granular after a certain mode of treatment is said to be albuminous. It is perfectly possible that such a cell should secrete a substance which is more allied to mucin than to albumin. We do not yet know enough about the chemical characters of the bodies intermediate between proteid and mucin to make any dogmatic statement on this head.

A fuller account of the points dealt with in this paper will shortly be published in the "Journal of Physiology."

II. "On the Computation of the Harmonic Components, &c." By Lieut.-General STRACHEY, R.E., C.S.I., F.R.S. Received April 15, 1886.

(Abstract.)

The object of this paper is to propose a method of computing the harmonic components of formulæ to represent the daily and yearly variations of atmospheric temperature and pressure, or other recurring phenomena, which is less laborious than the ordinary method, though practically not involving sensibly larger probable errors.

According to the usual method the most probable values of the harmonic coefficients are found by solving the equations of condition supplied from the hourly or other periodical observations, by the method of least squares. The number of these equations is, however, much larger than the number of unknown quantities, when these are limited, as is usual, to the coefficients of the first four orders, and the numerical values of the coefficients of those quantities which depend on a series of sines of multiple arcs, afford peculiar facilities for the eliminating process, so that values of the harmonic coefficients may be obtained by applying certain multipliers to combinations of the original observations obtained by a series of additions and subtractions, the results giving probable errors virtually the same as those got by the method of least squares. These multipliers for the two first orders of coefficients are so nearly equal to $\frac{2}{30}$, and for the third order so nearly 0·07, that the values may readily be found without tables, though such tables have been calculated to facilitate computations.

Approximate methods of determining the coefficients and of the components for each interval of the series, are also given, from which last a graphical representation of the components may easily be obtained.

The system of computation is applicable to all cases in which the angular intervals between the observations are such as to make the circle a whole series, exactly divisible by 6 and 8, and it has been extended, by aid of an interpolation, to the case of the 73 five-day means of a yearly period, in which the calculation by the ordinary

method would be so laborious as to be impracticable in most circumstances.

Tabular forms have been prepared by help of which the computations of the coefficients in the form $p \cos \theta$, $q \sin \theta$, may conveniently be carried out, with a minimum of arithmetical labour; also for obtaining the coefficients P and the angle C in the form P sin $(\theta + C)$; and the method of correcting the coefficients, as computed from the observed quantities, for any non-periodic variation between the commencement and end of the series is likewise indicated.

III. "On the Sympathetic Vibrations of Jets." By CHICHESTER A. BELL, M.B. Communicated by Prof. A. W. WILLIAMSON, F.R.S. Received April 28, 1886.

(Abstract.)

After a brief historical notice of the observations of Savart, Masson, Sondhauss, Kundt, Laconte, Barret and Tyndall, Decharme, and Neyreneuf, on the sympathetic vibrations of jets and flames, the author describes his own experiments. Attention was directed to the subject by the accidental observation that a pulsating air-jet directed against a flame caused the latter to emit a musical sound. The pitch of this sound depended solely on the rapidity of the jet pulsations, but its intensity was found to increase in a remarkable way with the distance of the flame from the orifice. In order to study the phenomenon, air was allowed to escape against the flame from a small orifice in the diaphragm of an ordinary telephone, the chamber behind the diaphragm being placed in communication with a reservoir of air under gentle pressure. Vibratory motions being then excited in the diaphragm, by means of a battery and a microphone or rheotome in a distant apartment, the discovery was made that speech as well as musical and other sounds could be quite loudly reproduced from the flame. Certain observations led the author to suspect that motion of the orifice rather than compression of the air in the chamber was the chief agent in the phenomenon; and, in fact, precisely similar results were obtained when a light glass jet-tube was cemented to a soft iron armature, mounted on a spring in front of the telephone magnet.

Experiment also showed that an air-jet at suitable pressure directed against a flame repeats all sounds or words uttered in the neighbourhood. Except, however, where the impressed vibrations do not differ widely in pitch from the normal vibrations of the jet (discovered by Sondhauss and Masson), these effects are likely to escape notice, owing to the inability of the ear to distinguish between the disturbing sounds and their echo-like reproduction from the flame.