ACT II
Scene 1

AT RISE: TURING Enters and addresses the audience.

TURING. Mr. Headmaster, members of the staff, boys. I want you to imagine a bowl of porridge. A bowl of cold porridge. When I was a boy here at Sherborne — some twenty-five years ago — we always had porridge for breakfast — every day, winter and summer — or so it seems. And for some unaccountable reason, by the time the porridge reached me it was always cold. My friend, Christopher Morcom, was more fortunate; he enjoyed his porridge and ate it heartily. But I sat there every morning staring miserably into my bowl of cold porridge: all grey and soft and wrinkled on top. You must be wondering why I'm telling you this. Your Headmaster has asked me here to talk about my work with computers and here I am describing bowls of cold porridge. Well, there's a very good reason for it and I'll come to that in a moment. I daresay the word "computer" is unfamiliar to many of you. It is to lots of people. But if I were to say Electronic Brain — ah! — that's much more interesting. And if I were to ask, can a machine think? — I'm sure you'd all be intrigued to know the answer. But before we can consider that question properly, I must tell you something about computers and how they work. First of all, let me com-

pare a computer with the human brain — which brings us back to our bowl of porridge, because that's what the human brain looks like: same color, same texture. A computer is very different. It's big — the size of several large wardrobes all joined together; it's hard and metallic on the outside, terribly complicated inside, with lots of valves and condensers and so on — not a bit like cold porridge, but that doesn't matter. It's the logical pattern of the brain that counts, not the grey stuff it's made of. The same with a computer. What matters is its logic. And the logic of a computer is really very simple. All it does is to read a list of instructions — we call this a program — which it then carries out methodically. And the only thing you have to do is to write down exactly what you want done in a language the computer understands. I know this may sound like a fanciful theory, but I assure you that it's not. The computer we've built at Manchester University has been working for over four years, since 1949, and in that time it has successfully tackled a wide variety of tasks. People assume that computers are just glorified calculating machines. Not so. It's true that computers are often used to do calculating because they do calculate very quickly — but computer programs don't have to have aything to do with numbers. A colleague of mine has got our computer to hum tunes — it once sang "Jingle Bells." We've even got it to write love letters! So — doing calculations, humming tunes, writing love letters. All very different tasks, but all performed by one machine. And that's an extremely important fact about computers. A computer is a universal machine. It can perform any task that can be described in symbols. Now

many people think that a computer can only do what it's been told to do. Well, it's true that we may start off like that — but it's only the start. A computer can be made to learn. Suppose, for example, that it was set to play chess. It could find out for itself, in the light of its own experience, which were winning and which were losing strategies, and then drop the losing ones. After a while we wouldn't know which instructions it was actually using; so it would hardly be fair to say that we had instructed it what to do. That would be like crediting the master with any originality shown by the pupil. The question thus arises as to whether or not we would credit such a machine with intelligence. I would say that we must. It is my view that a computer being a universal machine, can perform any task that the human brain can carry out. Any task. What I would very much like to do is to educate a computer, partly by direct training, partly by letting it find out things for itself. We don't know how to do this yet, but I believe that it will be achieved in the very near future — and I feel sure that by the year 2000, it will be considered perfectly correct to speak of an intelligent machine or to say that a computer is thinking. Of course not everyone agrees with this view, far from it. There are those who say that thinking is a function of man's immortal soul and since a machine has no soul it cannot think. Surely this is blasphemous — who are we to deny the possibility that God may wish to grant a soul to a machine? Then there is what I call the "Heads in the Sand" objection. "The consequences of machines thinking is too dreadful to contemplate," people say "such a thing could never happen." This point of view is usually expressed by

intellectuals. They have the most to lose. Another objection — and this is one I hear very frequently — is that a machine cannot be said to think until it can write a sonnet or compose a concerto, feel grief when its valves fuse, be warmed by flattery, be angry or depressed when it can't get what it wants. Well, of course one might reply that there are precious few human beings who can write a sonnet or compose a concerto — and I can see no reason at all why a thinking machine should not be kind, resourceful, beautiful, friendly, have a sense of humor, tell right from wrong, make mistakes, fall in love, or enjoy strawberries and cream. At the moment such considerations should not concern us; but it might be rather nice — don't you think? — if, one day, we could find out just what a machine can *feel.*

Scene 2

SCENE: LIGHTING change: Autumn afternoon.

AT RISE: KNOX Enters, leaning heavily on a stick.

KNOX. Did I tell you what happened to my brother?

TURING. *(at table, looking thru papers)* What was that?

KNOX. They were having a dinner party. It was some time ago, during the blitz. Eddie was just about to open a bottle of claret when a bomb fell nearby. Tremendous explosion. Bang! Guess what happened.