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Most sink holes occur in regions where the underlying rock is dominantly calcareous. They are variously shaped depressions in the surface into which the run-off is carried away as subterranean drainage.

Sink holes are due, (1) to an enlargement by solution of joints and fissures, or, (2) to the caving in of the tops of subterranean caverns. They vary in diameter from a few yards to several miles. Where sink holes are due to the solvent action of meteoric waters along joints or fissures they are more or less round, but where they result from the caving in of the roofs of subterranean caverns, they are more irregular in outline. After their formation many sinks are given dendritic pattern by the erosive work of surface streams which flow into them.

Often sink holes become clogged, due either to a filling up of the joints or fissures, or to a sudden rise of the ground water surface. In such instances lakelets are formed.

Sink holes are common in many parts of Iowa. In the northeastern part of the state where the glacial and residual rock mantle is thin and the underlying rock is highly calcareous, sink holes, in places, are the most conspicuous features of the landscape.

In some parts of the state farmers have attempted to drain small ponds and marshes on their land by boring holes through the more or less impervious rock mantle and thus connecting the surface drainage with the subterranean fissures and joints. In some instances where the sink holes become an asset for surface drainage, farmers direct their tile ditches into these sink holes.

In the spring of 1918, a peculiar sink hole was observed in Pocahontas county. The county is deeply covered with drift except in local areas where the underlying St. Louis limestone is subject to the solvent action of meteoric waters. The sink hole in question is located seven and one-half miles to the south and east of the town of Rolfe.

Instead of proving ready egress for surface waters the sink

Fig. 32. Sink hole south of Rolfe, Pocahontas county.

Fig. 33. The same sink in a later stage.

Fig. 34. The same sink in a still later stage.

hole not only filled up with water, but became a spouting spring. A column of water several feet high and several inches in diameter was continuously forced up. The phenomenon was so unusual that its fame spread and people came from considerable distances to witness the novelty. Although the spouting was continuous for three or four weeks the amount of water forced up varied and it was observed that there was a gradual decrease in the flow, until after the heavy spring rains the flow ceased and finally even the lakelet disappeared. Compare figures 32, 33 and 34.

That the water was not the immediate run-off was shown by the fact that the water forced up through the sink hole was clear and free from sediment. The phenomenon may have been due either to tile ditches connected with this particular sink hole, or a natural drainage to this particular joint or fissure. Sufficient underground drainage was directed to the joint to develop the hydrostatic pressure.

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