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E. J. Cable

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The Buchanan Interglacial

By E. J. CABLE

On the John G. Miller farm, Section 27, Waterloo Township, Black Hawk County, the writer examined very carefully an area which was excavated for fill for grading of the new four-lane highway into west Waterloo.

The area through which the new highway was surveyed was very low ground which flooded when Black Hawk Creek, a tributary of the Cedar River, overflowed. Thus, it became necessary to construct a high road bed through this area. To secure material for the grade, a hill about 25 feet in height was entirely leveled. The top of the hill was capped by about six to eight feet of what was undoubtedly Iowan drift. Below the Iowan, there was a deposit of several feet of interglacial material which was unquestionably Buchanan. The term Buchanan was first used by Dr. Samuel Calvin and is still in use to designate the interglacial between the Kansan glacial stage and the Iowan glacial stage. This interval now includes the Yarmouth interglacial stage, the Illinoian glacial stage and the Sangamon interglacial stage.

The nature of the material composing the Buchanan here was rather complex. The gravel was highly oxidized. A careful examination of the material revealed the presence of tree trunks and branches and many fossil prints in sandstone boulders. (Figure 1.) The plants appeared to be Cretaceous in age. The veining of the leaf prints was not distinct enough to determine the species, but the large ones may have been fig tree leaves. Other imprints were common. A tree trunk was observed showing the roots firmly imbedded in the clay below. Ferruginous concretions, many with clayey nuclei, were very abundant. The rock material consisted of micaceous schists, quartzites, granites, dolerites, basalt with many varieties of quartz pebbles.

A few vestiges of fossil life were observed: for example, pelecypods, bryozoans, and belemnite stems predominated. Pyrite concretions were very conspicuous. In some places the entire area was coated with a whitish substance, melanterite, the weathered product of iron pyrite and possibly pyrrhotite.

Other examples of the presence of the Buchanan interglacial have been reported in Professor Arey's geology of Black Hawk County, in Cedar Falls Township. On the east side of Dry Run located about one-quarter mile east of Iowa State Teachers College, there was formerly an extensive deposit of Buchanan sand and gravel. Professor

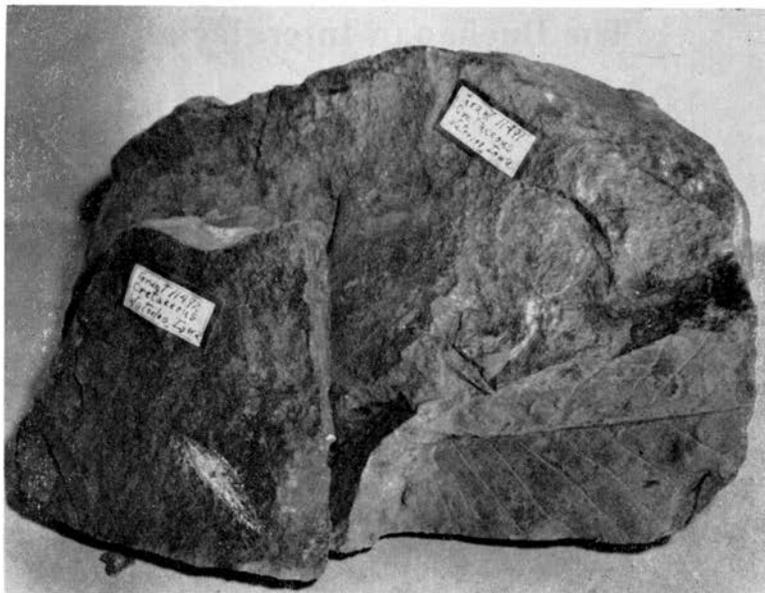


Figure 1. Cretaceous sandstone showing leaf imprints.

Arey, in his report, suggested that the material was of the valley stage deposit. The writer has examined this deposit many times in the past. Most of the material has been removed for railroad ballast and road surfacing. The present site has been excavated for the construction of the Lutheran Old Peoples Home. An examination of the excavation showed little evidence of this deposit.

The excavation for the present heating plant at the college showed about eight feet of what, no doubt, is Iowan. Directly beneath was the typical Kansan drift, a dense blue clay, the upper portion leached and somewhat oxidized. Below was the unleached and unoxidized Kansan.

Pockets of sand and gravel were present with streaks of the same material extending in all directions. No evidences of Buchanan were observed. Weathered granite boulders, green stones and dolerites were abundant. Figure 2 shows the material which was found in the upper Kansan in the excavation at the heating plant. Note the large specimen of martite and the glacial polished and striated felsite porphyry. The basalt slab has what appears to be pot holes. They were filled with sand and cemented with iron oxide cement. The writer cannot account for the holes in the upper and lower surface of the basalt boulder. The polishing and striating of the boulder suggests that it was carried beneath the Kansan ice.

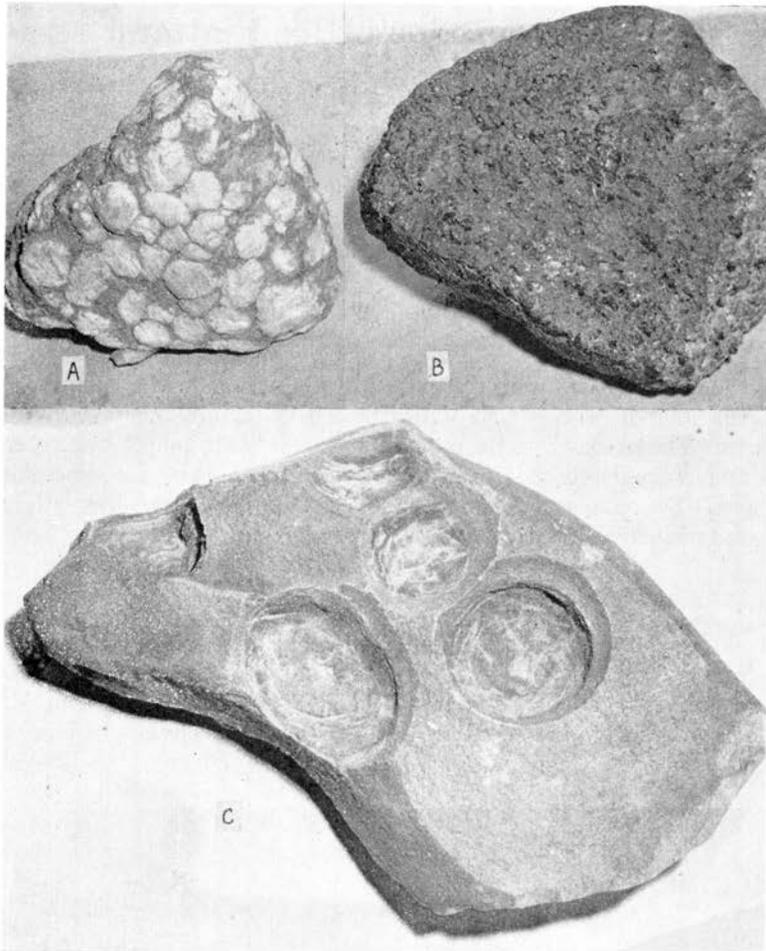


Figure 2. A. Felsite porphyry. B. Martite. C. Basalt boulder with pothole depressions.

Last fall the writer examined a deep excavation for a sewer extension from the men's dormitory to the main sewer. No evidences of Buchanan were observed although the depth of the excavation was 12 to 14 feet.

I note in Professor Arey's report that when the basement for the auditorium building at the college was excavated pieces of coal and other carbonaceous material, calcareous septaria and polished stones were found, which may have belonged to the Buchanan.

CEDAR FALLS, IOWA