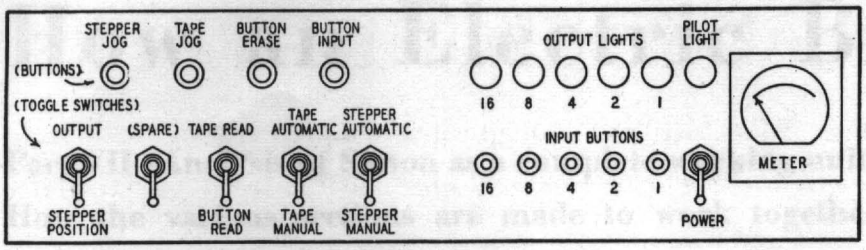

Fig. 3—Diagram of Simon's front panel showing his controls and indicators.

time to time at appropriate points. You can tell Simon to stop at an appropriate place, by punching into the tape an indication for a "programmed stop," as it is called. When Simon makes a programmed stop, you press any one or more of the buttons numbered 8, 4, 2, 1 (see Fig. 3). This action inserts the number which is the sum of the figures selected, into the button relays (register BR in Fig. 4). Then to transfer the number from the button register into Simon's regular input register (register IR 2 and IR 1 in Fig. 4), you press a button called BUTTON INPUT (see Fig. 3). Finally, you press the STEPPER JOG button (see Fig. 3), and Simon runs on, automatically reading and obeying the tape.

Table of Relay Abbreviations

Abbreviation	Name of Group	Purpose
ASR	Auxiliary Stepping Relay	Slow down the stepping switch.
BR	Button Register	Temporarily record numbers in instructions from buttons.
CR	Computer Registers	Compute
ER	Entrance Relays	Allow information to enter registers.
IR	Input Registers	Temporarily record numbers from the tape or the buttons.
OR	Output Registers	Hold answers, to be shone in the output lights.
PR	Program Relays	Record programming information from the tape or from the buttons, and control Simon.
RR	Reset Relays	Reset, release, or clear registers, so that new information may be stored in them.
SPR	Step-Position Output Relay	Allows the position of the stepping switch to be read in the output lights.
SR	Storage Registers	Store information until used.
SYR	Synchronism Relays	Arrange that the tape and the machine cycles shall be automatically in synchronism.

Output

The *output* of Simon also is on the front panel (see Fig. 3). It consists of five lights, called OUTPUT LIGHTS 16, 8, 4, 2, and 1. In these lights any number from 0 (no lights shining) up to 31 (all five lights shining) can be indicated. For example, if OUTPUT LIGHTS 16, 4, and 1 are shining, the number indicated is 16 plus 4 plus 1, or 21. You program Simon so he will stop when a result has been delivered. You can examine and, if you wish, copy the result; and then, when you press the STEPPER JOG button, Simon will run on.

The sixth light on the front panel is a red pilot light which shines when the power is on; and the meter reads the voltage at which Simon is operating. Simon will operate at 20 to 35 volts d.c.

Storage, computer, and control

The functions of storage, computing, and control in Simon are carried out by relays. Of course, a good deal of the control is also expressed in the tape, but relays take the information from the tape and operate with it.

A diagram showing all the 129 relays of Simon is given in Fig. 4. Each relay is represented by a rectangle placed in the correct physical location (compare Fig. 4 with Fig. 1). There are 19 columns, corresponding to the columns shown in the photograph. Fig. 1, and 8 rows (the two bottom ones incomplete) corresponding to the rows shown in Fig. 1.

The relays in Simon may be designated in either one of two ways, according to location in the machine, and according to function.

For wiring purposes, the relays are designated by location, that is, by row (a single letter C, D, E, F, G, H, N, or P) and by column (a number 1 to 19).

But for purposes of understanding Simon, the functional designations are useful. To designate a relay by its function, each relay has an abbreviation that may have three parts. Part 1 is two or more letters, to tell the kind of register. Part 2, if any, is a number, used to number off registers all of the same kind. These numbers are not always consecutive, for reasons that will be explained later. Part 3, if any, is a number in parentheses, used to tell the binary digit being handled by that relay.

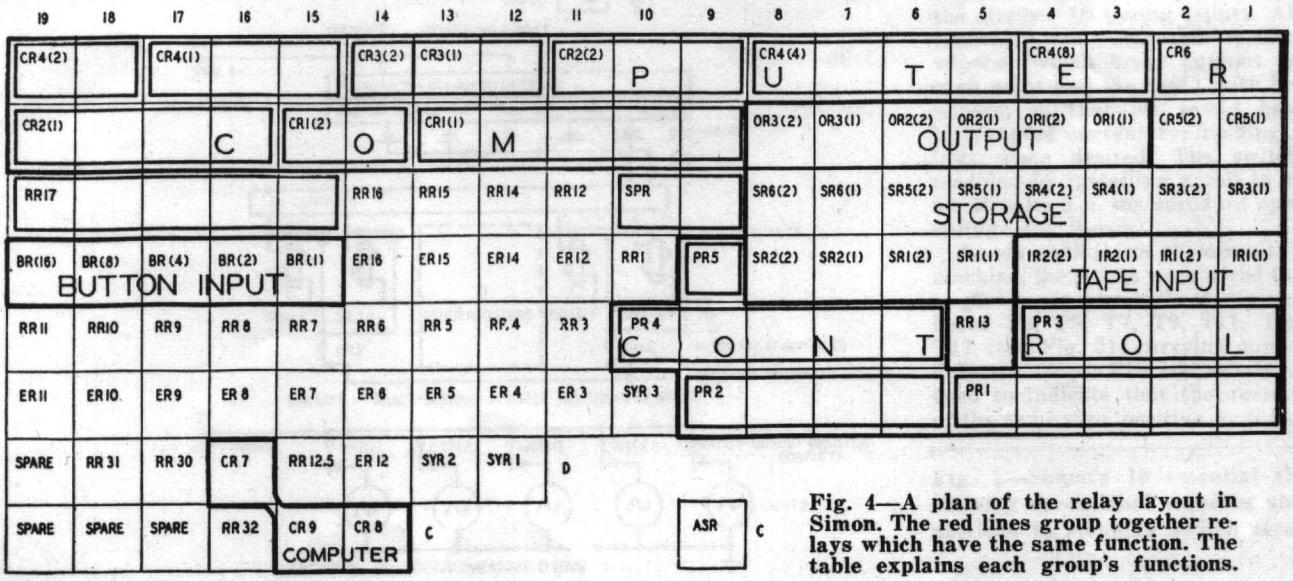

Fig. 4—A plan of the relay layout in Simon. The red lines group together relays which have the same function. The table explains each group's functions.