III. THE DISPATCHER

As pointed out in Section I, there is a class of privileged instructions which user programs must not be allowed to perform because of their possible detrimental effect on the system; these include input-output instructions and instructions that halt the machine. If a user program attempts to execute a privileged instruction, the instruction is trapped by computer hardware and stored in the trap register, and an interrupt is initiated. The user programs, of course, must be allowed to perform I-O operations or halt by some mechanism, so the routine started by the privileged-instruction interrupt was given the function of examining the trap register and dispatching to the portion of the Executive which can perform the desired operation for the user. This routine is therefore known as the Dispatcher. Since the operations which the earliest version of the Dispatcher performed for the user were primarily Input-Output Transfer operations, the privileged instructions which were specified to cause such a linkage were known as IOT's.

The present Hospital Computer System uses a greatly expanded IOT concept. From the point of view of the user programs, IOT's are the same as machine-language instructions. In general, they are more complex than machine commands, may require somewhat longer calling sequences, and perform those operations normally associated with closed subroutines. Most of the IOT's fall into one of the three following categories:

1. operations which the user programs must not be allowed to perform for themselves —— this category includes all I-O operations and references to the Executive memory bank;