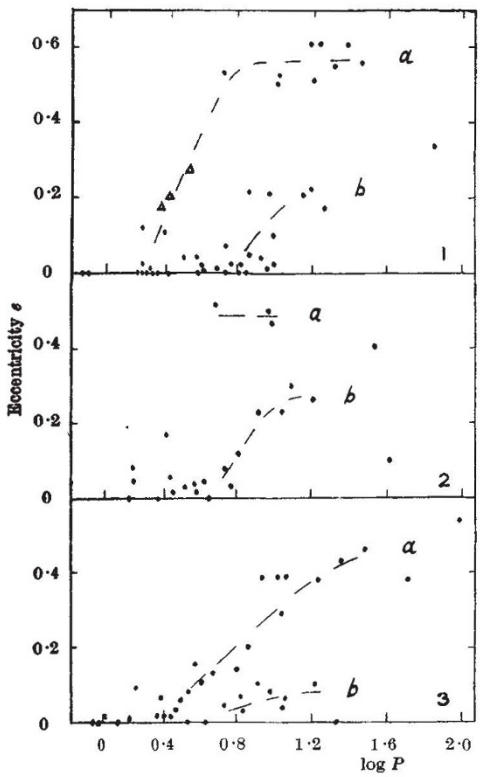

Relations between periods and eccentricities for binaries with **chief components** of spectral classes $B9-A7$. Abscissæ · logarithms **of periods** of revolution, log P. Ordinates : eccentricities of orbits, e. (1) Systems with nearly equal components ; (2) systems with **mass function** $f \leqslant 0{\cdot}02$ sun mass ; (3) systems with mass function $f > 0{\cdot}02$ sun mass

The diagrams show the surprising fact that the **systems** split up into two groups of orbits, for each **of which** the relation between periods and eccentric**ities is rather** definite. The groups may be called *a* **and** *b*. Proceeding to later spectral types of chief **components**, the systems of group *a* decrease and are **not found** among spectral types later than *F*7.

It is suggested that the systems of the two groups **contain** different types of *A*-stars. From systems **with two** visible spectra a systematic difference of **the average** masses of these different types is indicated, **the components** of systems of group *a* having average **masses** of 1·5 that of the sun ($n = 9$) and those of **group** *b* 2·1 that of the sun ($n = 22$), for the same sub**class** *A*1. The hypothesis of equilibrium between two **forces**, one tending to enlarge, the other to diminish, **the eccentricities** of orbit put forward by me in 1939 [2], **affords a** reasonable explanation of the observed facts. **According** to this hypothesis, the chief difference **between** the two sorts of *A*-stars can be attributed to **differences** in the strength of the tendency causing **the rotation** of the equatorial regions to be different **from that** of those parts of the stars lying near the **rotational** axis.

A detailed account of this investigation will be published soon.

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[1] *Lick Obs. Bull.*, 521 (1948).
[2] *Viert. Astr. Ges.*, **74**, 261 (1939) ; *Z. Astrophys.*, **19**, 157 (1940) and **23**, 24 (1944).

Pleistocene Deep Weathering

T. C. Phemister and S. Simpson have performed a very useful service in recording deep weathering of granite under comparatively unweathered glacial deposits, as exposed during the cutting of a new drainage system in Aberdeen city[1]. They refer to other examples of the same kind, which, they say, occur "at a large number of scattered localities in north-east Scotland". It is much to be hoped that they will follow up this strangely neglected topic.

The most striking display of which I know is given by the Strath Hallidale injection complex of east Sutherland, where "a very remarkable feature of the Suisgill district is the extent to which preglacially weathered rock has escaped erosion"[2]. I had a good chance of examining the Suisgill exposures during a visit of the International Precambrian Association in August, 1934. Later the same year, during the British Association meeting at Aberdeen, I saw the phenomenon repeated, though on a comparatively small scale, at the famous Bay of Nigg. This year, during the British Association visit to Newcastle, we were shown at Tynemouth a mass of sandstone blocks separating solid sandstone below from boulder clay above. We were told that this mass had been broken up by the ice responsible for the boulder clay ; but, as it had no resemblance to boulder clay, and the closest possible resemblance to 'head', such as is commonly found in unglaciated districts, I question the interpretation. Moreover, in other parts of the Newcastle district unweathered boulder clay overlies ochre beds representing chemically weathered limestones. Farther south, too, in Yorkshire, boulder clay can be seen resting on chalk rubble, again of 'head' character. I refer, for example, to the chalk rubble which overlies the well-known preglacial raised beach at Bridlington.

The general weakness of east coast glaciation as compared with that of the west has attracted the attention of many Scottish geologists. It is commonly recognized as due in large measure to restricted snowfall in the east. It must also, at certain stages, have been exaggerated by the proximity of Scandinavian ice, which would tend to impede the run off of the British contribution.

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[1] *Nature*, **164**, 318 (1949).
[2] *Geol. Mag.*, **71**, 553 (1934).

Exchange of Oxygen-18 Between Oxides and Gaseous Oxygen

THE communication by J. A. Allen and I. Lauder[1] is of interest to us since we are also making an examination of such reactions. It was anticipated that this work would throw some light on the nature and reactivity of solids and solid surfaces ; this expectation has been realized.

Our isotope analyses are being carried out by means of a mass spectrometer, so that very small samples of gas are required ; this facilitates a detailed investigation of the kinetics. The method used was to outgas a sample of oxide at a temperature of 450° C. or higher for some 14 hr. and then to add a known quantity of oxygen gas containing about 1·2 per cent of oxygen-18 : a very fine capillary