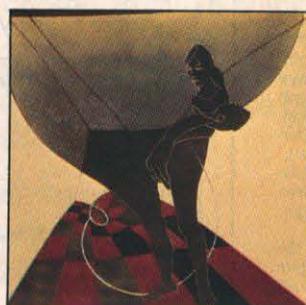**BYTE**

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messages collide, so this is not a minor consideration.

As a last point, it is very useful to provide a high-level time-out interval, say of about 30 seconds, so that if nothing happens during that length of time, everything gives up trying to communicate and goes back to the initial state. Otherwise, if for some reason things get stuck, it may be necessary to reset *all* the computers connected to the network to get them all back in synchronism on message numbers. If all the systems in your classroom full of microcomputers need to be reset whenever any one gets fouled up, this trick is a big help.

With these fixes, the Ultra-Low-Cost Network should fly. There are more elaborate schemes, but this is the simplest one that doesn't get intermittent errors.

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Software Considerations

I would like to comment on "Bridging the 10-Percent Gap" by Paul Brady (October 1981 BYTE, page 264). Mr. Brady points out that a wide range of reasonably priced hardware for small-business requirements is available. This is true and should encourage progressive small-business owners to move into the computer age. However, Mr. Brady demonstrated the classic "small-business mistake" in this statement: "We barely managed the funds required for the hardware. We simply cannot spend hundreds or thousands more on software."

Prospective computer owners need to realize that good software is a labor-intensive product and must be included in the budgeting for a computer system. Mr. Brady was lucky that his organization had people willing to donate their time to design, code, test, and document customized software. Not all small businesses have this advantage.

My advice to a small-business owner who needs a computer but lacks the time and inclination to become a computer expert is to hire a local computer professional or small firm to put together the best hardware and software combination for his application. I will be glad to mail free copies of my article, "The Small-Business Owner's Guide to Hiring a Computer Expert," to anyone who sends me an address and 40¢ in stamps.

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Altos Gamesmen

While Thomas Wadlow's "The Xerox Alto Computer" (see September 1981 BYTE, page 58) was most interesting, I'm sorry he didn't mention that Xerox also donated four Altos to the Computer Science Department at the University of Rochester in 1974. In fact, two of the games pictured in the article were written by graduate students there.

Trek is the work of Eugene Ball, who also wrote Death Star (in which you pilot your Alto down a trench in the Death Star and fire a torpedo at its only vulnerable spot to save the Federation). Pinball was written by Clint Parker. You can jiggle the "table" by holding down the space bar. Overly energetic application of the space bar results in a "tilt." Clint's version of Space Invaders remains one of the most popular Alto games. It keeps track of the top ten scores on the net. No still photograph can convey the fine graphic details of these programs.

Incidentally, the four original Altos at University of Rochester are named John, Paul, George, and Ringo (my own suggestion was Groucho, Harpo, Chico, and Zeppo).

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Exploring Zork's Origins

While praising so highly the efforts to fight software piracy undertaken by the vendors of "Zork, The Great Underground Empire," Bob Liddil in his review (February 1981 BYTE, page 262) perhaps forgot to mention that the release of Zork seems to be an act of software piracy itself. From the description given, I infer that Zork is just an implementation of the well-known PDP-11 game Dungeon, distributed by Digital Equipment Corp.'s user group, DECUS. All the situations, descriptions, treasures, reactions, etc. are nearly identical to those found in Dungeon: the white house with the sack