

$\text{Pd}^{109}$  with 6.2 is again a borderline case. The evidence from this transition is, however, not conclusive since it goes to the metastate of  $\text{Ag}^{107}$ , whose spin and parity are subject to doubt.

For even A there is the puzzling case of  $\text{C}^{14}$ , where the spin change is measured to be 1 while  $\log ft = 9$ . The next case is  $\text{P}^{32}$  with 7.9. No first forbidden interpretation (i.e., change in parity) is possible for this nucleus, while a spin change of 2 with no parity change would lead to the expectation of a much higher  $ft$  value. An experimental determination of the spin of  $\text{P}^{32}$  would thus be particularly interesting.  $\text{Cu}^{60}$ ,  $\text{Sb}^{122}$ , and  $\text{I}^{126}$  have  $ft$  values compatible with first forbidden transitions but with neutron and proton configuration in the same shell, which should exclude a change in parity.  $\text{Cu}^{64}$  and  $\text{Ga}^{68}$  have  $ft$  values which classify their decays as allowed. However, it cannot be ruled out that their configuration is  $\text{P}_{3/2}-\text{P}_{3/2}$  under violation of rule (3).

The data on these nuclei, in which the transition occurs within the same shell, suggest strongly that they form a distinct group which is neither allowed nor second forbidden. An appropriate name for this class may be "L-forbidden." The  $\log ft$  values of these nuclei fluctuate widely from seemingly allowed values in the neighborhood of 5 to 9 for  $\text{C}^{14}$ . It seems thus that a remnant of our selection rule is operative and that it is very much a matter of chance, how far it is violated. We are thus inclined to consider the long life time of  $\text{C}^{14}$  as an accident.

The nuclei with series  $\gamma$ -rays find in most cases an unforced interpretation by rule (3). An outstanding group of this type is that with  $Z$  between 21 and 27 which have the interpretation  $f_{7/2}-f_{7/2}$  or  $f_{7/2}-\text{P}_{3/2}$  and which go without exception to excited states. It is unfortunately not possible to obtain reliable information about the actual spins of nuclei which fall under rule (3). In  $\text{B}^{10}$ ,  $\text{N}^{14}$ ,  $\text{Na}^{22}$  the spins of the neutron and proton