than to those from $\psi = 0$ to $\psi = \pi$.

which is qualitatively true when second and higher order terms of the Fourier series are not neglected in the consideration of the flapping. Physically, it is logical that the greater the eccentricity and in consequence the flapping, the more important the components of the inertia forces perpendicular to the disc.

By assumption e,

$$R' = \frac{\sqrt{\Omega^2 + V^2 - 2\Omega V \sin\psi}}{\Omega} \cdot R. \qquad (17).$$

The average value of R' is taken as $R'_m = \sqrt{1 + \frac{V^2}{\Omega^2}} \cdot R.$ (18).

The coefficient C in the expression (16) will be calculated by the assumption h and the expression (18). The total lift on a virtual blade will be

$$\left.\begin{aligned} &C\int_0^{R'} \sqrt{R'^2 - x^2} \cdot x\,dx = \tfrac{1}{3}CR'^3 = \frac{T}{b} \cdot \frac{R'}{\sqrt{1+\frac{V^2}{\Omega^2}} \cdot R}. \\ &C = \frac{3T}{bR\sqrt{1+\frac{V^2}{\Omega^2}} \cdot R'^2} = \frac{M}{R'^2}, \text{ if } M = \frac{3T}{bR\sqrt{1+\frac{V^2}{\Omega^2}}}. \\ &\text{By virtue of (14), M can be written } M = \frac{3\rho\pi R\sigma \frac{L_c}{\sigma}V^2}{b\sqrt{1+\frac{V^2}{\Omega^2}}}. \end{aligned}\right\} \quad (19).$$

(16) can be written

$\Gamma = \frac{M}{R'^2}\sqrt{R'^2 - x^2}\,x = \rho a c \frac{\Omega^2}{R^2} \tan\alpha \cdot x^2$, by assumptions e and g,

and from that equation, $\tan\alpha = \frac{MR^2}{\Omega^2 R'^2} \cdot \frac{\sqrt{R'^2 - x^2}}{x} \cdot \frac{1}{\rho a c}$. (20).

Giving to α the value α_s corresponding to the incidence at which burbling or stalling conditions start, the radius at which stalling begins is given by

$$x_s = \sqrt{\frac{M^2 R^4 R'^2}{\rho^2 a^2 c^2 \tan^2\alpha_s\, \Omega^4 R'^4 + M^2 R^4}}$$

Now, in view of the assumptions made, it is possible to calculate the energy lost in friction or profile losses, as

$$P_{losses} = \rho b c \sum_0^{2\pi} \int_0^{R'} \delta (\text{Resultant air speed})^3 dx,$$