number of intervals embraced. In the integration described above the curve of the second integration is displaced above the original curve so that a maximum in a implies a minimum in c.]

The present author states this as follows:

Given the so-called quasi-periodic function

$$y = A_0 + \sum_{k=1}^{k=n} A_k \sin\left(\frac{2\pi}{T_k} t + \varphi_k\right)$$

which will be periodic if $T_1, T_2, \cdots T_k$ are commensurable; upon twice integrating this function the equation

$$Y = \sum_{k=1}^{k=n} -\left(\frac{T_k}{2\pi}\right)^2 A_k \sin\left(\frac{2\pi}{T_k} t + \varphi_k\right) + \frac{1}{2} A_0 t^2 + C_1 t + C_2$$

is obtained, in which C_1 and C_2 are constants of integration.

It appears that Schmidt did not take into sufficient account the significance of these constants of integration and introduced a fallacy in taking departures from the mean value of the function.

If

$$y = f(t),$$

the mean value of which is M, then

$$y_1 = f(t) - M.$$

Integrating once, we obtain,

$$\int_{t_0}^{t} y_1 dt = F(t) - Mt + C_1.$$

Instead of again integrating this function, we take the departures from the new mean M_2, the new function to be integrated becomes

$$F(t) - Mt + C_1 - M_2 = F(t) - Mt - M_1.$$

Upon integrating, we obtain

$$Y = \int_{t_0}^{t} F(t)dt - [M(t-t_0)^2/2] - M_1(t-t_0) = \phi(t)\ [Mt^2/2] - M_1 t + C.$$

Because of the repeated taking of departures from the mean, the quantity C_1 is not effective in the second integration, while the mean M appears in a parabolic term. Thus, a function which is really not periodic may be made to yield a second integral of parabolic form; this might be mistaken for a sine curve, and thus a period be found, which would have no reality.

Several examples of the inefficacy of this form of investigation are given. First, given a certain function,

$$y = \sin 10^\circ t + \sin 30^\circ t,$$

the second integral shows a period which is entirely different from that shown by the second integral of the expression

$$y = \sin 10^\circ t + \sin 30^\circ t - 0.28,$$

which is the function when subtracted from its mean.

Again, taking the departures from the hundred-year mean of temperature at Petersburg and constructing a second integral curve by Schmidt's method, a very long period is demonstrated, which obviously has no existence in the data themselves.

The author concludes that only if it is known a priori that superimposed trigonometrical functions are involved is this method applicable.—*C. L. M.*

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