nity, and also the degree of visability of these granulations during the transit.

ARTICLE 2.—It will be well to employ a reflecting prism, or a polariscopic eye piece, to diminish the heat and consequent danger to the observer's eyes.

If it be decided to use a silvered objective, a method which offers the great advantage of eliminating all the obscure heat rays and doing away with errors from distortion arising from heating of the interior of the tube, the excess of light may be absorbed by a neutral tint glass composed of two glasses of similar thickness, one being colored and the other colorless.

ARTICLE 3.—The eye-pieces should be positive, achromatic, and of a power of 150. The observations of contacts should be made in a field sufficiently clear to show plainly projected on the solar disc, two wires separated by a distance of 1″.

Means should be employed to remove as far as possible the effects of atmospheric dispersion.

The setting point of the reticule should be previously ascertained on the stars or by means of a collimator focussed to stars.

In cases of observation by projection, correspondent means should be employed.

ARTICLE 4.—The times corresponding to internal contacts may be defined as follows:

Ingress. The moment when an evident and, at the same time, persistant discontinuity in the illumination of the apparent limb of the sun joining the point of contact with Venus, disappears.

Egress. The moment of the first appearance of an evident and, at the same time, persistent discontinuity in the illumination of the solar limb joining the point of contact.

If the limb of two stars coming into geometrical contact, without obscuration or deformation of the interposed thread of light, the instant previously defined is that of contact.

If there be produced a black drop or ligament, well defined and as dark as the body of the planet, the precedingly defined instants, are for Ingress, that of definite rupture, and for Egress, that of the first apparition of the ligament.

Between these two extreme cases, other appearances may be produced when the instants of contact may be noted as follows:

If the limbs remaining without deformation, there is produced an obscuration of the luminous thread, without the shadow, however, being as dark as the body of the planet, the observer notes the instant of geometrical contact. The moment of the formation or disappearance of this shadow should also be noted.

If the shadow is almost or becomes quite as dark as the planet, the precedingly defined instant is that when this equality ceases or is established.

The observer should also note whether there is produced on the luminous thread, any fringes or any other distinct phenomena, and should note the moment of their appearance and disappearance.

It is generally desirable to note the time of occurrence of any distinct phenomena about the time of contact. Nevertheless it is a grave mistake, and one that should be guarded against, to multiply the noting of times near the occurrence of a contact.

The time of appearance of phenomena of a distinct character, should be mentioned only in such a manner as to be readily separated from other phenomena observed about contact.

It will be useful in all cases that the observer should illustrate his notes with a drawing made immediately after each complete observation of contact, in order to show more clearly the interpretation which he attaches to his description of the phenomena.

ARTICLE 5.—As the limb of Venus falls internally on the solar disc during internal contact, as has been noted in Article 4, the observer should indicate as closely as possible whether the moment when the limbs of Venus and the sun, apparently coinciding, seem to be lengthened out.

This observation, though rough, is still desirable as a check to the principal noted phase.

ARTICLE 6.—Notwithstanding the fact that observations of external contacts are subject to considerable uncertainty, the conference recommends that they be observed either by direct vision or by means of the spectroscope, and that the point on the solar disc, where the first contact takes place, be determined in an appropriate manner.

COMPTES RENDUS, Oct. 17, 1881, t xciii., p. 569.

BACTERIAN NOTES.

So long as the makers of microscopes do not place at our disposal much higher powers, and as far as possible without immersion, we shall find ourselves in the domain of the Bacteria, in the situation of a traveler who wanders in an unknown country at the hour of twilight, at the moment when the light of day no longer suffices to enable him clearly to distinguish objects, and when he is conscious that, notwithstanding all his precautions, he is liable to lose his way.—Cohn.

Bacteria were regarded as animals up to the time of Dujardin (1841), a kingdom—the *Protista*—midway between the animal and vegetable, being created by Haeckel for their especial benefit. Duvaine (1859) was, however, among the first to show clearly their alliance with the algæ. Cohn holds them to belong to the algæ, although from want of Chlorophyle, approaching the fungi. Magnin says, "If there are still some differences of opinion among naturalists as to the place of the Bacteria among the cryptograms, there is but one opinion of their vegetable nature." Sachs, however, solves the difficulty by uniting the algæ and fungi in a single group, the *thallophytes*, in which he establishes two series exactly parallel —one comprising the forms with chlorophyle, the other, the forms which are deprived of it."

"The Bacteria, then, resemble green plants, in that they assimilate nitrogen contained in their cells by taking it from ammonia compounds, which animals cannot do. They differ from green plants in that they cannot draw their carbon from carbonic acid, and only assimilate organic substances containing carbon, above all the hydrates of carbon and their derivatives; and in this respect they resemble animals."

Ehrenberg was the first to maintain that the motion of Bacteria depended upon the presence of vibratile cilia (observed by him in *spirillum volutans*), but although the cilia, denied at first by most microscopists, have been since seen in nearly all the bacteria, recent researches permit us to say that cilia exist without doubt in all true bacteria; the botanist who has best studied them, M. Walming for example, recognize that it is scarcely probable that these organs are the cause of their movement, for one meets some examples in which the body remains motionless, while the cilia are in violent agitation, and others in which the body moves, while the cilia remain inert or dragging behind.

Cohn explains the origin of the gelatinous substance in which the bacteria are included as being produced by a thickening or jellification of the cell membrane, but a more plausible view is that it is produced by a secretion from their protoplasm.

MR. A. AGASSIZ has printed in the *Proceedings of the American Academy* a biographical sketch of the late Count Pourtalès, together with a biographical list of his principal publications. Mr. Agassiz has also written a Review of Professor Haeckel's Monograph of the Acalephs in the August number of the *American Journal of Science.*