analysts. Without this kind of follow-up, international projects which capture the public imagination at the time become little more than grandiose and expensive scientific stunts. The Meteorological Office must therefore be congratulated on a very considerable achievement.

The charts provide a major contribution to the study of the general circulation of the atmosphere or, what is much the same thing, the climatology of the atmosphere, between the surface and about 30 km height (10 mbar pressure). The vertical section is interesting near the latitude of the maximum of the sub-tropical jet stream. Routine daily synoptic data do not suffice to give any adequate idea of the constancy and meandering of this current centred at a height of about 12 km, a little below the tropopause, so that this daily series presents unique information. On the average December chart for 1958 are shown five distinct jet-stream wavelengths with the maxima of north-south component attaining 5 to 10 m/s, compared with a maximum west-east current varying from about 15 to over 50 m/s. The smallest speed at this latitude is at longitude 120° W, the greatest at 130° E, the extreme east and west of the Pacific Ocean. These agree well with established climatic features, the speeds being in fair agreement with the means shown on upper-air climatic charts, but the meanderings seem more pronounced. The daily charts naturally show much greater variability.

Apart from their intrinsic interest, the data on the charts can be used to compute statistics of central significance in general circulation theory such as the monthly mean fluxes and eddy fluxes of momentum, energy and water vapour. A paper by the compilers of these charts, Murray, Parker and Collison, recently appeared in the *Quarterly Journal of the Royal Meteorological Society* (p. 92; 1969) presenting some of these derived data, and much more of value can be extracted. It is interesting that another combined attack on the world's atmospheric circulation is being planned for the mid-1970s, but against a much advanced theoretical background. The hope then will be to predict and not merely to record the day to day changes. This change in objective is a good indication of the progress made since the IGY, but the IGY data still remain the most complete collection we have.

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Probability and Prejudice

SIR,—Concerning the prisoners: Matthew, Mark and Luke (*Nature*, 221, 291; 1969); if two execution victims were to be selected in succession by a random ballot, Matthew's joint probability of being executed with either Mark or Luke—in any order—is $2/3$. Having survived the first ballot, Matthew is entitled to feel happier, for his conditional probability of execution on the second ballot is now $1/2$. Note that this is conditional to his surviving the first ballot. The first diagram depicts this situation.

These probabilities thus derived are termed "subjective", for they are derived from a two-stage ballot which Matthew subjectively evaluates as equivalent to his real-world event: execution of two prisoners whose identities have been predetermined.

One element of confusion in this problem is provided by the reference to a "posterior probability" after additional information is provided by the jailer. What additional information, relevant to his own fate, has Matthew received from the jailer? None! The jailer could equally have answered instead: "Luke is to be executed" without providing useful information to Matthew.

When he posed the question to the jailer, Matthew had already reasoned that at least one victim must occur

TWO VICTIMS TO BE SELECTED BY RANDOM BALLOT AT EVENT FORKS X, Y

within the pair, Mark and Luke, taken together. Presumably, he must have also been indifferent as to which one was this victim: because the omission of a statement of any subjective preferences would make the problem incomplete, it is assumed such subjective factors are absent. He now invokes his own decision to make this victim the choice of the first ballot, as shown below in the schematic diagram.

The question now arises whether this subjective viewpoint is equivalent to the real-world event which Matthew is evaluating. Because it is "subjective" by definition, this equivalence cannot be measured by any outsider by any absolute means—this is where the indefiniteness of subjective probabilities is galling to exact scientists!

We can, however, at least insist that Matthew's subjective evaluation be rational and consistent. The second diagram cannot rationally be reconciled with the prior schematic diagram as representative of the real-world by reason of the arbitrary order of selection introduced at X. Matthew may have subjective reasons for preferring the second diagram (such as the jailer hating Mark, who therefore becomes first choice), but he cannot regard both diagrams as reasonable and consistent. He therefore cannot feel happier.

Yours faithfully,

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ELDO's Future Programme

SIR,—May I clarify a point in your paragraph on ELDO's Future Programme (*Nature*, 221, 990; 1969).

The undertaking which the Government has given in regard to Blue Streak covers supply "to ELDO, to