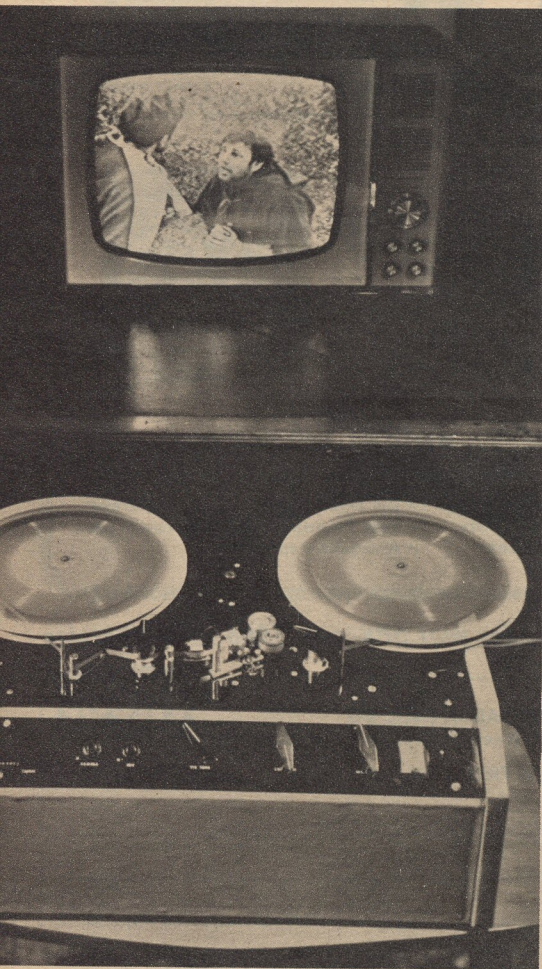


# El Tests a HOME TV TAPE RECORDER

World's first home TV tape recorder, in photo supplied by manufacturer, seemingly works like a breeze. Unit we assembled proved less able.



KIT: Wesgrove VCR 500 video recorder.  
 MANUFACTURER: Wesgrove Electric Ltd., Nash  
 Hse., New St., Worcester, England.  
 (In the U.S.: Wesgrove International,  
 3325 Fillmore St., San Francisco, Calif. 94123).  
 PRICE: \$392

ONLY a few months back we at EI were saying we had heard about a lot more home TV tape recorders than we had seen and that we hadn't as yet been able to purchase even one (TELCAN, YOU SAY? July '65 EI). We also made mention of a British firm called Wesgrove which, like half a dozen other concerns, boldly had announced development of a home TV taper.

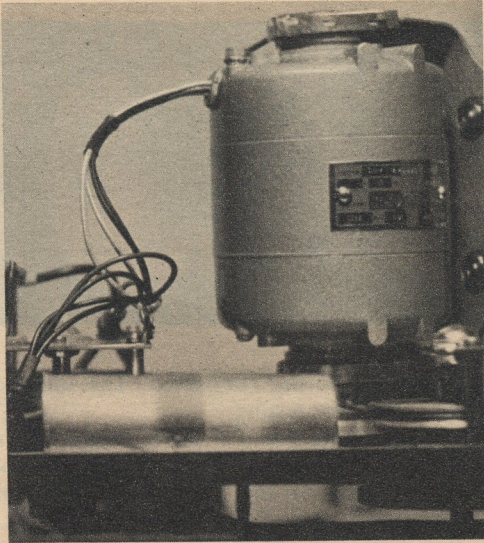
Thing is, this claim proved for real. Wesgrove *does* have a home TV recorder in both kit and wired versions. We know, because 1) we assembled the kit, 2) we inspected a factory-wired unit (what we don't know, of course, is how many more machines Wesgrove may have around in addition to the two just mentioned).

Though Wesgrove now has an American agent (see above), they had none at the time we purchased our kit, which came directly from company headquarters in Worcester, England. Packed in a big carton, the kit was accompanied by a 32-page instruction manual which, being typewritten and duplicated, suggests hasty preparation. It also allows conveniently for modifications, of which there already have been more than a few.

Our copy of the manual was marked *Issue 3* and contained 2½ pages of amendments and additional instructions, including six circuit modifications. Parts for four of the changes were contained with the kit, though those for the remaining two were not.

**What It Is.** What we had received, we were informed, was a low-cost TV tape recorder in kit form. The cost, considering the formidable performance the unit was alleged to be capable of, seemed fair enough—especially in view of what comparable commercial machines sell for. But the business of TV-taping was the thing that really held us spellbound, since here before us, though unbuilt, was the first home VTR (video tape recorder) to reach the marketplace. How, we wondered, had Wesgrove managed to turn the trick for the price we had paid?

The device, we soon found, best is described as a tape-transport equipped with record and play preamplifiers. With most components already mounted on the deck



Single motor in VKR 500 drives capstan, rewinds tape. Machine offers only play and fast-forward modes, so reels must be interchanged for rewind.



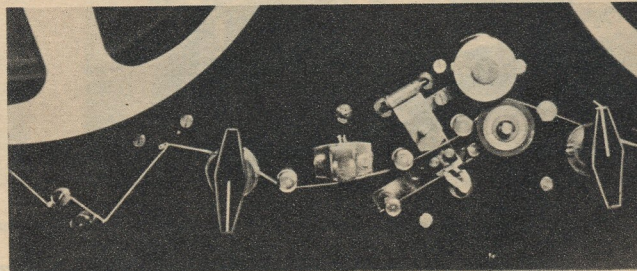
Kit consists of basic tape-transport mechanism and necessary record and replay electronics. Most components mount on single printed-circuit board.

plate, the transport struck us as looking much like most any tape deck. There is, for example, a feed spool with an associated tension device to keep the tape taut and prevent it from spilling. A single, 1/10-hp motor drives the capstan and also serves to drive the take-up spool when the machine is in the fast-forward position.

Interestingly enough, the unit has no rewind mode, which means that reels must be reversed and the machine placed in fast-forward in order to rewind the tape. This done, the reels again must be interchanged to play what has been recorded.

The deck has but two heads—one for audio record and play, one for video record and play. There's no erase head. A permanent magnet serves to erase the tape and also provides a kind of bias.

Deck view shows portion of feed and take-up reels and reveals path tape follows with machine in play mode. Transport is conventional in design, with tape issuing from feed reel (left), passing through tape guides, across a permanent-magnet erase head, on to sound head, video head, capstan drive and take-up reel. Interchangeable capstans give tape speeds of 90, 120 or 150 ips.

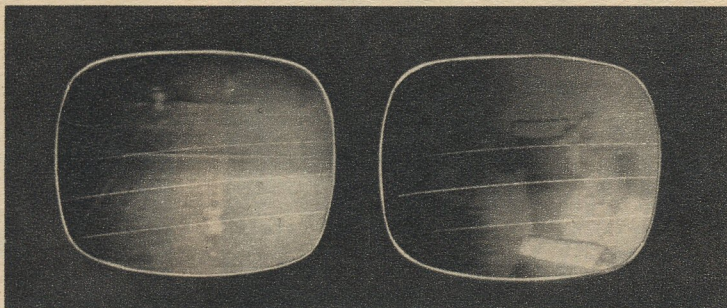


Digging a little further into the Wesgrove way of things, we discovered that the machine was intended to put both audio and video signals on triple-play (i.e., 1/2-mil) standard audio tape. To do so without resorting to rotating heads is impossible, of course, unless tape speeds are phenomenally high. And this they are in the Wesgrove unit, since the tape whips by at speeds up to 150 ips (roughly 40 times as fast as it does in a typical home recorder designed for audio use).

**Putting It Together.** Before starting assembly, we were advised to soak five spherical bearings in oil for an hour to allow the porous metal to drink enough lubricant for life. Three of these bearings were destined for the deck plate, one for the flywheel and one for the clutch spool.

We next began to work on the deck proper.

Tape of tennis tournament (left) and Yogi Bear cartoon was supplied by manufacturer and presented fair pictures on screen when played through completed kit. White traces are fly-back lines which we could not significantly suppress.



mounting supports, switches, cams and the like. Flywheel and capstan came next, with the motor eventually being connected according to the color code contained in the circuit diagram. An azimuth adjustment plate was assembled, whereupon the video and audio heads were mounted along with the erase magnet. Having adjusted clutch tension, we were advised to run the deck for two to three hours to seat the bearings.

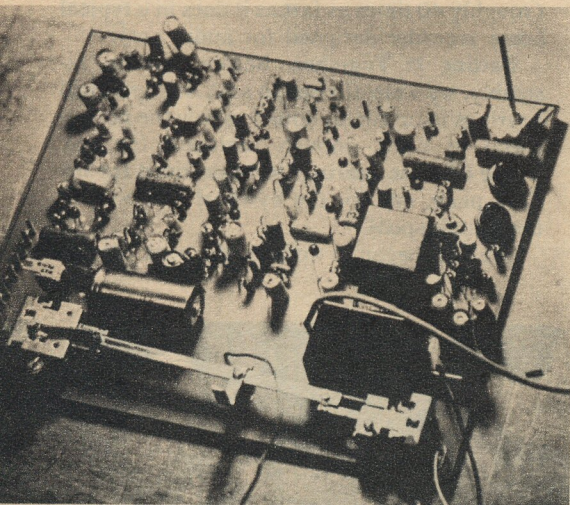
With tape deck spinning away, we turned our attention to the single printed-circuit board on which are soldered the bulk of the VTR's 120-odd components. We encountered no trouble here, since both board and components are numbered and wiring primarily is a matter of matching numbers. The completed circuit board was mounted on the deck, the power transformer installed and all

remaining wiring completed. The unit now was ready for testing.

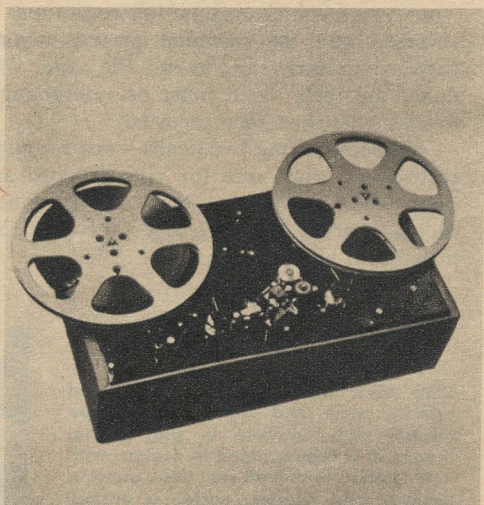
Connecting our TV set as instructed, we switched the recorder to record and watched for a picture on the TV screen (such a picture would come from a monitoring point in the recording amplifier and should show exactly what was going on the tape). But no picture appeared—only a confused pattern of lines.

When a stage-by-stage check of the circuit revealed no errors we decided to try one of the modifications Wesgrove had recommended but that we had decided to overlook in the course of wiring the kit. But this step still produced no usable picture on our screen, though the capstan supplied with our set gave the fastest of the three available tape

[Continued on page 114]



Circuit-board wiring is simplified by having both holes and corresponding components numbered. Schematic indicates voltages at key test points.



Completed VCR 500, ready for connection to TV set and audio amplifier. Unit's video bandwidth is roughly 2 mc, audio bandwidth about 10,000 cps.

## Home TV Tape Recorder

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speeds—150 ips—and, therefore, should have produced the best picture quality. We finally found the video head itself to be faulty and replaced it. But the picture was no better than before.

Unfortunately, setting the record level is a matter of trial and error on the Wesgrove, since no visual indicator is provided. No amount of adjustment produced an acceptable picture, so Wesgrove suggested we send them one of our recorded tapes for examination. Their verdict was that our signal had been recorded at too low a level.

When our tape was returned, Wesgrove had recorded a tennis match and part of a Yogi Bear cartoon on it. Played back through our recorder, both subjects came through as reasonable pictures on the screen, though with a certain amount of flashing and flyback lines (see our illustration). Attempts to increase our own recording level only made pictures white, indicating overloading, and we still were unable to record a picture of a quality equal to that given on the tape from Wesgrove. We accordingly asked them to check our set over for us. They're still checking.

**Summing Up.** Though Wesgrove has distinguished itself by being the first maker to market a true home VTR, the rush to reach the marketplace is evident from circuit board to instruction manual. The VKR 500 clearly is not a kit for the builder who is not prepared to experiment as only a technically qualified hobbyist can. Putting the kit together scarcely is more than half the battle, since it still must be connected to a TV set and made to operate properly.

The unit's recording head, incidentally, is said to have a life of approximately 100 hours. In view of the machine's 150-ips tape speed, this seems a somewhat optimistic figure. Even so, replacement heads reportedly sell for about \$8 at the Wesgrove factory and the hobbyist who has assembled the kit obviously will have no trouble replacing a head.

Given its maximum reel size (11½ in.) and playing time (30 minutes per side at 90 ips), the Wesgrove VKR 500 would seem to offer the enterprising and technically knowledgeable hobbyist plenty of room for experimentation. But much more experimentation

will be required by Wesgrove itself before its VTR can make a bid as a serious electronic product for the consumer. —

## Notes From EI's DX Club

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spot—6115 kc. Watch for this one at 0100 EST sign-on.

**Propagation:** The end of August should see a noticeable decrease in the number of TV and FM DX openings and this trend will continue through the fall. As the angle of the sun in the sky begins to decrease, heating in the upper atmosphere also will drop. Sporadic-E regions, therefore, will form less frequently in the ionosphere than during peak summer conditions, and result will be a reduction in the amount of VHF reflected. Openings in the 10-meter amateur band and the Citizens Band also will drop off sharply.

In the bands between 3 and 30 mc, trend during the day will be toward higher useful frequencies, with 21 mc utilized more frequently for SWBC services during the day. Best daytime DX reception will be in the 15- and 17-mc bands.

At night, 6 and 7 mc will continue to offer most DX promise, though 9 mc also should be satisfactory. —



"And I have to have it by Friday."