

April 30, 1874.

Prof. ANDREW CROMBIE RAMSAY, LL.D., Vice-President,
in the Chair.

It was announced from the Chair that the President and Council had appointed Mr. Lockyer's Paper, "Researches in Spectrum-Analysis in connexion with the Spectrum of the Sun, No. III.," read Nov. 27 last, to be the Bakerian Lecture; and Dr. Ferrier's Paper, on "the Localization of Function in the Brain," read March 5 last, to be the Croonian Lecture for the present year.

The Presents received were laid on the table, and thanks ordered for them.

The following Papers were read:—

- I. "The Structure of the Mucous Membrane of the Uterus and its Periodical Changes." By JOHN WILLIAMS, M.D. (Lond.), Assistant Obstetric Physician to University College Hospital. Communicated by Dr. SHARPEY. Received March 21, 1874.

(Abstract.)

The paper consists of observations made on the uteri of nine women who had died in different stages of the monthly period.

In two of the uteri the menstrual flow had almost ceased, and the mucous membrane was wanting in the bodies of the organs. The muscular fibre-cells were more or less exposed in the cavity, and the meshes formed by their bundles contained glands and groups of round cells.

In one uterus menstruation had ceased three days before death, and the muscular fibres were not exposed in the cavity of the organ, but imposed upon them was a layer of tissue composed of fusiform and round cells. This tissue contained glands. The muscular tissue near the internal orifice was devoid of glands, but nearer the fundus it contained numerous glands.

In one uterus, in which the catamenial flow had ceased probably about a fortnight before death, the layer of superficial tissue was thicker than in the last; and near the internal orifice there was a marked and abrupt distinction between it and the subjacent muscular tissue.

In one uterus the flow had ceased three weeks before death, and the superficial layer was still thicker; and the distinction between it and the subjacent muscular layer was well marked, except at the fundus. The uterine glands were tubular, and arranged in some parts obliquely, in others perpendicularly to the surface. They were lined by columnar ciliated epithelium.

In two uteri menstruation was imminent, but the flow had not begun. In these the mucous membrane of the body of the uterus was fully developed, and had begun to undergo fatty degeneration. There was a marked distinction between it and the muscular tissue throughout the uterine cavity : it was highly congested.

In one uterus the menstrual flow had taken place for one day, and in another for two or three days before death. In these there was extravasation of blood into the mucous membrane, and the latter had in part been disintegrated and removed.

Menstruation appears essentially to consist, not in a congestion or a species of erection, but in growth and rapid decay of the mucous membrane. The menstrual discharge consists chiefly of blood and of the debris of the mucous membrane of the body of the uterus. The source of the hæmorrhage is the vessels of the body of the uterus. The mucous membrane having undergone fatty degeneration, blood becomes extravasated into its substance ; then the membrane undergoes rapid disintegration, and is entirely carried away with the menstrual discharge. A new mucous membrane is then developed by proliferation of the inner layer of the uterine wall, the muscular tissue producing fusiform cells, and the groups of round cells enclosed in the meshes of the muscular bundles producing the columnar epithelium of the glands.

II. "On Leaf-Arrangement." By HUBERT AIRY, M.A., M.D.
Communicated by CHARLES DARWIN, F.R.S. Received
March 23, 1874.

(Abstract.)

This paper is offered in correction and extension of the views contained in a previous paper by the same author, read 27th February, 1873.

The main facts of leaf-arrangement to be accounted for are :—

- (1) the division into *verticillate* and *alternate* leaf-order ;
- (2) in the former, the equal division of the circumference of the stem by the leaves of each whorl, and the alternation, in angular position, of successive whorls ;
- (3) in the latter, the arrangement of leaves in a spiral series round the stem, with uniform angular divergence between successive leaves, and the limitation of that angular divergence (represented as a fraction of the circumference) to certain fractional values (in most cases only approximate) which find place most commonly in the following convergent series (A) :—

$$\frac{1}{2}, \frac{1}{3}, \frac{2}{5}, \frac{3}{8}, \frac{5}{13}, \frac{8}{21}, \frac{13}{34}, \frac{21}{55}, \frac{34}{89}, \frac{55}{144}, \&c.; \dots\dots\dots (A)$$