Although Stephens's concept of linking the lateritic leaching processes in one great region with the deposition of silica in the adjacent one is appealing in its simplicity, severe doubts come to mind if one attempts to visualize the process of fairly regular distribution of the silica over a surface, measuring hundreds of miles across, by means of streams and rivers. No planation surface is so featureless as to allow complete, or major, inundations by rivers, and even during great floods, rivers would, therefore, tend to follow particular linear trends along which the silica supplied and eventually precipitated would have to be confined. Thus, if rivers flowing across the region actually did contribute a major amount of allochthonous silica to the formation of the silcrete sheet, this could only have happened by feeding the dissolved silica into the groundwater and by its further slow distribution and rise with this latter agent away from the river courses. It is more likely, however, that river contributions of silica were subordinate or negligible, and that the formation of the siliceous duricrust followed, predominantly or entirely, the pattern generally accepted for the genesis of such surficial encrustations, whether ferruginous, aluminous, manganiferous, calcareous, or siliceous—mobilization of the substances concerned from the bedrock (or parent material) *in situ* by chemical weathering, and precipitation after movement over very short, or at best moderate, distances in the groundwater, usually by means of evaporation[2]. It would be necessary, therefore, to make allowance, in the silcrete areas, for a period during which the climatic conditions were just right for both mobilization and precipitation of silica to occur more or less *in situ*. A climate drier than the equatorial one with its lateritic weathering processes would presumably have to be envisaged.

My own experience with duricrusts was essentially gained in West Africa, and although I was predominantly concerned there with ferruginous and aluminous types[3,4], I have made some observations on siliceous precipitates which support the generally accepted view outlined here. These investigations will be published separately.

W. D. BRÜCKNER

Department of Geology,
Memorial University of Newfoundland,
St. John's, Newfoundland,
Canada.

[1] Stephens, C. G., *Nature*, **203**, 1407 (1964).
[2] King, L. C., *The Morphology of the Earth*, 171 (Oliver and Boyd, 1962).
[3] Brückner, W. D., *Geol. Rundschau*, **43**, 307 (1955).
[4] Brückner, W. D., *Eclogae Geol. Helv.*, **50**, 239 (1957).

I TAKE Prof. Brückner's remarks to mean that he almost exclusively favours the hypothesis of relative accumulation of silica within the profile in which it has been released by weathering. Examples of this are widespread in Australia for both laterite and silcrete, but in the case of the Central Australian silcretes the general and detailed evidence is markedly in favour of absolute accumulation following lateral movement in drainage waters. In addition to the general evidence set out in my letter the following details are significant. (1) Water-worn quartz gravels are frequently found in the matrix of silcrete. (2) Water-worn silcrete from some higher residuals is often included in the silcrete of lower surfaces, thus pointing to a complex erosional and depositional history rather than simple widespread planation. (3) Some of the silcrete overlies gypseous, calcareous and alunitic lacustrine deposits from which it is most unlikely to have been derived. (4) The present ephemeral stream pattern and the associated soils and rock exposure taken together with the higher situated water-worn quartz gravels point to topographic inversion of a landscape in which the originally lower silicified surfaces are now preserved as the higher topographic elements.

It is my intention to complete, during 1966, a monograph giving the results of an intermittent, but very prolonged, investigation of Australian laterites and silcretes and their relationships.

C. G. STEPHENS

C.S.I.R.O. Division of Soils,
Adelaide, South Australia.

Cromer Forest Bed Series

DURING the past seven years much new evidence has been obtained concerning the stratigraphy of the Cromer Forest Bed Series of the Norfolk and Suffolk coasts, and this requires the sequence put forward by Clement Reid[1,2] to be revised. These new investigations have not yet been completed and it will be some time before the full stratigraphical and palaeoecological results will be available. But because of the importance of the Cromer Forest Bed Series for the European Middle Pleistocene succession it will be of general interest to give a simplified description of our provisional stratigraphical results.

Reid's classic Cromer Forest Bed Series succession is shown in Table 1.

Table 1. CLEMENT REID'S SEQUENCE OF THE CROMER FOREST BED SERIES AND RELATED DEPOSITS

Cromer Till (First Till)	
Arctic Freshwater Bed	
Leda-myalis Bed	
Upper Freshwater Bed	Cromer Forest Bed Series
Forest Bed (estuarine)	Cromer Forest Bed Series
Lower Freshwater Bed	Cromer Forest Bed Series
Weybourne Crag	

The only emendation that this sequence has received since the nineteenth century is Solomon's[3] suggestion that the Arctic Freshwater Bed precedes the *Leda-myalis* Bed.

The new stratigraphical evidence is summarized in the sketch-sections of Figs. 1 and 2 of the coastal exposures at West Runton and Mundesley. A lower temperate series, principally estuarine sediments (*a*), is overlain by sands and gravels (*b*), often ferruginous near their surface and forming iron pan. These gravels are often associated with clay-conglomerates derived by re-working of the lower estuarine beds. Arctic freshwater beds (*c*) are associated with these gravels at West Runton, and ice-wedge casts and involutions occur within them. Freshwater late-glacial marls and silts (*d*) lie on these beds and then come the temperate organic mud beds (*e*) forming the so-called 'Upper Freshwater Beds' at West Runton. These temperate freshwater beds are the type sediments of the European Cromerian Stage[4]. The soil (*f*) of this stage extends north and south of the main exposure at Goss' Gap, West Runton. Along this stretch of the coast the soil and the peat are covered by estuarine silts, gravels and sands (*g*) of a marine transgression which occurred in the latter half of the Cromerian. The well-known bed of *Mya truncata in situ* at West Runton, noted by Trimmer[5],

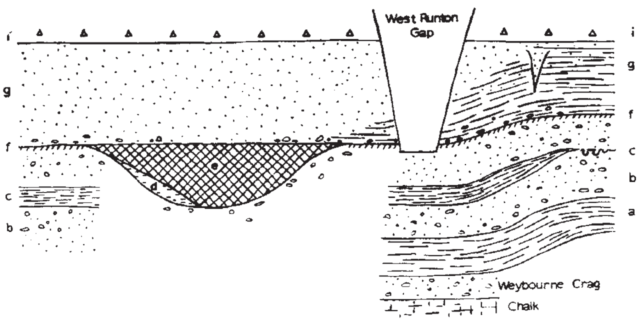

Fig. 1. Sketch section at West Runton, about 400 m length and 7 m depth. Key to letters in Table 2