may be assumed that the night conditions are almost reached at 0957 p.m. when the Sun is 14° below the horizon and the night prevails until the Sun is in the similar position on the morning side.

Although no absolute calibration is given, it is quite striking to note that the relative intensities in the three wave-lengths show a wide variation with time. Independent variation of the individual radiations can also be observed. Throughout the night 5400 Å radiation shows random and small fluctuations. 6300 Å radiation shows higher intensities at the beginning and end of the night, with a minimum around 0020 E.S.T. The 5577 Å radiation shows some decrease in intensity in the early part of the night with a distinct maximum at about 0045 E.S.T. and falling off again towards dawn. The ratio of maximum to minimum intensity of 5577 Å radiation during the night is 2.3 : 1. Photometers subtending narrow angles have also shown maxima of intensity around midnight, both at the middle latitudes² and in the tropics³.

	Table 2 Beginning of night	When I_{5577} is maximum	End of night
I_{5577}/I_{6300}	4.5	8.9	4.75
I_{5577}/I_{5400}	4.3	8.4	5.3

Table 2 gives the ratios of intensities of I_{5577}/I_{6300} and I_{5577}/I_{5400} for the three epochs of the night; (1) at the beginning of the night; (2) at the time when 5577 Å radiation had maximum intensity; (3) at the end of the night.

P. V. KULKARNI*

Radio and Electrical Engineering Division,
National Research Council (Canada), Ottawa.

* Postdoctorate Fellow.

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Fitting the Continents

THE discussion¹ by Dr. C. H. Barnett and Sir Harold Jeffreys calls for comment. First, the original suggestion that the Earth might be expanding, on the basis of experimental fit of the 200-m depth contours of the continental shelves, was made by O. C. Hilgenberg in 1933². Further, Sir Harold Jeffreys's objection that there is too much implied distortion can be met. The pseudo-viscosity of the crust^{3,4} and observed distortion by shear^{5,6} would lead one to expect continental distortion in any event; and the outline of the continental margins may have changed in geological time, by accretion of the continents^{7,8}, by loss of continental crust⁹, or both.

These points must be borne in mind when seeking evidence for or against Earth expansion and continental drift.

JOHN G. DENNIS

Department of Geology,
Long Beach State College,
Long Beach 4, California.

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GEOLOGY

Kenya Ignimbrites

IN a recent communication¹, Dr. G. J. H. McCall gave his views on some ignimbrite-like rocks found in the Kenya rift valley. The full details of these rocks, particularly those in the Menengai area, are awaited with great interest as they should prove to be a valuable contribution to the subject of ignimbrites and ignimbrite-like rocks. Some comments are called for in the light of an investigation²⁻⁴ made on similar rocks in the area immediately to the east of that studied by Dr. McCall.

The hypothesis that the lenticles (or lithophysae) are due to a drawing out by flow of formerly continuous laminae cannot be accepted for two reasons. The first is that the lenticles would show a preferred direction of elongation when viewed in the foliation plane if they were due to a drawing out by flow; in the same way that gas vesicles drawn out by flow in a normal lava show elongation in both horizontal and vertical sections. Such an elongation has not been noticed in any of the several hundred specimens of Kenya ignimbrites examined. The second reason for rejecting Dr. McCall's explanation of the origin of the lenticles is that it fails to account for the vertical transition of the lenticles from lens-shaped vesicle-free blebs near the base of a flow unit, to equidimensional pumiceous blocks near the top; all transitions between these two extremes being present in a single unit. This transition is particularly well seen in the ignimbrite which forms the bank of the Melawa River 5 miles south-east of Ol Kalou. This ignimbrite also shows a thick development of incoherent unwelded ash as its upper member, which is indistinguishable from normal vulcanian ash. Such a deposit could not have been produced by the collapse of a lava froth. It is noteworthy that the vertical zonation of the ignimbrites in this region can be matched with those described by Marshall⁵ and more recently by Martin⁶ from the type locality for ignimbrites in North Island, New Zealand.

The xenoliths, which Dr. McCall attributes to the break-up of a brittle solidified lava, are common features of Kenya ignimbrites. However, in any one flow, many different kinds of lava may occur as xenoliths and they can sometimes be matched with underlying lavas. In the case of the Gorge flow of the Lower Oramutia volcanics⁴ it is possible to relate the distance of the ignimbrite from its presumed source to the increase in xenolithic debris. Besides lava fragments, clods of earth and weathered lava have been found in many Kenya ignimbrites. There is obviously no reason for abandoning the orthodox view that the xenoliths are fragments of country rock torn off during the eruption or during transport above ground-level.

One of the Pleistocene 'ravine flow' occurrences mentioned by Dr. McCall is the subject of a recent paper⁷. Dr. McCall describes these as 'watery'. Does 'watery' in this context mean a high water content or an exceptionally low viscosity? It is important to realize that these 'ravine flows' are of two different kinds: ignimbrites with a texture suggestive of coalesced liquid blebs and true froth lavas. The latter are of low density and closely resemble pumice tuffs.

Composite flows showing eutaxitic structure and normal lava in one unit are apparently restricted to Menengai crater. Most of the ignimbrites occur in the main body of the Kinangop tuffs. However,