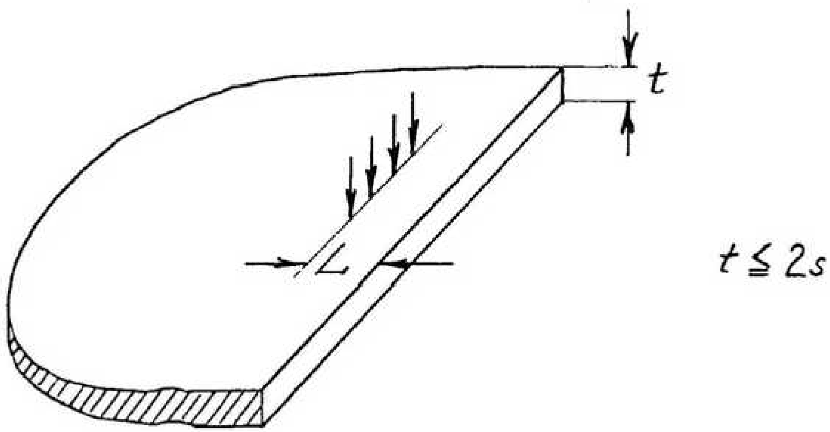
E.5) Probe Array Parallel to Edge , Thin Sample.



When the sample is thin, it is convenient to write the resistivity in the following way:

$$\rho = G\,\frac{V}{I}, \qquad G = \frac{\pi}{\ln 2}\cdot t\cdot D_4\left(\frac{L}{s}\right)\cdot F_4\left(\frac{t}{s},\frac{L}{s}\right) \qquad (16)$$

Where

$\frac{\pi}{\ln 2}\cdot t = 4{,}5324\cdot t$ is the geometric factor for an infinite slice of thickness $t \ll s$,

$$D_4\left(\frac{L}{s}\right) = \frac{1}{1+\frac{1}{2\ln 2}\cdot \ln\left[\frac{(L/s)^2+1}{(L/s)^2+\frac{1}{4}}\right]} \qquad (17)$$

is the additional correction to apply when measuring at a distance L from the straight edge on the semi-infinite slice of thickness $t \ll s$.

$F_4(\frac{t}{s},\frac{L}{s})$ deviates from unity, when the thickness t of the slice is not much less than the probe distances s.

The expression for $D_4(\frac{L}{s})$ was obtained from the formula (23) section I.3. for a circular slice when the probes are perpendicular to a diameter, by letting the diameter go to infinity. $D_4(\frac{L}{s})$ is tabulated and plotted at page 29.

The additional correction $F_4(\frac{t}{s},\frac{L}{s})$ to apply when t is not much less than s, was computed on the basis of Uhlir's paper (f) (g) and tabulated below. Curves for $F_4(\frac{t}{s},\frac{L}{s})$ are shown at page 30.