

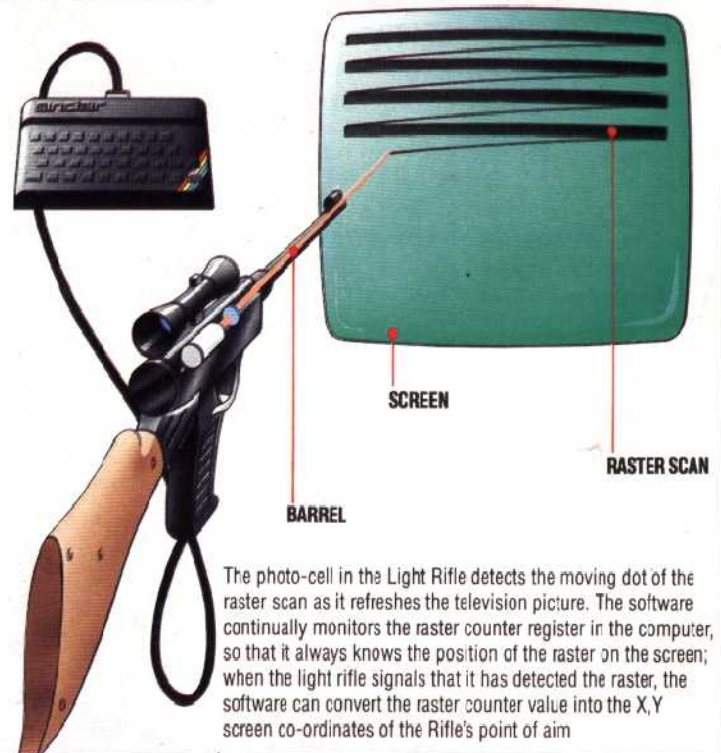


operation as a light pen, but is much bigger and is designed to be held up to about three metres (10 feet) from the television set rather than in contact with the screen. To help filter out any ambient light, the Light Rifle is provided with both a long dark tube (the barrel) and a lens. These combine to provide a reasonable — if not perfect — degree of accuracy, and allow the user to 'shoot-em-up' from the comfort of an armchair. The games that are supplied are rather poor examples of what should be possible; both the use of graphics and the 'playability' are hardly outstanding.

One of the major problems in programming light pens, or even giant versions such as the Light Rifle, is that the program needs to be very efficiently written. In all the examples supplied by Stack, the games come to a halt when the trigger is pulled. This is because the requirement of continuously scanning the screen, as is usually done for a light pen, would slow the games down too much. So when the trigger is pulled on the Light Rifle, the software must freeze the action and establish whether the target on the screen is aligned with the position of the gun. Once the software has determined whether or not the player has hit the target, the game can continue. In theory, when the trigger has been pulled, the amount of code necessary to establish the screen position of the next scan detected by the gun should be very small indeed, but observing the software in action indicates that this isn't always the case.

On a computer such as the BBC, for which there is as yet no version of the Light Rifle, the provision of a light pen facility within the video chip would make the task of the software much simpler. The Commodore 64 offers such a system, but the ZX Spectrum, on which the Light Rifle was tested, lacks the facility and the deficiency shows up in the time taken to calculate the position of the rifle when the trigger is pulled.

## Shot In The Dark



The photo-cell in the Light Rifle detects the moving dot of the raster scan as it refreshes the television picture. The software continually monitors the raster counter register in the computer, so that it always knows the position of the raster on the screen; when the light rifle signals that it has detected the raster, the software can convert the raster counter value into the X,Y screen co-ordinates of the Rifle's point of aim

## Open Season



High Noon is the best of the three Stack demonstration programs. Animation is good, and the gunfighter shoots back credibly. Grouse Shoot and Shooting Gallery both provide a single moving target that must be hit before it goes out of bounds. Animation is jerky, and pulling the trigger causes a noticeable halt in screen action