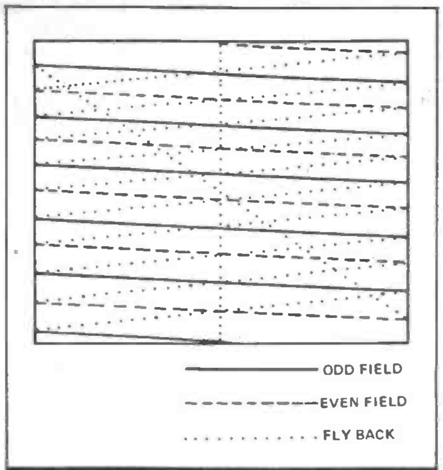

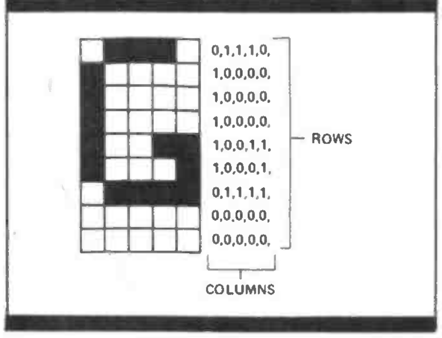

ces when cutting between different vision sources and also permits mixes and split screen effects between two vision sources.

Sync distribution

Television sync pulses can be distributed around several pieces of equipment by looping as in **Fig 1.** It is essential that the end of the loop is terminated in 75ohms. Television equipment is often fitted with switches labelled bridge and term, ie 75ohm on or off. All equipment in the loop is switched to bridge except the last item which is switched to term.

In our system we will not be using switches and the last item will be two sockets for feeding other equipment. If BNC sockets are used, these will be fitted with blanking plugs fitted with a 75ohm resistor.

All leads over 6" long must be coax in a pulse distribution system. Video can also be distributed in the same way, so one video feed can connect several pieces of equipment, for instance a monitor, 70cms TX and video tape recorder.

The 75ohm resistor stops reflections which would happen if the end of the loop were left open. This would show up as a ghost in the case of video loop.

The 2V mixed sync pulses are fed into a window clip circuit which slices the centre section of the pulses and converts them to TTL level. The positive going edges of the sync pulses cause one half of a dual monostable to trigger for an unstable period given by its time constants 47K × 1nF where C × R = 0.7T, ie about 33μS. During the period where this monostable is unstable, it allows the second half of the dual monostable to be triggered by a negative transition. This should only happen on the end of a frame scan. See **Fig. 2.** Every 312½ lines of a television scan is succeeded by a chain of pulses as per Fig 2 which are decoded by a TV receiver as a command to return the spot to the top of screen and recommence scan. Perhaps you thought television was 625 lines per picture. Well it still is, but two scans are required to make the complete picture. These scans are called fields and two fields are required per frame of TV picture. The two fields are interlaced to give 625 lines. The two fields are called odd and even fields and are proceeded by slightly different field sync waveforms as in Fig 2.

Positioning the characters

At the end of the unstable period of the second monostable we start the character generator. The position of the characters in the frame can be varied by altering the value of time constants associated with that monostable. The 47K marked * can be decreased in order to move the characters up the screen.

This monostable is brought out via a diode to a terminal that can be connected to terminal X of last month's generator in order to suppress the video behind the characters with a black horizontal wipe.

Having positioned the characters in the TV frame, they must be generated. **Fig 4** shows an example character which is positioned in a 5 × 9 matrix.

Circuit description

This matrix has two dimensions, 5 vertical columns and 9 horizontal rows. The characters are contained within the 74S262AN chip in the form of a large addressable matrix of pre-programmed characters, 128 in all. The required character is selected by the matrix board which puts a code on the board edge connector pins B, C, D, E, F, G, H.

The top row of the character 'G' is present when B is equal to logic O, C equal to logic O, D equal to logic O, and E F G H is equal to logic 1. The top row of the 'G' is present on the output pins of the 74S262AN in the form 0, 1, 1, 1, 0. The 74151 looks at this data in sequence and during data 1 causes Q5 to turn on and clamp the picture to peak white via the port Y on the pattern generator. In order for the 74151 to scan each column in row 1 it requires a binary code supplied by the column counter which is advanced by the line locked clock oscillator. When the top row of the