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SHALLOW-WATER SEDIMENTATION

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as illustrated in the Upper Devonian Baggy Beds

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SUMMARY

The Baggy Beds (440 m thick) form a transgressive sequence of shallow-water marine and delta-like sediments of Upper Famennian age between the continental Pickwell Down Sandstone and the overlying neritic Pilton Beds (which straddle the Devonian–Carboniferous boundary). The Baggy Beds are divided into lower and upper divisions (the lower division containing the bulk of the sandstones) and a number of members. There is a strong diversity of facies, and nine main facies are recognized; they show little evidence of cyclicity but their stratigraphical relationships are important for their interpretation. Penecontemporaneous erosion, principally attributed to wave-action, was often intense, and has contributed more than any other factor to the overall aspect of the marine facies. The bulk of the sediment comprises the shales, siltstones, and very fine sandstones of the *Diplocraterion yoyo* facies group, which display all gradations from non-life (letal) graded siltstones and shales to intensely bioturbated sandstones, in which the trace-fossil *D. yoyo* is generally conspicuous. The Reynard facies comprises graded sets of fine to very fine sandstones, the upper portions of which commonly show oscillation ripple or are bioturbated. The sets are intercalated singly in the *D. yoyo* facies, or form cosets (11 per cent of Baggy Beds). These two facies, which yield a small neritic fauna, are considered to represent deposits of the delta-front platform, or a like off-shore environment, with the cosets of Reynard facies for the most part representing a nearer-shore environment. The other facies (with an interpretation of their depositional environment) are as follows:

(i) *Arenicolites curvatus* facies (6 per cent), which include thin, fine to very fine sandstones with *A. curvatus* and bioturbated sandstones: sub-beach environment.

(ii) Rough facies (1 per cent), thin sets of shelly, cross-stratified sandstones with *Dolabra*, and intraformational conglomerate of local derivation: near-shore, shelly, and possibly intertidal channel fills.

(iii) Gull facies (1 per cent), cross-stratified fine well-sorted sandstones: near-shore submarine dune depositis.

(iv) *Lingula* facies (8 per cent), bioturbated and penecontemporaneously eroded graded siltstones and shales with patches of disarticulated *Lingula* and thin bellerophontoid limestones: lagoonal or restricted bay environment, possibly brackish.

(v) Timber and Cormorant facies (11·5 per cent), channel-fill sediments with parallel and cross-stratified fine to very fine sandstones of northerly provenance with much plant debris: distributary fills. (Cormorant subfacies represents deposition mainly under upper flow régime.)

(vi) Tag facies (5 per cent), multiple channel-fill sediments deposited under lower flow intensity with fine to very fine sandstones and silt-grade sediments, in which small-scale cross-lamination is important: interpretation doubtful, possibly distributary mouth bar deposits, or crevasse fill or the fill of an off-shore barrier inlet.

(vii) Hoe facies (1·5 per cent), shales and siltstones associated with Timber and Tag facies: deposited under conditions of low flow intensity, or in fresh-water lakes. Plant remains and, rarely, *Chondrites*? *parvus*.

A model is erected (Fig. 27) suggesting that the sediments were deposited in the vicinity of a delta or similar fluvially influenced environment, subject to a moderate tidal range, though largely on the delta-front platform, or relatively inshore on the continental shelf.

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