

variance with Ameghino's. When he places the marine Cretaceous beds of the lower Rio Tarde section in the Neocomian, while Stanton declares them not older than Gault, and when he places the marine Patagonian beds in the Eocene, while I assign them to the Lower Miocene, he can do so only if he introduces new evidence, and shows that our determinations are incorrect. But he has not done this, and has never attempted to do it, and therefore his personal opinion on this question is without any scientific value.

Ameghino may claim that my final report on the Tertiary invertebrates had not come into his hands when he wrote the present paper. But he must have seen Stanton's report, as well as the preliminary notes by Hatcher and myself in the *American Journal of Science*. These should have induced him to wait for the publication of my final report.

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PRINCETON UNIVERSITY,  
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#### VELOCITY OF LIGHT IN AN ELECTROSTATIC FIELD.

TO THE EDITOR OF SCIENCE: In a paper, 'Determination of the Electric and Magnetic Quantities,' *Phys. Rev.*, January, 1900, I pointed out that light should be accelerated in an electrostatic field. I have to announce that preliminary experiments made last year show that this is the case, though the velocity actually observed is only eighty per cent. of that predicted in the paper referred to.

The tests, however, were rough and can be made more accurately with improved apparatus. I am desirous of repeating them, and obtaining a closer result. I would be glad to know of any one who has worked on interference phenomena who would be willing to collaborate with me, I of course bearing all expense.

In a recent note to the Toronto Astronomical Society, I refer to a paper to be published in SCIENCE, in which I show that by a development of the vortex theory described in the above-mentioned paper, the difference between positive and negative electricity is explained. By some mishap this paper was lost in the

mails, about last December, and merely the letter forwarded with it reached the editor. I hope to rewrite it, but at present would say that I found that the difference is merely one of circulation, *i. e.*, that the simple vortex singularity must be taken as the negative electron, and that when a number of the vortex singularities are so grouped that their circulation is closed, they behave as positive electrons. Hence the positive electron is simply an agglomeration of negative electrons, so grouped as to have a closed circulation.

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#### SHORTER ARTICLES.

##### THE FORMATION OF DEWBOWS.

If an observer standing on a mountain top should view below him, under suitable conditions, a horizontal stratum of falling rain-drops on which the sun was shining, he would see a rainbow. This bow would appear as a true circle, or a segment of it, depending upon the area of the stratum and the position of the sun. If, however, he could view this bow with reference to its *space* relations, he would no longer see a circle, but some other conic section. This latter condition was recently observed to be satisfied by the reflection and refraction of sunlight in the drops of dew on a lawn. The phenomenon appears to be unique, and furnishes another interesting modification of the familiar rainbow.

The space in front of one of the Government buildings had been recently harrowed and then carefully leveled and rolled, and finally seeded thickly with Kentucky blue grass. At the time the observations were made this grass was about one and a half centimeters high, covering the ground thickly, and very uniform in height, the fine spears being surmounted with drops of dew.

On standing with one's back to the sun, one could see the bow on the grass very distinctly, which at nine o'clock A.M. was at a distance of about one meter at its nearest point, and then extended on either side in the form of a conic, to a distance of from ten to fifteen meters. The red color of the outer portion of the bow and the blue of the inner side were well de-