VELOCITY OF LIGHT.

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The late experiments of Michelson, and those upon which Newcomb is now engaged, may lend interest to approximations to the velocity of light by the nebular hypothesis.

On the 24th inst., I found the first of the values which I give, in connection with other recent estimates, in the following comparative table. The only elements required in the calculation are, the force of gravity at the equator, the diameter of the earth, and the lengths of the terrestrial day and year.

I have found, to-day, the second value, which I am inclined to regard as still more accurate.

Light requires 497·827 seconds to come from the sun to the earth, a distance of 214·54 solar radii. If planetary revolution were possible at sun's surface, the velocity $\sqrt{gr}$ would be ·00062563 r per second, or $\frac{1}{688784}$ as great as the velocity of light. The solar *modulus* of light, M , is therefore 474,500 r . According to Stockwell, the centre of the dense belt of planets, or the primitive centre of greatest condensation, C , is at 1·016878 earth's mean radius vector, or at 218·16 r . From the necessary action and reaction between the nucleal centre and the principal centre of condensation I deduce the equation,

$$\left(M \times C \right)^{\frac{1}{2}} = \frac{1 \text{ yr.}}{1 \text{ dy.}} \times \frac{g^{\circ}}{g'}$$

From this equation we readily find 27·78 for the quotient of solar by terrestrial equatorial gravity, $\frac{g^{\circ}}{g'}$, and 185,852 miles, or 299,090 kilometres, for the velocity of light per second.

	Velocity of Light.		Neptune, sec. perihelion.
Foucault,	298,000 km.	Leverrier,	29·602
Cornu,	300,000 "	Stockwell,	29·598
Perry and Ayrton,	298,000 "	Newcomb,	29·619
Michelson,	299,820 "	Chase,	29·608
Chase, 1,	298,030 "		
" 2,	299,090 "		

In the estimates of Neptune's secular perihelion, I have adopted Stockwell's value for the greatest secular eccentricity, ·0145.

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