

There are a few cases in which Venus and Jupiter are opposed to one another; the authors do not, however, suppose that these instances are sufficient to prove the fact of an action due to Jupiter, but think it right, in alluding to them, to state at the same time the opposed position of the two planets, since this may furnish a possible explanation of the uncertain behaviour of spots by which these series are characterized.

The results of this paper may be stated briefly as follows :—

*Observed fact.*—Spots appearing about the same time on the sun's disk behave in the same manner as they pass from left to right.

*Legitimate deduction.*—The behaviour of spots is influenced by something from without, and from the nature of the spot-behaviour the authors conclude that this influence travels faster than the earth; and finally, they find that the behaviour of spots appears to be determined by the position of Venus in such a manner that a spot wanes as it approaches this planet by rotation, and, on the other hand, breaks out and increases as it recedes from the neighbourhood of the planet, reaching its maximum on the opposite side.

In conclusion, it is not meant in this paper to convey the idea that Venus is the cause of the ten-yearly period of sun-spots, but merely that there is a *varying behaviour* of spots which appears to have reference to the position of this planet, or, putting aside the influencing agent, appears to have reference to certain ecliptical longitudes.

### III. "On the Rapidity of the Passage of *Crystalloid* Substances into the Vascular and Non-Vascular Textures of the Body." By HENRY BENICE JONES, F.R.S. In a Letter to the Secretary. Received February 2, 1865.

DEAR DR. SHARPEY,—I am anxious that you should read to the Royal Society a short note containing the results of some observations I lately made on the rapidity of the passage of *crystalloid* substances into the vascular and non-vascular textures of the body.

It occurred to me that it might be possible to trace the passage of substances from the blood into the textures of the body by means of the spectrum-analysis, and with the assistance of Dr. Dupré some very remarkable results have been obtained.

Guinea-pigs have chiefly been used for the experiments. Usually no lithium can be found in any part of their bodies. When half a grain of chloride of lithium was given to a guinea-pig for three successive days, lithium appeared in every tissue of the body. Even in the non-vascular textures, as the cartilages, the cornea, the crystalline lens, lithium would be found.

Two animals of the same size and age were taken; one was given 3 grains of chloride of lithium, and it was killed in eight hours; another had no

lithium ; it was also killed, and when the whole lens was burnt at once, no trace of lithium could be found. In the other, which had taken lithium, a piece of the lens,  $\frac{1}{20}$ th of a pin's head in size, showed the lithium ; it had penetrated to the centre of the lens.

In another pig the same quantity of chloride of lithium was given, and in four hours even the centre of the lens contained lithium.

Another pig was given the same quantity, and it was killed in two hours and a quarter. The cartilage of the hip showed lithium faintly, but distinctly. The outer portions of the lens showed it slightly ; the inner portions showed no trace.

To a younger pig the same quantity was given, and it was killed in thirty-two minutes. Lithium was found in the cartilage of the hip ; in the aqueous humour ; distinctly in the outer part of the lens, and very faintly in the inner part.

In an older and larger pig, to which the same quantity was given, lithium after one hour was found in the hip and knee joints very faintly ; in the aqueous humour of the eye very distinctly ; but none was found in the lens, not even when half was taken for one trial.

Chloride of rubidium in a three-grain dose was not satisfactorily detected anywhere. When 20 grains had been taken, the blood, liver, and kidney showed this substance ; the lens when burnt all at once showed the smallest possible trace ; the cartilages and aqueous humour showed none, probably because the delicacy of the spectrum-analysis for rubidium is very much less than that for lithium.

A patient who was suffering from diseased heart took some lithia-water containing 15 grains of citrate of lithia thirty-six hours before her death, and the same quantity six hours before death. The crystalline lens, the blood, and the cartilage of one joint were examined for lithium : in the cartilage it was found very distinctly ; in the blood exceedingly faintly ; and when the entire lens was taken, the faintest possible indications of lithium were obtained.

Another patient took lithia-water containing 10 grains of carbonate of lithia five hours and a half before death : the lens showed very faint traces of lithium when half the substance was taken for one examination ; the cartilage showed lithium very distinctly.

I expect to be able to find lithium in the lens after operation for cataract, and in the umbilical cord after the birth of the fœtus.

I am, yours truly,

H. BENCE JONES.

*February 9, 1865.*

Major-General SABINE, President, in the Chair.

Pursuant to notice given at the last Meeting, the Right Honourable Lord Dufferin was proposed for election and immediate ballot.