EMEMBER the first Walkman? It has been almost a quarter-century since Sony's portable cassette player changed the way people listen to music on the go. Now another form of entertainment is getting the Walkman treatment. Palm-size portable video players are beginning to change where and how people watch movies, cartoons and music videos.

The gadgets, which play compressed video files on a small screen, are designed to be generally less expensive and more convenient than portable DVD players, which have been available for several years. None of these new-generation players, in fact, play DVD's. Instead, using advances in storage and compression technology, most store video on hard drives or memory cards, much the way digital audio players store music files.

"It's just what happened to music," said Ulrich Neumann, director of the Integrated Media Systems Center at the University of Southern California. "We went from cassette tape to CD's to MP3 on memory chips or tiny hard drives. What is happening now is that you have digital movie files going from DVD's down to probably small micro drives."

A few of these players are already in stores. At the high end, Archos has released AV320 Cinema to Go, a hard-drive-based player that costs $600. At the low end, the toy manufacturer Hasbro unveiled a hand-held player for children last week called VideoNow. The $50 device plays 30-minute cartoons on a monochrome screen.

Yet it is unclear whether the public will want to watch video on a screen the size of a dollhouse window, with a resolution that is no match for even a standard TV set. After all, some hand-held organizers can show video, but that function has never been a particularly strong selling point.

Watching a movie requires more attention than listening to music, so it is difficult to see how the mobile video players will be used in the on-the-go way that portable audio players are.

Industry experts also caution that providing legal content for the devices is and will continue to be a major obstacle.

Still, several other electronics manufacturers, including ViewSonic and Samsung, have announced plans to introduce video players later this year. And Sony is developing a device, the PlayStation Portable, that will play video and music in addition to games.

But it is another game company, Nintendo, that is hastening the development of these devices, calculating that they will appeal to young people, mostly boys, who are used to playing games on a small, relatively low-resolution screen. The first mass-market wave of these gadgets is likely to piggyback on the Game Boy, Nintendo's hugely popular portable video gaming device.

Nintendo estimates that more than 150 million Game Boys have been sold since the machine was...
introduced in 1989. Its most recent permutation, the $100 Game Boy Advance SP, released this spring, is just 3 inches on its side when folded and about an inch thick. Most important, it has a bright full-color screen.

Parrin Kaplan, Nintendo's vice president for corporate affairs, said the company recognized the flexibility of its hand-held gaming franchise. "There's so much you can do with it," Ms. Kaplan said.

With varying degrees of support from Nintendo, four electronics companies have developed technologies that use the Game Boy Advance SP's 2.4-by-1.6-inch screen to play anything from cartoon shorts to full-length movies in full-motion video. Some Game Boy video technology is expected to reach the market as early as September.

"It is a new application for the Game Boy Advance," Dan Kitchen, vice president for hand-held development at Majesco, a video game publisher in Edison, N.J., said of his company's approach to augmenting the Game Boy for video playback.

Called Game Boy Video Pak, the Majesco product consists of special cartridges that appear to be no different from standard Game Boy game cartridges. But when they are inserted into the Game Boy they transform it into a video player, complete with stereo sound, DVD-like controls and full-screen playback.

Mr. Kitchen said the cartridges could hold up to 90 minutes of video, depending on the type of material and how much compression was required. The cartridges will be made by Nintendo and are expected to cost about $20 each.

He said Majesco was negotiating with content makers for Video Pak rights to various films and expected to have five to seven cartridges ready for release by late October.

The early offerings are likely to be feature cartoons, which are far less demanding to render than live-action video, said Mr. Kitchen, noting that the initial target audience for Video Pak would be Game Boy owners, generally 4 to 14. Playing 24 to 30 frames a second, the Video Pak's image quality on Game Boy's small liquid crystal display is close to VHS quality.

TuneIn Entertainment, a Sherman Oaks, Calif., company that already brings full-length television shows and movies to hand-held digital organizers, is taking a different route to Game Boy-based video.

Rather than digitally compressing video files into memory chips in cartridges, TuneIn executives say, the company is producing a Game Boy adapter that will operate as a docking station. The battery-powered unit, roughly the size of a Game Boy Advance SP, will play three-inch CD's encoded with video on the game machine's screen.

Darrell R. Griffin, TuneIn Entertainment's president and chief executive, said that Pocket Cinema was expected to cost about $50 and reach stores in the fall. TuneIn, which already has access to 2,500 film and television titles for its Pocket PC line, will offer educational programs as well as entertainment titles for the new format, which will run 24 frames a second, he said.

The content will range from classic television to Hollywood blockbusters, and each disc will cost $10 to $15, Mr. Griffin said.

He emphasized that the Pocket Cinema was strictly a playback device and could only play content provided by his company. "I don't want to find little kids sitting around playing porn on this device," Mr. Griffin said. "We are very cognizant of the fact that we have a responsibility that only family content can be played on it."

Nonetheless, he said he expected the product to expand Nintendo's core demographic market to users in their early 20's. "These devices are reasonably priced," Mr. Griffin said. "Why buy a DVD player when
you can get this and it's a lot more handy?"

Nintendo could benefit from products that extend the age range of people who use its game machines. The company's flagship game console, GameCube, is still running third in a three-way race with Sony's PlayStation and Microsoft's Xbox. In May, Nintendo reported a 37 percent decline in profits for the fiscal year ended in March. With companies like Nokia and Sony preparing devices to challenge Game Boy, Nintendo released a GameCube adapter that enables users to play Game Boy games on the GameCube.

Nintendo's strategy surprised Ron L. Jones and Mark A. Bush, founders of a Santa Monica, Calif., company that fought a legal battle with Nintendo three years ago. The clash ended with an agreement by Nintendo to let Mr. Jones and Mr. Bush market an adapter, SongPro, that turns a Game Boy into a digital audio music player.

This year Mr. Jones and Mr. Bush are introducing SongPro Video, a cartridge and memory card system (depending on included content) costing $40 to $50 that lets users play music videos and movies on Game Boys. "I think the market is ready," Mr. Bush said of hand-held video players.

In May, a Tokyo-based company, Am3, unveiled a Game Boy adapter that uses Smart Media memory cards (32 minutes on a 32-megabyte card) to play movies. The company said it would introduce the adapter in Japan first and later in North American and European markets.

All the interest in portable video players is understandable, Mr. Bush said.

"DVD screens are standard," he said. "I want to be able to watch DVD-like films at home, in the car, anywhere I want to go."

That sentiment is not lost on Bill Gates.

In January, Mr. Gates, Microsoft's chairman and chief software architect, announced that his company was working with Intel to develop a personal media player called Media2Go. Major electronics companies, including ViewSonic, Sanyo, iRiver and Samsung Electronics, said they planned to use the Media2Go prototype as a reference point in building their personal video players for this year's holiday season.

A start-up company, Tapwave of Mountain View, Calif., has meanwhile offered peeks at its video player, code-named Helix, which is expected to be released in the fall.

Byron Connell, senior vice president for marketing at Tapwave and a founder of the company, said that in addition to playing high-quality video, Helix would have organizer functions (it uses the Palm 5.1 operating system), and would run games and play music.

As for what video the Helix will show, Mr. Connell said, "There is quite a bit of content on the Web already."

"We want to give customers the flexibility to get content that already exists or content they create," he said.

Yet acquiring content is a potential stumbling block that may slow the demand for new personal video players, said Michael Gartenberg, a research director at Jupiter Research.

Mr. Gartenberg said that when digital audio players were introduced over a decade ago, content was hardly a problem. Users soon learned that music could easily be copied, compressed and uploaded to their portable audio players. But video, he said, is a very different matter. DVD files are larger than music files, and compressing them for storage on a portable video player would be time-consuming. He added that the picture quality would be relatively poor.
More daunting, Mr. Gartenberg said, content is not as widely available for legal distribution.

Surveys indicate that only about 20 percent of consumers said they were "interested right now" in watching video on a mobile device. In the end, said Mr. Neumann of the University of Southern California, consumers will dictate where portable digital technology goes. He noted that people have long signaled that they want their personal electronics to keep shrinking.

"It is the progression of technology ever downward in size and costs," Dr. Neumann said, "but upward in portability."

Remember the first Walkman?