Sound Principles

The sound functions of the Atari models include four independent voices

The Atari sound facilities are good — as can be heard in many of the cartridge games — though the means of controlling them are a little idiosyncratic. Four independent square wave oscillators are provided, each with a range of three octaves. As a bonus, the oscillator output can be distorted in seven ways to colour the sound. These facilities are easily accessible from BASIC via the SOUND command provided, but this doesn't make full use of the extra features of the Atari sound chip POKEY, which with high-pass filters and special modes of operation can extensively modify the sound produced. As a consequence, the full range of sound control can be fully exploited only by using complex POKEs or machine code, which is beyond the scope of this part of the course. Output is via the television speaker only.

SOUND

This is a very simple command with the following format:

SOUND O,P,D,V

O = Oscillator (0-3)
P = Pitch (0-255)
D = Distortion (even numbers 0-14)
V = Volume (1-15)

Each SOUND command can select only one oscillator, so it is impossible to start more than one oscillator at a time. This is not normally a problem, but if music is programmed using all oscillators for four-part harmonies the delay is noticeable.

Pitch is calculated a little strangely and as a consequence some frequencies are inaccurate. Frequency decreases as the pitch number increases, giving an effective range from 'C' at 29 (1046.5Hz) to 'C' at 243 (130.81Hz). The following table indicates some of the pitch numbers for music note symbols. A full list is given in the Atari BASIC reference manual.

	Octave-1	Octave-3
(Mid)	C — 121	C — 29
	B — 128	B — 31
	A — 144	A — 35
	G — 162	G — 40
	F — 182	F — 45
	E — 193	E — 47
	D — 217	D — 53
	C — 243	C — 60

The distortion parameter 'P' is equivalent to the noise channel on most computers but it is far more versatile. Each even number causes a different arrangement of random pulses to be mixed with the standard oscillator output. Curiously, 10 gives

Light Refreshment

A quick look at the Oric's graphics shows many similarities with the Spectrum

The Oric-1 home computer was released in the middle of 1983 and is designed as an obvious rival to Sinclair's ZX Spectrum. The Oric offers four modes of display. Only one mode, however, enables the use of high resolution graphics. There are eight colours available; foreground and background colours respectively being set by the commands INK and PAPER. Oric BASIC includes several special high resolution commands to aid the graphics programmer.

The screen is made up of 28 lines, each containing 40 character spaces. The Oric's characters are not designed using the usual eight by eight pixel grid, but are constructed on an eight by six grid. In high resolution mode the screen has 240×200 pixel resolution, the bottom three lines being reserved for information such as error messages. There is no PAINT-type command, but with a little thought it is possible to accomplish the function using the FILL command. As with the Spectrum (see page 392) it is possible to mix high resolution graphics and text together on the same screen, but the Oric allows each line inside a character square to be coloured individually, whereas the Spectrum allows only one colour to be specified within any one character square.

Now let us look in more detail at the low resolution modes offered by the Oric-1. The Oric has three low resolution modes: TEXT, LORES0, and LORES1. The only difference between LORES0 and LORES1 is that they use different character sets. In the TEXT mode, letters can be positioned horizontally by the TAB command. In the two LORES modes, however, this facility is improved to