

phenomenon which can be equated in a simple, one-to-one way with the extent of 'interaction' between separate groups or individuals; it can clearly operate very differently in different social contexts, and can lead to a variety of contrasting and interacting patterns in different spheres of material culture. Variations in the forms of hunting weapons may after all provide one of the most sensitive indicators of group affiliation among prehistoric hunting and gathering communities, but to assume that

this would necessarily be true in all social contexts would be stretching the evidence too far. Only by clearly understanding the social mechanisms by which these variations in material culture come into being can we reliably interpret the data from the surviving archaeological record. It is in this context, of course, that the ethnoarchaeological studies carried out by Wiessner and others are of central importance to the understanding of human behaviour in the past. □

number of small limb features. The observations are not at all difficult, requiring only careful timing and concentration.

Nowadays at any major eclipse there are several airborne observers. NASA's Kuiper Airborne Observatory may be flying along the track over the Indian Ocean, using the Moon as a high-resolution image dissector along the limb to study the limb brightness variation in sub-millimetre wavelengths.

On the ground, several US experimenters hope to be present. A team led by D. Landman, Institute of Astronomy, Hawaii, hopes to continue spectrophotometry of the weak emission lines and continua of ordinary prominences to provide tests of theoretical models. Investigative teams from Kitt Peak, Sacramento Peak and Williams College would like to study in different ways the motion of material in the inner corona, while a group from Iowa State University would study the motion of dust in the outer corona.

Turning the Sun 'off' for several minutes should produce some significant effects in the Earth's atmosphere in the wake of the eclipse path. At least four teams from the US are hoping to study these effects. Two of them would attempt to refine our knowledge of the atmospheric turbulence causing shadow bands and another would look for effects of the wake as far away as India. Observing teams are also expected from Japan and Australia, and quite likely from India, Europe and Canada as well. Indonesia has created a national committee on the eclipse.

This eclipse is the first of three total eclipses to occur in the region over a five-year period. Interestingly, the second is also the next total eclipse, on 22-23 November 1984, and its path intersects with the 1983 eclipse in the Gulf of Papua. However, no experiment has yet been proposed which would make use of this circumstance. The third eclipse will be on 18 March 1988 over Sumatra and Borneo.

Total eclipse of June 1983

from A.D. Fiala

NEXT June 11, nature will provide one of her most spectacular sights, a total eclipse of the Sun. The eclipse will be of long duration and visible from accessible land sites where there is every prospect of good weather — a favourable combination that has not occurred since June 1973 and will not occur again until July 1991. The path of totality will cross land mostly in Indonesia, but also in Papua New Guinea and a few small islands. Maximum duration of totality will reach over 5 minutes 15 seconds, at a point midway between the islands of Java and Sulawesi. However, on both islands duration in excess of five minutes will occur, with the Sun well up in the sky.

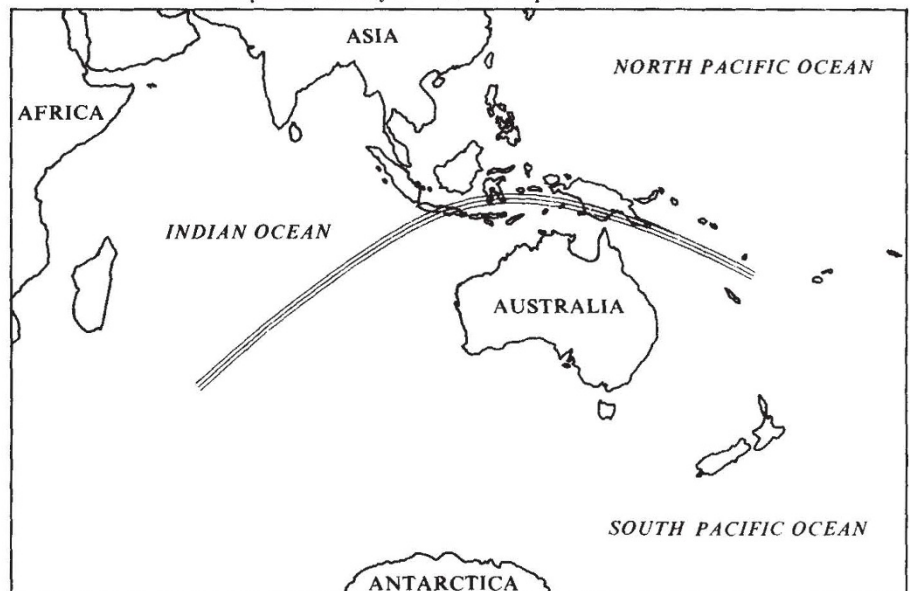
The path of totality will start in the south Indian Ocean at sunrise. For the first hour the umbra will sweep over water, then fall upon Christmas Island. It will then travel the Indonesian archipelago, crossing the centre of Java, the south of Sulawesi and the south of New Guinea, with Ujung Pandang and Port Moresby lying nearly on the central line (see the map). On Java, several large cities lie in the path, including Jogjakarta, Surabaya and Semarang. Bosscha Observatory, the closest to the equator of the world's major observatories, will lie outside the path of totality, however, and will see only 97 per cent partial phase.

The weather prospects for the eclipse are excellent, according to Canadian meteorologist Jay Anderson (*Newsletter of the Bull. R. astr. Soc. Can.*, June 1981). Monsoon conditions give a probability of clear sky of over 65 per cent on the north-east coast of Java and south-west coast of Sulawesi, and nearly 90 per cent at Port Moresby. The sunspot cycle will be midway between maximum and minimum, so intermediate coronal structure and activity may be expected. The eclipse will last long enough for the sky to darken, making it easier to see faint features, particularly from high altitude.

Many astronomers and physicists are laying provisional plans as, indeed, is the Indonesian Government, which is hoping to attract tourists to both the eclipse and the hundredth anniversary of the eruption of Krakatoa that falls at the same time. Experiments are being planned to measure the size of the Sun, to probe the composition and structure of the solar atmosphere and to look for solar effects on the Earth's atmosphere and on the behaviour of living organisms.

A collaborative team from the US Naval Observatory, the Computer Science Corporation, NASA Goddard Space Flight Center and the Astronomical Society of Canberra plans to man at least one station near each edge of the path, in order to measure the solar diameter. This procedure has been carried out at many eclipses, since the original measurements in 1715 by Halley. So far, the results indicate that there is a variation in the size of the Sun, but too few measurements have been gathered to distinguish between monotonic and pulsating variation. The long duration of this eclipse should give the opportunity for observing an extraordinarily large

The path of totality of the total eclipse of June 1983.



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