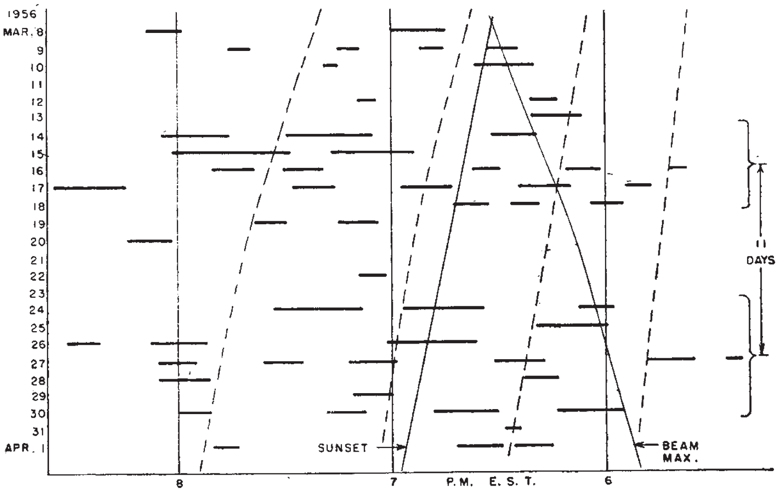

Fig. 2. Periods of peak intensity of radio signals from Venus at 11 m. during March 1956

of the interferometer pattern before setting. These lobes near the horizon are sufficiently wide and the periods of intense Venus signals sufficiently brief for the lobe pattern to have only a minor effect in separating the periods of peak intensity. The lobe minima are shown by dashed lines. The time of sunset and the time when the planet was in the maximum of the antenna primary pattern are also indicated.

The peak periods show a tendency to group around March 16 and 27. Whether this 11-day period is related to the rotation period of the planet is not definite. The peak periods in Fig. 2 also show some tendency to occur progressively earlier during the month. This apparent drift-rate amounts to 5–8 min. per day.

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[1] Kraus, J. D., *Nature*, [178, 33 (1956)].

Observations of Potential Evapo-Transpiration

The Nature Conservancy started at the end of 1955 to measure potential evapo-transpiration using the methods devised by C. W. Thornthwaite and his associates[1]. These studies are continuing; but since the first year's results for Achnagoichan in Rothiemurchus, within the Cairngorms Nature Reserve, are of special topical interest, it is worth referring to them briefly at this stage.

1955 was a particularly dry year; but it was surprising that the figures recorded for potential evapo-transpiration reached as high as 6·8 in. in July and 7·1 in. in August, while even the winter months showed in general more than 1 in. These figures are so much higher than would be given by any of the existing empirical formulæ that they are at once open to suspicion. Investigation of every conceivable source of error has so far yielded none which could account for the whole of the discrepancy, and one is driven to conclude that the formulæ fail to give sufficient weighting to one or more factors. It seems likely that wind was underweighted, and this is borne out by the readings in the present winter months, which were comparatively calm, being significantly less than for the previous winter, which was windy. The effects of wind may be augmented by a föhn effect in the intermontane basin of Mid-Strathspey.

A tentative water-budget, constructed from the evapo-transpiration figures and the rainfall, suggests that 1955 ended with a considerable water deficit, which may not be made up before the 1956 vegetative season is under way; this in spite of a very wet December. The calculations are to a large extent borne out by common observation of stream- and well-levels, wilting of plants, etc., where extremes for the century were recorded. It will be of theoretical, as well as practical, interest to see whether the prognostications of water shortage in 1956 are borne out.

On February 8 this year the Advisory Committee on Weather Control of the United States Senate, in a report to the President, put an end to the doubts about the effectiveness of rain-making by seeding clouds with silver iodide. Its demonstration that precipitation had been increased by amounts between 9 and 17 per cent in the Pacific States becomes well worth pondering in Great Britain, where we are liable to shortages such as experienced in 1955, and which we shall probably not be free from in 1956.

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[1] Mather, J. R. (edit.), Pub. in Climatol., The Johns Hopkins University Laboratory of Climatology, Seabrook, New Jersey, U.S.A., 5, VII, No. 1 (1954).

Capillary Structure of Coals

A conference on the "Ultrafine Structure of Coals and Cokes"[1] was held in London in 1943; later, Bangham *et al.*[2] proposed a model for coals in which the capillary system was located between closely compacted spherical 'micelles'. More recently, in the laboratories of the British Coal Utilisation Research Association, an extensive investigation of the adsorptive properties of some British coals has been carried out, and has led to a new model of the physical structure of coal. This model may be described briefly as follows.

The ultrafine structure consists of an extensive system of cavities interconnected by a maze of narrow capillary-constrictions. These cavities appear to be flat in shape and are two or three times as wide (about 40–60 A.) as the constrictions. The interconnecting constrictions have a bi-modal distribution of widths, with modal values at 10–20 and 15–30 A. for the coals studied—which included an anthracite, a steam coal, a coking coal, and a free-burning coal. This ultrafine structure, which exhibits molecular sieve properties, accommodates about 95 per cent of the total internal surface area, but only about