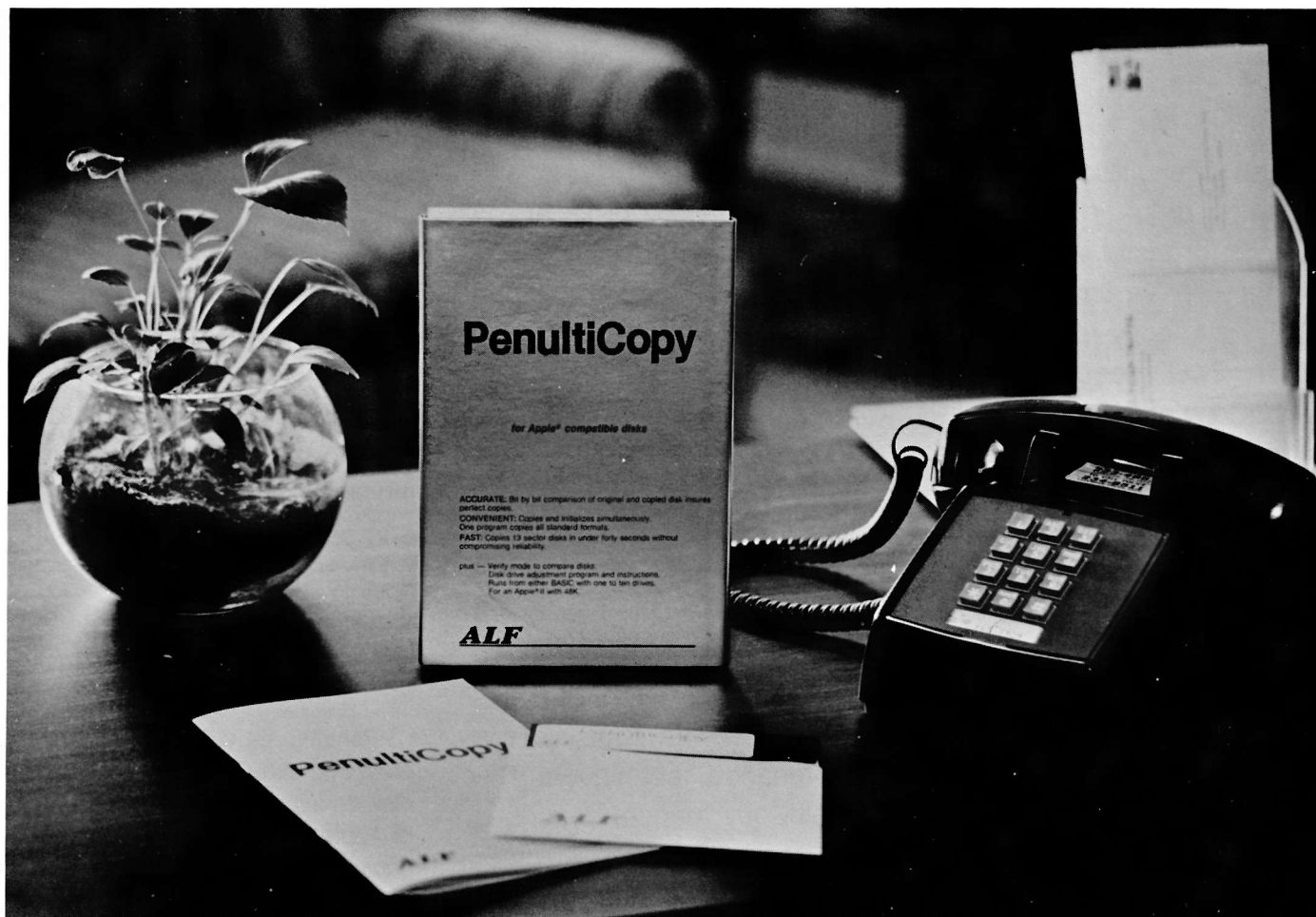# ALF

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PenultiCopy

PenultiCopy is an advanced program which copies Apple-compatible disks quickly and reliably. PenultiCopy is accurate. Its bit by bit comparison feature helps insure perfect copies time after time. Penulti-Copy is convenient: it copies and initializes simultaneously. And it copies all standard Apple® formats with a single program. PenultiCopy is fast. Starting from either a blank disk or a previously initialized disk, it can copy a 13-sector disk in under 40 seconds or a 16-sector disk in under 45 seconds. PenultiCopy features a verify mode which lets you quickly compare two disks to see if they're identical. Penulti-Copy includes maintenance instructions and a special drive adjustment program. Penulti-Copy features much of the technology used in ALF's high-speed disk copying systems and ALF's disk copying serv-ice. You can use PenultiCopy with complete confidence.

Accurate. After each track is written, it is read and com-pared bit by bit with the track read from the original disk. Comparing all data bytes and format bytes in this fashion is much more reliable than just computing the check bytes in each sector since that might indicate a faulty sector as "good". Additional checks are made to detect certain drive mechanism failures.

Convenient. Keyboard commands allow 13-sector (DOS 3.1, DOS 3.2, DOS 3.2.1, etc.) or 16-sector (DOS 3.3, Pascal, Fortran, CPM, etc.) disks to be copied from a single program. Commands also select normal copy mode or verify mode, change disk drive slot numbers, add or remove drives, and so forth. PenultiCopy "beeps" when

nearly finished and again (louder) when finished so you know when your copy is done even if you aren't sitting at the Apple.

Fast. PenultiCopy copies 13-sector disks in about 39 seconds (or faster with certain settings). We've timed Apple's DOS 3.2.1 copy program at about 146 seconds. Yet PenultiCopy's 39 seconds includes a full verify; Apple's program doesn't have a verify feature. PenultiCopy copies 16-sector disks in about 42 seconds (again, it's faster with certain settings). Apple's DOS 3.3 copy program took 88 seconds. PenultiCopy is designed to produce perfect copies at the fastest possible rate. To increase the speed beyond PenultiCopy's 39/42 seconds it would be necessary to reduce the reliability of the copies (by simplifying or eliminating the accuracy checks) or make use of additional hardware. (Systems using additional hardware for faster copying are available. Write for details.)

Verify. PenultiCopy features a "verify only" mode which compares two disks (the same way its copy mode checks a copied disk for accuracy). Verify is very useful in checking for interchangebility by switching the drives the original and copy disks are in after copying and then verifying. This assures you that the copy can be read in a drive other than the one that wrote it, and can help you find misaligned drives.

Maintenance. While copying hundreds of thousands of disks for customers of ALF's disk copying service, ALF has developed various drive maintenance techniques. The PenultiCopy manual describes how these techniques differ from the standard Shugart Associates techniques (Apple uses a modified Shugart disk drive). A program to operate the drive under the various conditions required for adjustment and maintenance is provided. Some maintenance procedures can be done without additional equipment; the more complex adjustments require items from Shugart and other electronic equipment. PenultiCopy requires that each disk drive's speed be adjusted if it is not already close enough to standard speed. This adjustment is easily made without any equipment other than a screwdriver. (Note: opening the drive to adjust speed may void Apple warranties.)

You'll find PenultiCopy ideal for all your Apple-format copying needs. It's fast, reliable, and easy to use. It is available through your local Apple dealer. The suggested list price is just **$34.95.**

PenultiCopy works on a 48K Apple II computer with one to ten Apple disk drives. ("Apple" is a trademark of Apple Computer Inc.) PenultiCopy copies only standard formats, it will not copy "protected" disks. 16-sector disks can be copied only on an Apple that can read 16-sector disks. Programs are supplied in assembly language or in Interger and Applesoft BASIC on a 13-sector (DOS 3.2.1) disk and may be moved to a DOS 3.3 disk using Apple's MUFFIN program. Write for information on ALF's disk copying service, and on hardware products for fast disk duplication.