current sprite. HIT? first sets the current sprite to the dragon and then asks if anything is touching it.

The command JOYSTICK takes 0 or 1 as input (corresponding to ports 1 and 2). The output is –1 if the joystick is central, 0 if up, 1 if at 45°, 2 if at 90°, and so on up to 7. Here, we simply set the dragon's heading to 45° multiplied by the output number.

Explosions and similar effects are easy to achieve using sprites. A shape representing the explosion is simply flashed on top of the object to be destroyed. We give the FLAME sprite a low number so that it will have high priority and thus appear on top of the other sprites.

The computer controls the knight, but it uses a very simple defensive strategy: the knight heads straight towards the dragon. As the game stands the dragon can slip by the knight and destroy the town fairly easily.

How can we improve the knight's defensive strategy? One simple way is to increase his speed, and simply increasing this from 10 to 11 makes it very difficult for the dragon to get by. (Wrapping round the screen is cheating!) A slightly better strategy is for the knight to aim to cut the dragon off by heading for the line between the dragon and the city and staying there.

In the next instalment, we will look at some of the sprite features found in Atari LOGO.

Three Bugs Project

The bugs start out from the corners of a triangle:

```
TO BUGS
    SETUP MOVE.BUGS
END

TO SETUP
    DRAW FULLSCREEN TELL 0 HT PU SETXY
    ( – 100 ) ( – 100 ) TRI 200 POSITION 1 ( – 100 )
    ( – 100 ) POSITION 2 0 73 POSITION 3 100
    (–100)
END

TO TRI :SIDE
    PD REPEAT 3 [FD :SIDE RT 120] PU
END

TO POSITION :NO :X :Y
    TELL :NO SETSHAPE 3 PU SETXY :X :Y PD ST
END

TO MOVE.BUGS
    FOLLOW 1 2 FOLLOW 2 3 FOLLOW 3 1
    MOVE.BUGS
END

TO FOLLOW :A :B
    TELL :B MAKE "X XCOR MAKE "Y YCOR TELL :A
    SETH TOWARDS :X :Y FD 10
END
```
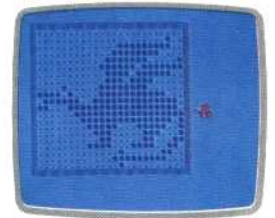
Sprite Editor

```
    MAKE "X2 XCOR
    MAKE "Y2 YCOR
    OUTPUT SQRT ( ( :X1 – :X2 ) * ( :X1 – :X2 ) +
    ( :Y1 – :Y2 ) * ( :Y1 – Y2 ) )
END

TO CITY.DESTROYED
    TELL :CITY
MAKE "X XCOR
    MAKE "Y YCOR
    FLASH :X :Y :ORANGE
    TELL :CITY1
    MAKE "X2 XCOR
    MAKE "Y2 YCOR
    FLASH1 :X2 :Y2 :ORANGE
    HIDE.SPRITE
    SPLITSCREEN
    REPEAT 3 [PRINT "]
    PRINT [CITY DESTROYED!]
END

TO FLASH :X :Y :COLOR
    TELL :FLAME
    PENCOLOR :COLOR
    SETXY :X :Y
    ST
    REPEAT 6 [SMALLX SMALLY WAIT BIGX BIGY
        WAIT]
END

TO FLASH1 :X2 :Y2 :COLOR
    TELL :FLAME1 PENCOLOR :COLOR
SETXY :X2 :Y2
    ST REPEAT 6 [SMALLX SMALLY WAIT BIGX BIGY
        WAIT]
END
```

```
TO KNIGHT.MOVE
    TELL :DRAGON
    MAKE "X XCOR
    MAKE "Y YCOR
    TELL :KNIGHT
    SETH TOWARDS :X :Y
    FD 10
END

TO HIT?
    TELL :DRAGON
    IF TS? THEN OUTPUT "TRUE
    OUTPUT "FALSE
END

TO DRAGON.DESTROYED
    TELL :DRAGON
    MAKE "X XCOR
    MAKE "Y YCOR
    FLASH :X :Y :BLACK
    HIDE.SPRITE
    SPLITSCREEN
    REPEAT 3 [PRINT "]
    (PRINT [DRAGON KILLED AT A DISTANCE OF]
        DISTANCE :DRAGON :CITY )
END

TO HIDE.SPRITE
    TELL :FLAME HT
    TELL :FLAME1 HT
    TELL :CITY HT
    TELL :CITY1 HT
END

TO WAIT
    REPEAT 100 []
END
```
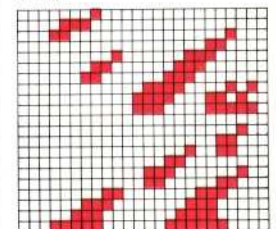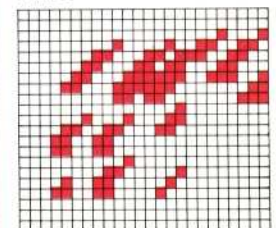
Flame 1

Flame 2

LIZ DIXON