The authors investigate the joint probability distribution of the vectors $F$, $dF/dt$, where $F$ is the force acting on a given star. This force is considered as due to stars distributed as described in the preceding review [MR0006279], each with a spherical distribution of velocities about the origin in velocity space, independent of the position of the star. The method used is that of characteristic functions. The distribution of $F$ alone has already been discussed by Chandrasekhar [cf. the preceding review]. In the present paper, which is a step towards derivation of the transition probabilities of $F$ as a function of time, an expression for the joint density function of $F$, $dF/dt$ is found. Using this, the second moment of $dF/dt$ for given $F$, that of $F$ for given $dF/dt$, and that of $dF/dt$ are found. Using these moments, it is possible to discuss the probable characteristics of field strength transitions, questions of mean life of a given state $F$, etc.

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