posed by M. Blondel are undoubtedly logical, and their names are well chosen. The chief objection to them outside of that urged by Dr. Macfarlane is, it seems to me, that we have little or no use for them. We do need a name for the unit of luminous intensity, and, perhaps a simple, rather than a compound name for the unit of illumination would be desirable. Further than this in the naming of units, it seems to me that we need not go. The other units are used so little that it would not be burdensome to employ compound names for them, and it is always to be remembered that a multiplicity of abstract names invariably causes confusion.

DISCUSSION AT CHICAGO, JANUARY 16th, 1895.

[Mr. S. Arthur Rhodes in the Chair.]

PROF. W. M. STINE:—I would call attention to a movement that is now gaining force amongst the photographers of the country. As the editor of one of the leading photographic journals recently expressed to the speaker, "We are trying to get rid of our worst enemy, daylight." Since daylight is such an uncertain factor in photographic work, the arc lamp is fast coming into use to replace it. Photographers are thus endeavoring to obtain a unit light or condition of exposure for their plates. They have a problem before them similar to that encountered in electric illumination, but one whose applications simplify it to some extent. I mention this fact because the paper just read has some bearing on their investigations.

As an attempt to point out the conditions and relations of unit radiation from a light source, the paper has great merit, and, while the mathematical relations have been so fully worked out by the author and others, yet the attempt to assign a nomenclature to certain unit conditions seems perhaps premature. A portion of the title seems unfortunate. The paper does not deal with the unit of light as in any sense applicable to illumination, but the unit conditions of radiant energy, as applicable to a hot-non-luminous, as well as to a hot-luminous source. To render it applicable to purposes of photometry, the question of the amount of radiant energy from the accepted unit for illumination under the unit conditions here laid down must be determined. It seems that this after all is the vital question, and the subsequent ones of the relations of space radiation could readily be obtained from well-known properties of solid angles. All through the discussion a standard of illumination seems presupposed. But here rests the whole matter. We seem almost further removed from a light standard than ever before. It is the physiological action, or peculiarities of the eye which causes the difficulty. The eye is concerned with the quality of the light rather than the intensity of the radiant energy from a source. Even should we arrive at a standard for illumination, which would evaluate the effect of

a given light on the eye, and express this unit in terms of the energy involved, we could by no means employ the conclusions here expressed in such a general sense as to make them applicable to all lights.

The quality of a light being its larger factor, lights of a different character cannot be compared along the lines of simple energy relations; at best we can only compare a single light as affected by space relations. Even should the "light of the future" be realized, we must still hold it capable of variation and quality. The conclusion is, that the attempt to establish unit space and surface relations for purposes of nomenclature is not well founded. Neither can we hope it will gain general acceptance. The whole matter seems to belong to the sphere of radiant energy, and it is a question of pure physics rather than one applicable to electrical illumination. As such, the conditions have already been worked out, and can readily be applied in the restricted sense already pointed out, when occasion demands. It seems ill-advised to confuse a subject dealing only with the pure physics of radiant energy by the application of such terms for units as apply only to questions of illumination, involving but indirectly those of radiant energy.

The desire to establish units for the evident purpose of nomenclature has here reversed the usual and logical order. It seems reasonable to await the establishment of a given unit condition before attempting its nomenclature. We must first of all attain a unit condition of light, or, rather of illumination, if the unit is to have any influence. Then it is probable that the naming of the unit would be all-sufficient. Its space and surface relations can be dealt with by the aid of the usual mathematical relations, without encumbering the process with useless nomenclature.