EDITORIAL.

Trapezoidal Rule for Computing Seasonal Indices.

The following method for computing seasonals is suggested by the Detroit Edison article on *"A Mathematical Theory of Seasonals"* that appeared in Vol. I, No. 1 of the *Annals*.

We shall likewise define "the seasonal index for any month as the ratio of the total of the variates for the month in question to the total that would have been experienced if neither accidental nor seasonal influences were present", that is, the seasonal index for the i-th month is

$$(1) \qquad s_i = \frac{\Sigma_o y_i}{\Sigma \psi_i} \, .$$

The numerator presents no difficulties: the obstacle is met in determining the denominator, since $\psi(x)$ is the unknown function that is the consequence of only trend and cycle influences. According to accepted concepts the trend may be represented by some smooth analytic function, the cycle is a smooth though not a mathematically periodic function—but the seasonal and residual influences may inject all sorts of disturbances into a time series. We shall make but two further assumptions,—

(a) The smooth function $y=\psi(x)$, representing the combined effect of trend and cycle, may be approximated by the upper sides of a series of trapezoids as in figure (1). The area of each trapezoid is to equal the area under the function $\psi(x)$ limited by the common ordinates.

(b) Neither seasonal nor accidental influences affect annual totals. Thus we might assume that the seasonal activity in the production of coal does not affect the total coal mined within the year, but merely concentrates production within certain months