Referring again to Figs. 2, 3, 4, 5, and 6, the values of C for the developed pressure theory are shown by the solid line; those from Rankine by dashes and Rebhann by a dot and dash.

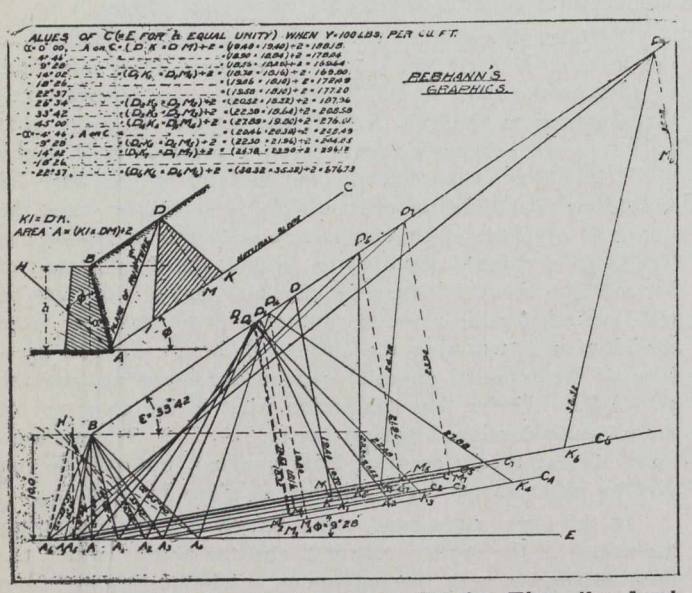



**Fig. 9.—Break-down for Surcharge Greater Than the Angle of Repose.**

In Fig. 2 the values for "$\alpha = 0$, and $\epsilon = 0$ or $\phi$," are greater than Rankine and Rebhann give for "$\alpha = 0$, $\epsilon = 0$," but are less than those given for "$\alpha = 0$, $\epsilon = \phi$." As previously stated, when $\alpha = 0$, or is negative, a surcharged fill is not considered as giving any greater pressure than one without.

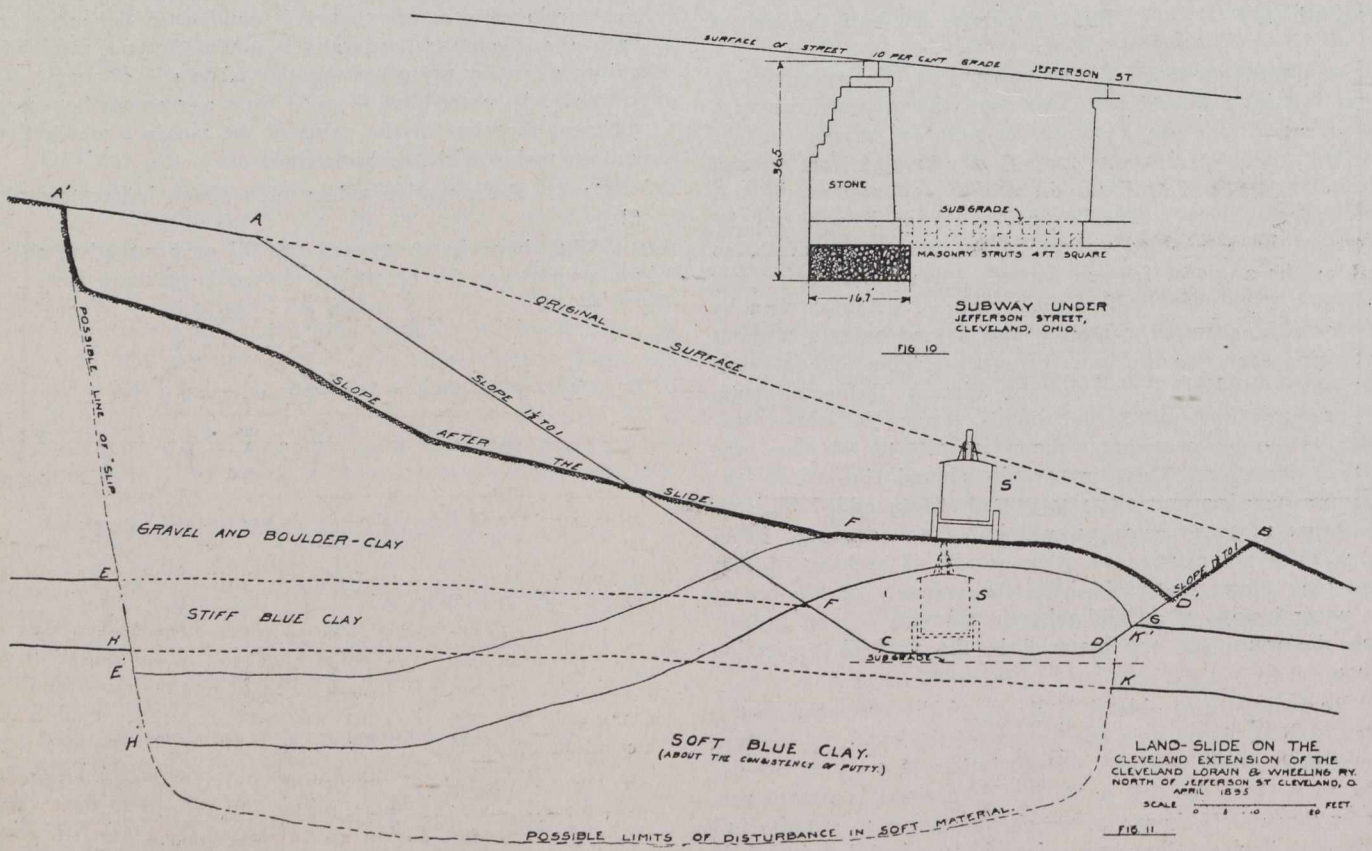
It will be noted that the values given by the developed pressure theory are almost a mean of those given by Rankine and Rebhann under the extremes of $\epsilon = 0$ and $\phi$. For $\alpha = 33° 42'$ and $\epsilon = \phi$, the developed pressure formulae give much lower values than the old theories, with one exception. For $\phi =$ about 55° Rebhann crosses the solid line and gives lower values. That, however, is an evident break-down in Rebhann. The increase shown by the solid curve is abou as we should expect. The increase in E (C) caused by the added load of the earth wedge with its surcharge is almost offset by the decrease in the horizontal pressure P, as the angle of repose $\phi$ increases.

In Fig. 3 for the two groups of curves shown $\alpha =$ —4° 46′ and —22° 37′, with $\epsilon = 0$ and $\phi$, the values for the developed pressure theory are almost a mean of those given by Rankine and Rebhann.

In Fig. 4 curves are given for $\phi = 45°$, with $\epsilon = 0°$ and 45°. For $\epsilon = 0$, the developed pressure formula gives larger values than obtained from Rankine and Rebhann, but for $\epsilon = 45°$ the results are less, when $\alpha$ is positive. When $\alpha = 0$, the two curves join, and continue with one value throughout for $\alpha$ negative. Compare this with the break-down of Rankine and the very low values of Rebhann for $\epsilon = 0$. Also note the solid curve is convex upward while Rebhann is convex downward.

In Fig. 5 is given curves for $\phi = 33° 42'$, and $\epsilon = 0$, 33° 42′ and 45°. The three curves for $\alpha$ positive join at $\alpha = 0$, and for negative $\alpha$ the curve is convex upward. Compare this with the very large values given for $\epsilon = \phi$ by both Rankine and Rebhann, and the break-down of Rebhann for $\epsilon = 45°$.

In Fig. 6 is given a group of curves for $\phi = 9° 28'$, and $\epsilon = 0$, 9° 28′, and 33° 42′. The same general characteristics are shown on comparison as seen in Figs. 4 and 5 except that Rebhann gives two curves convex upward for $\alpha$ nega




**Figs. 10 and 11.—Land Slide from Steep Surcharge and "Flowing" Understrata.**

tive. One of these is a complete break-down and the other a very close approach. Compare this also with the complete break-down of Rebhann for $\epsilon = 33° 42'$ as previously noted. The graphic sketch from which the Rebhann results were obtained is shown in Fig. 9. Neither Rankine's formula nor