refilled on level 1 because this operation requires data transfers, and the list of block addresses, if needed, is made up by a level 15 routine. The level 4 routine is primarily a control routine; the only Fastrand activity performed on level 4 is boom movement, in the case when Table 4 does not need to be written out *and* the Data Channel is performing a magnetic-tape data transfer. At the same time, the Swapper is bringing the user program with "IOP wants" status into core, and, when this operation is completed, the Swapper generates an interrupt on level 1 to notify the I-O Processor.

Finally, when the user program is in core and the level 4 routine has satisfied as many preconditions as possible, the level 1 routine stops debreaking to lower interrupt levels and assumes control. Any remaining preconditions are satisfied (if a block address list must still be generated, it is generated by level 15 routines which return to level 1) and the data transfer is started. The routine on level 1 then debreaks and the cycle is complete.

The preceding discussion has taken very little account of the fact that two magnetic-tape drives are also controlled by the I-O Processor and must transfer information by means of the Data Channel. Available to user programs are IOT's which space magnetic tape forward and backward by record, forward by file, rewind tape, and reserve and release tape drives, as well as IOT's which read and write one record at a time. Reserving and releasing tape drives, of course, do not require the use of the I-O Processor, and, with the exception of reading and writing, all other magnetic-tape operations can be performed by the interrupt level 4 routines. The flow through the I-O Processor of user programs