we obtain a result by T. Carleman (*L'integrale de Fourier*, Uppsala, 1944, p. 42). (Received October 19, 1946.)

61. J. W. T. Youngs: *Remarks on the isoperimetric inequality for closed Fréchet surfaces.*

The author treats the particular isoperimetric inequality $36\pi V^2 \leqq A^3$, where A is the Lebesgue area of a closed Fréchet surface S, and V is the volume enclosed by S. These terms are defined in a forthcoming paper by Radó, who establishes the inequality for every S. In the present paper, the purpose is twofold: first, to offer a variation of the definition of enclosed volume which generally increases the left side of the inequality; second, to investigate the consequences of equality, under both definitions of enclosed volume. The basic concept employed is that of the cyclic decomposition of a closed Fréchet surface S. It is shown, for example, that if $36\pi V^2 = A^3$ and $0 < A < \infty$, the cyclic decomposition of S reduces to precisely one closed surface. (Received November 20, 1946.)

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62. N. R. Amundson: *Unsymmetrically loaded orthotropic thin plates on elastic foundations.*

The author considers orthotropic thin plates of infinite extent on elastic foundations of two different kinds. In the first case the foundation exerts a reactive pressure proportional to the deflection. The solution of the plate equation for this case, $D(u) = au_{xxxx} + 2bu_{xxyy} + cu_{yyyy} = q(x, y) - ku(x, y)$ with suitable conditions at infinity, is $u(x, y) = (4\pi^2)^{-1}\int_{-\infty}^{\infty}\int_{-\infty}^{\infty}F(\alpha, \beta)d\alpha d\beta\int_{-\infty}^{\infty}\int_{-\infty}^{\infty}q(s, t)\exp(-i[\alpha(x-s)+\beta(y-t)])dsdt$ where $q(x, y)$ is the loading function and $F(\alpha, \beta) = (a\alpha^4 + 2b\alpha^2\beta^2 + c\beta^4 + k)^{-1}$. In the second case the foundation is the homogeneous istropic semi-infinite medium of classical elasticity theory (Timoshenko, *Theory of elasticity*, p. 332). The solution of the plate equation for this case, $D(u) = q(x, y) - p_s(x, y)$, where $p_s(x, y)$ is the reactive pressure of the foundation, is obtained from an equivalent integral equation, $u = k\int_{-\infty}^{\infty}\int_{-\infty}^{\infty}[q(s, t) - D(u)]rdsdt$, and is $u(x, y) = (4\pi^2)^{-1}\int_{-\infty}^{\infty}\int_{-\infty}^{\infty}G(\alpha, \beta)d\alpha d\beta\int_{-\infty}^{\infty}\int_{-\infty}^{\infty}q(s, t)\exp(-i[\alpha(x - s) + \beta(y - t)])dsdt$ where $r = [(x - s)^2 + (y - t)^2]^{-1/2}$ and $G(\alpha, \beta) = [(\alpha^2+\beta^2)^{1/2}(2\pi k)^{-1} + a\alpha^4 + 2b\alpha^2\beta^2 + c\beta^4]^{-1}$. These solutions are obtained by the use of the double Fourier transform. The solution of the first problem can also be obtained from the finite plate as a limiting case. Various special cases are considered. This work is connected with that of Holl, Hogg, Woinowski-Krieger, Happel, Lewe, et al. (Received October 25, 1946.)

63. J. W. Beach: *Flow of slow viscous fluid between rotating cylinders.*

A solution is obtained for the biharmonic equation in the region between eccentric cylinders when the stream function and its normal derivative are given on both cylinders. The solution is set up in terms of two functions of a complex variable and a transformation of co-ordinates is made so that the bounding cylinders become concentric. The form of the two functions is determined with the single-valued parts given as infinite series. Unknown coefficients are determined and the solution obtained. The limit of this solution as the cylinders become concentric is obtained and agrees with the known solution for concentric cylinders. (Received October 23, 1946.)