attention for its preservation. This is, no doubt, due to the small proportion of magnesium chloride.

A preliminary analysis affords the following result :—

Moisture	0·12	$MgCl_2+6H_2O$	0·22
Insoluble matter ..	0 65	$Na_2SO_4+10H_2O$ ...	1·95
$MnCl_2+4H_2O$	38·97	Fe_2O_3	traces
KCl	57·71		
NaCl	0·32	Total	99 94

From this analysis it appears that we have to do with a double chloride of manganese and potassium for which I propose the name of *chlormanganokalite*, at any rate provisionally until more complete studies can be made of this undescribed species and proper proportions attributed to the combined molecules.

The associated minerals have been deposited as sublimates in the interspaces of scoriaceous masses forming the upper part of the great cone.

The halite probably is rich in potash, but I have not yet had time to make an analysis.

H. J. JOHNSTON-LAVIS.

THE PHOTOGRAPHY OF THE FUNDUS OCULI.

IT is not surprising that the idea of photographing the fundus of the eye followed quickly upon the discovery of the ophthalmoscope by von Helmholtz in 1851. The many attempts made by Noyes (1862), Rosebrugh, Dor, Howe, Bagneris, and others on animals met with only partial success, whilst Gerloff, Thorner and others, who attacked the more difficult problem of the human eye, obtained very inferior results. The best photographs of the human fundus have been taken by Prof. Dimmer, of Graz, who records his experiments in the *Sitzungsberichte der kaiserlichen Akademie der Wissenschaften zu Wien*,

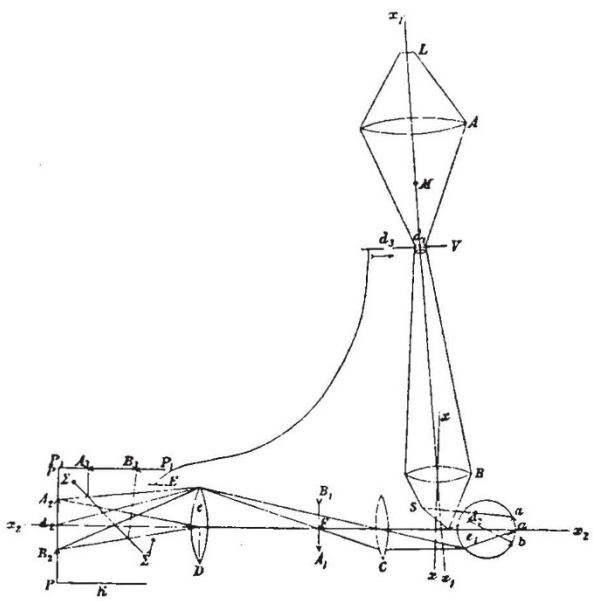

FIG. 1.—Diagram of apparatus.

Math.-Naturwissensch. Klasse (Bd. cxiv., Heft ix., 1905).

The chief difficulties which have to be contended with are (1) that of keeping the eye immobile; (2) the necessity for very powerful illumination, which may have a deleterious effect upon the eye; (3) the reflexes formed by the surfaces of the dioptric media—corneal, lenticular, and fundal. Of these the complete abolition of reflexes has as yet proved insuperable. Prof. Dimmer has succeeded in reducing the corneal and lenticular reflexes to a minimum, but the shimmering reflexes at the fundus, which vary so much in different eyes, have resisted all efforts. Nevertheless, an encouraging degree of success has been attained.

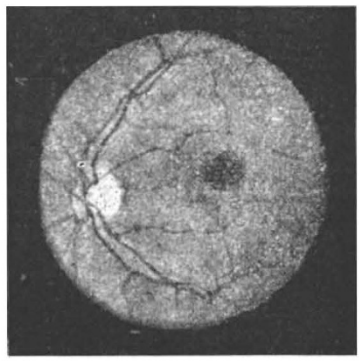

FIG. 2.—The normal fundus.

The method adopted was as follows: — The source of light was a 20–30-ampere arc lamp (L). The light was concentrated on a small diaphragm (d_1), which may be regarded as the immediate source of illumination. A second condenser system (B) formed an image of the diaphragm at the level of the pupil of the eye (d_2). The light and condenser systems were centred on an axis at right angles to the optic axis, the cone of rays being reflected into one half of the pupil by an oblique mirror (S) immediately in front of the eye. This arrangement has the advantages of illuminating a maximum field of the fundus, of reducing the corneal and lenticular reflexes to a minimum, and of leaving the other half of the pupil free for the emergent rays. The last device is that adopted by Bagneris, and by Wolff in his electric-light ophthalmoscope.

The image of the fundus is that of the ordinary indirect method of ophthalmoscopic examination. A convex lens (C) forms a real inverted image at or near its principal focus (F), according to the refraction of the eye. A second convex lens (D) is used to form an erect image upon the sensitive plate (PP). An oblique mirror ($\Sigma\Sigma$) in the camera reflects the image on to a ground glass screen (P_1P_1) at right angles to the position of the plate until the moment of exposure; this facilitates focusing, &c.

Fixation is maintained by an object (M) in the axis of illumination, the diaphragm being covered by a smoked glass. At the moment of exposure, which is instantaneous, a blank diaphragm (d_3) is shot into position by a simple electromagnetic arrangement. Orthochromatic plates are, of course, used to minimise the inopportune colour of the image.

Prof. Dimmer has photographed several normal and pathological eyes. No evil effects have apparently ensued, owing to the shortness of the exposure required. The results are better than any previously obtained, but they are far from perfect. Those who saw the original photographs at the International Ophthalmological Congress at Lucerne in 1904 will, however, condole with the author for the inferior half-tone reproductions of the Imperial Academy.

We are forced to admire Prof. Dimmer's pertinacity in this research, at which he has been occupied since 1899. Considering the well-known dangers of very bright illumination upon the retina, the mediocre results obtained, and the doubtful utility in ophthalmic surgery, we cannot but hope that future experiments will be confined for the present to animals.

J. HERBERT PARSONS.