

THE LOOSE VALLEY, ETC., NEAR MAIDSTONE.

Valleys of subsidence initiated by Swallow-holes.

SIR,—My attention has for some time been called to the formation of valleys from what seems to me a new point of view, and both at and near Malling the evidence for this seems as clear as one can expect in these cases.

This evidence seems to point that these valleys, all of which are in the same formation, viz. the Hythe Beds, and I would also include some valleys in the Chalk, have been initiated by swallow-holes, and that these have been in their primary stage *formed from below*, by the uprise of the water up lines of weakness under hydrostatic pressure.

Many of these swallow-holes still exist parallel with the course of the valley, but high and dry, and many of these are known by local names as Jacob's Hole, Baldwin's Hole, etc. Some still contain water, and are situated *at the heads* of some of the side valleys and are fed by springs.

It appears also that much more has been done by way of erosion by the invisible underground stream than by the visible one, and the shape of the valley sides, very steep in places, indicates subsidence consequent on the giving way of the valley under the weight above, rather than by subaerial action alone, though this of course has contributed.

In the case of Loose Valley we have instances of the loss of the stream for over a quarter and half a mile respectively, not an unusual occurrence in limestone areas, but here accompanied by what, as far as I know, is a most unusual feature, viz., that the loss of the valley accompanies the loss of the stream, and that where this occurs the valley ceases practically to exist, and is bridged over. Another governing factor seems to be the varying proportion of the Rag to the soft Hassock, as where the valley ceases there the Hassock is very thin and there the quarries occur, naturally at the place where the Rag is thicker.

Another interesting feature is the fact that there are various water-levels in this valley, and one case is that of a spring pond at a much higher level than the river and running over into it, a phase in the former state of that valley when this pond was a deep swallow-hole. Again, too, there occur many natural pools along the course of the river, and where these occur the valley assumes a crater-shaped form as if these pools also had once been deep swallow-holes, now worn away. That the loss of the river and of the valley must have escaped notice when the geological map was made, is shown by the fact that at the part where the last issue of the river takes place at the foot of the rise which there terminates the valley, a fault has been mapped, cutting off the Atherfield Clay, which it appears merely passes under that rise.

But I think I have said enough to show that both the Loose and the Malling Valleys deserve attention from all those interested in valley formation.

F. J. BENNETT.

WEST MALLING.

October 3rd, 1906.