

2. This residue, which when washed and dried is obtainable in a white amorphous condition, is insoluble in weak acids; but in concentrated mineral acids it is soluble in the cold.

3. On boiling the solution in sulphuric acid, a body which has the power of reducing cupric salts is formed.

4. On boiling the solution in hydrochloric acid it turns brown, and on evaporating this solution to dryness a body crystallises out which has all the properties of hydrochlorate of glycosamine.

I prepared some of this body from the chitin contained in the exoskeleton of cockroaches, and also obtained from Professor Lankester some crystals of the same body which Professor Gamgee had kindly sent him.

I was thus enabled to compare the crystalline body I had obtained from the invertebrate cartilage with that of the pure hydrochlorate of glycosamine, and they were found to agree in the following points:—

- a. Crystalline form: rhombic prisms of the monoclinic system; measurement of the angles gave the same result in all cases.
- b. Action of polarised light: *nil*.
- c. Solubilities: easily soluble in water, soluble with difficulty in alcohol.

These results are especially interesting as showing that chitin is not a body which is exclusively epiblastic in origin, but in these three instances at least occurs in mesoblastic structures.

II. "On the Constant of Electromagnetic Rotation of Light in Bisulphide of Carbon." By Lord RAYLEIGH, F.R.S. Received December 29, 1884.

(Abstract.)

A complete account is here given of the experiments briefly referred to in the Preliminary Note,* and of others on the same plan of more recent date. As regards the method, it may be sufficient to add to what was there said, that the electric currents were estimated by comparing the difference of potential generated by the current in traversing a known resistance with that of a standard Clark cell, the value of the cell being known by converse operations, in which the current was measured by a special electromagnetic apparatus.† Allowance

* "Proc. Roy. Soc.," vol. 37, p. 146, June, 1884.

† "On the Electrochemical Equivalent of Silver, and on the Absolute Electromotive Force of Clark Cells." "Proc. Roy. Soc.," vol. 37, p. 142, June, 1884.

being made for temperature, the determination of the currents by this method was abundantly accurate and very simple.

The results are grouped in three series, of which the first two were considered in the Preliminary Note. In both of them the same tube was used, the principal difference being that in the first the light traversed the tube three times, and in the second but once. In the third series another tube was employed, and some improvements in respect to thermal insulation were introduced. The readings were taken with a double image prism in place of the ordinary analysing nicol, a substitution by which it is believed some advantages were obtained.

From the fifteen sets of observations of Series I, we find as the rotation of sodium light in bisulphide of carbon at 18° corresponding to a difference of potential equal to unity C.G.S. the value $\cdot 04203$ minute. From the four observations of Series II we get in like manner $\cdot 04198$ minute, and from the seven observations of Series III $\cdot 04202$ minute. The last value is adopted as the most probable.

In an appendix some remarks are made upon polarimetry in general, especially in relation to the half-shade method. A device proposed by M. Becquerel for augmenting the precision with which rotations can be determined with the aid of a half-wave plate is considered, and the conclusion is arrived at that no advantage can thus be obtained.

III. "Absorption-spectra Thermograms." By Captain ABNEY, R.E., F.R.S., and Colonel FESTING, R.E. Received December 31, 1884.

When employing a grating for visual work, the choice of a medium which shall absorb the overlapping parts of orders of the spectrum other than that under examination is a comparatively simple affair. When working photographically, however, it becomes necessary to know what invisible rays the medium will cut off. For instance, in investigations in the infra-red of the spectrum, we have found it necessary to ascertain whether media which absorb the blue and allow the red rays to pass would also transmit the above-mentioned parts of the spectrum.

Photography would seem to be the simplest method of experimenting in this direction; but the results not being quantitative, as are those obtained by a thermopile, we found it better to work with that instrument.

It should be remembered that we were dealing with the infra-red part of the spectrum, in which the energy is so great as to be well shown by the thermopile; in the more refrangible part the indications