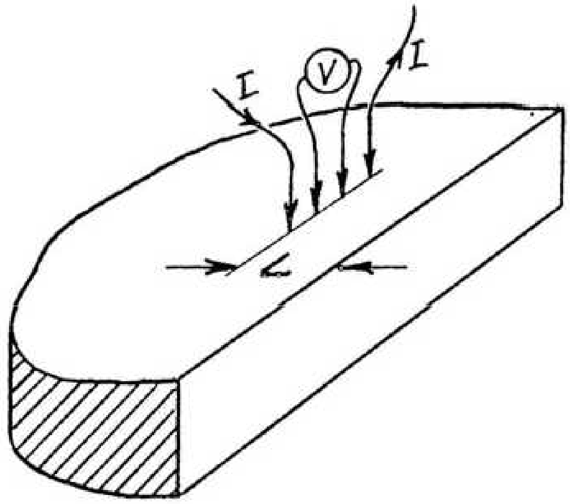
E.4) Probe Array Parallel to Edge, Thick Sample.



The geometric factor was calculated by Uhlir (f) (g). The results are presented here in a somewhat different form.

The resistivity is given by the equations:

$$\rho = G\,\frac{V}{I}, \qquad G = 2\pi s \cdot D_2(\tfrac{L}{s}) \cdot F_3(\tfrac{t}{s},\tfrac{L}{s}), \qquad (15)$$

where

$2\pi s$ is the geometric factor for a semi-infinite volume.

$$2\pi s \cdot D_2(\tfrac{L}{s}) = \frac{2\pi s}{1 + \frac{2}{\sqrt{1 + (2L/s)^2}} - \frac{1}{\sqrt{1 + (L/s)^2}}}$$

is the geometric factor to apply when measuring on a quarter-infinite volume with the probe array parrallel to the edge, see section C.2. $D_2(\frac{L}{s}) \rightarrow 1$ as $L/s \rightarrow \infty$ and $D_2(0) = \frac{1}{2}$.

$F_3(\frac{t}{s},\frac{L}{s})$ is the additional correction because of the finite thickness t of the sample.

As $L/s \rightarrow \infty$, F_3 approaches the factor $T_1(t/s)$ for an infinite plane sample, see section D.1. Furthermore, it is seen from symmetry considerations (see section A.3), that

$F_3(\frac{t}{s}, 0) = F_3(\frac{t}{s}, \infty) = T_1(t/s)$.