tances. The Fluegeman section is probably a sandy facies of the Clayton, with the section given by Reimers the equivalent of the limestone described in the original type reference and, thus, it must serve as a lithostratotype rather than any of the sand/clay sections.

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III. THE TYPE SECTION OF THE CLAYTON FORMATION OF ALABAMA: A REPLY

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I am very grateful to David D. Reimers for the discussion of my paper (Fluegeman, 1989) on the Clayton Formation lithostratotype. It is clear from his discussion and from my own work that there is some ambiguity as to the interpretation of the type section of the Clayton Formation. I wish to address a few points raised by Reimers about the type section of the Clayton Formation.

The purpose of my paper was to point out what I considered a discrepancy in the type section of the Clayton Formation described by Reimers (1986) when compared with the section designated as the lithostratotype of the Clayton Formation by Reinhardt and Gibson (1980). A full literature review of the Clayton Formation was not included in that paper, as I considered the section I used to be clearly the type section. My conclusion was based on the early work as well as the data presented by Reinhardt and Gibson (1980) from a nearby corehole.

The first use of the name Clayton was not Smith *et al.* (1894), as reported by Reimers, but by Langdon (1891). This study does not, however, shed any light on the nature of the Clayton Formation away from the Chattahoochee Valley. Smith *et al.* do provide a description of a section in the railroad cut near Clayton but it includes 10 to 15 feet (3 to 4.5 m) of clay overlying 5 to 6 feet (1.5 to 1.8 m) of limestone. The upper portion of this section must be the clay unit designated as the Porters Creek outlier by Reinhardt and Gibson, and as such, the Clayton Formation described by Smith *et al.* includes only the upper part of the Clayton Formation. The section of the Clayton Formation described by MacNeil (1946) appears to include the section described by Smith *et al.* but adds a section of sands and some limestones below it.

As anyone who has visted the railroad cut at Clayton knows, there are two railroad cut sections. Despite the assertion of Reimers that the section south of the railroad crossing was designated by the Gulf

Coast Association of Geological Societies (1970) as the type section of the Clayton Formation, both sections were included. The unconformity in the cut north of the railroad crossing, at the base of the "leaf clay," proposed in the GCAGS section is not obvious and is not supported by dinoflagellate assemblages (Edwards, 1980). Thus, the possibility that this section is actually in the Nanafalia Formation seems remote and it appears that both sections are within the Clayton Formation. The southern section does represent a higher portion of the Clayton than does the northern section, based on hand level measurements and the presence of the "leaf clay" at the base of the southern section. It appears that both sections at Clayton complement each other and are worthy of study.

Which of the two sections is the Clayton Formation lithostratotype? My own conclusion that it is the section north of the railroad crossing is based on the description by MacNeil (1946). Although much of this section is no longer exposed, the base of the Clayton consists of a series of sands and sandy limestones with hard crystalline limestone at the top. Specific thicknesses are not provided but if, as I feel, this section is a continuation of the one described by Smith *et al.*, the crystalline limestone is probably about 5 or 6 feet (1.5 to 1.8 m) thick. When the record of U.S.G.S. corehole 102 (drilled at the top of the hill of which the sections are a part, reported by Reinhardt and Gibson, 1980) is examined, a marked similarity to the described sections of Smith *et al.* and MacNeil is in evidence. This corehole has a slight overlap (perhaps 1 meter) with the northern section. At the top of the hill, there is outcropping sediment and it is reasonable to assume that the section encountered in Core 102 was once exposed on the hill. Certainly the clay in the corehole is the same as that described by Smith *et al.* and MacNeil. From the lower part of Corehole 102, Reinhardt and Gibson report approximately 5 feet (1.5 m) of indurated beds, which could not be cored. My interpretation of this interval is that these indurated beds are the "5 to 6 foot limestone" described by Smith *et al.* directly beneath the clay.

The section south of the railroad crossing does contain limestone but my own field descriptions indicate about 3 m of sandy limestones and calcareous sands overlying calareous sands and a basal clay (the "leaf clay" based on hand level measurements and microscopic examination). This description is close to the description of the Gulf Coast Association of Geological Societies section but does not seem to match the limestone described by Smith *et al.* If the mere presence of limestone makes the southern exposure the type section, where does the described clay fit in? The sections of Smith *et al.* and MacNeil both show a clay, which was assigned by Reinhardt and Gibson to the Porters Creek Formation. In fact, 15 feet (4.5 m) of the 20 feet (6.1 m) described by Smith *et al.* is this clay unit. According to this, and to the MacNeil description, I believe the Clayton was described originally as a unit containing a high proportion of clastic sediment. Furthermore, I feel that the outcrop north of the railroad crossing is the lower part of MacNeil's section and as such is the only remaining outcrop of the Clayton Formation lithostratotype.

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