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|--|---|----|
| 5. Yellow unfossiliferous shaly limestone | 1 | 4 |
| 4. Hard, brittle, unfossiliferous grayish limestone | 1 | 6 |
| 3. Limestone similar to the above in appearance, but very shaly | | 10 |
| 2. Thickly bedded gray buff limestone | 1 | 2 |
| 1. Heavy yellowish buff to brownish limestone very coarse and apparently unstratified. Porous with large amounts of calcite, and often much broken in portions, unfossiliferous. To bed of creek | 3 | 1 |

same as those shown at the Bloody Run section and the relative position is the same. In Charles City the mud-crack horizon may be found in places below great beds of the stromatoporoids and beneath the water level of the Cedar river. At Cedar Rapids, in Linn county, the writer observed what was taken to be a continuation of this horizon though he can make only a provisional statement that it occurs there. Mr. Webster considers that this horizon extends even to the south of Cedar Rapids.

The most satisfactory localities for the study of this horizon are the two Bloody Run quarries. The bed in these quarries has been exposed for a long

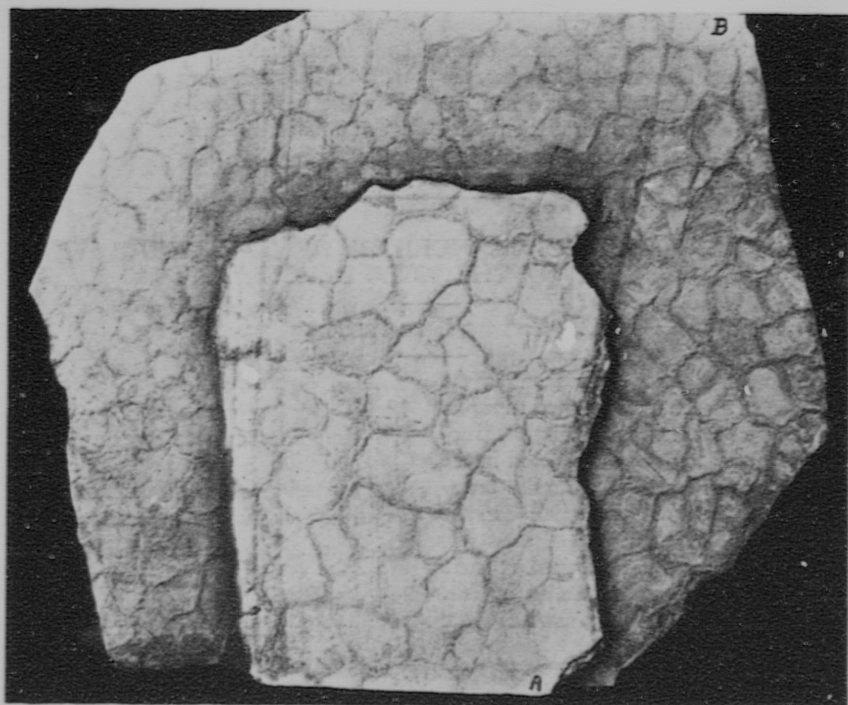


Fig. 1. A and B—Mud-crack; the smaller specimen (A) shows the first type; the larger one (B) shows that of the second. Specimens in collection of Carroll Lane Fenton.

Bed number 12 of this section has the widest extension of any mud-crack horizon of the Iowa Devonian known to the writer. It is found at various points east of Charles City, at Devonian, in the north part of Floyd county, at and near Osage and Mitchell in Mitchell county, and in other localities in the northern portion of Floyd as well as in portions of Cerro Gordo and Worth counties (C. L. Webster). At Waterloo, in Blackhawk county, it is a continuous horizon, and south of the State Teachers' College at Cedar Falls it is also well developed and has a good exposure on the bank of a small creek. The characters at these localities are practically the

term of years and the underlying rocks have so broken away that large specimens can be secured with comparative ease. The horizon at this point consists of two quite distinct divisions. The lower of these is of extremely thin bedded shale. The polygons are of large size from two to six inches at greatest diameter and the interspaces are often one-fourth to one-half an inch wide (fig. 1, A). The edges of the polygons are often very decidedly downwarped and in the specimen figured this characteristic is well developed.

The second type (fig. 1, B) is one of smaller polygons of more regular form with the greatest