10th. February 1948.

Dear Professor Lyot,

It was most kind of you to reply to my questions through Professor Stratton and to send me the reference to your publication on the polarisation of planetary light, which I have obtained and begun to study.

The possibility in my mind was that of a slight difference in colour between the light of the planet transmitted by a nicol in the plane of the sun and that transmitted by a nicol set at a right angle to the first. If I understand your paper, the total luminosity of these images differs by less than 3%. An admixture of coloured light to one but not to the other would perhaps be more perceptible than a corresponding addition of white light. That is the only foundation of my suggestion that it might be profitable to compare the colours of the light transmitted by these two paths if such a comparison is possible with accuracy.

Any portion of the light of the planet ascribable to rainbow refraction would indeed be very transient and would change in colour through the whole gamut of the spectrum in a few days, as the angle of vision changes from, let us say, 40°.5 to 42°.5. It was to emphasise this point that I calculated for Professor Stratton the angles of vision appropriate to droplets of water. The colour ~~content~~ contrast, if it existed, would reverse itself in two or three days, passing through a zero between the times of its maxima, and rapidly fading away. It could usefully be looked

for, if at all, during a period of about one week, at such a time, for example, as your observations of 25 May 1923 and 7 June 1924, and again at some period about 7 December 1948 and 15 July 1949, these dates being, of course, capable of correction by reference to the angle of vision, ~~which~~ for I have not calculated from sp with any accuracy, they being appropriate to observations capable of excluding in the first place refraction through droplets of water.

Thanking you again for your courtesy,

I remain

yours sincerely,