The thanks of the Meeting were voted to Mr. Millett for his communication.

The President read a paper descriptive of the Powell Iron Microscope, constructed by Hugh Powell in 1840, the instrument being exhibited in the room (see p. 209).

Mr. Vezey said he was sure the Fellows would agree with him that their best thanks were due to the President for his very interesting description of the old instrument before them. It was essentially one of the functions of the Society to record the facts and development in the history of the Microscope, and in this special work no one had done more valuable service than the President. Mr. Vezey ventured to throw out a suggestion that if it were possible, an exhibition should be held of historic Microscopes, showing the various stages of the development of the instrument. He thought that, while all microscopists were ready to acknowledge the immense improvements which instrument-makers had introduced into the modern forms of Microscopes, yet it would be found, on examining the old instruments, that there were many valuable ideas which had probably been lost sight of.

The vote of thanks was seconded by Mr. Michael, and carried unanimously.

The President thanked the Fellows for the kind way in which they had passed this vote of thanks. He hoped the Society would see its way to arrange for an exhibition of old Microscopes which would not only be of great interest, but might also lead to the discovery of some points of value which had been hitherto overlooked.

Mr. Julius Rheinberg read a paper in explanation of the chief features of the exhibition of multiple coloured illumination of objects arranged under about twenty-seven Microscopes in the room (see p. 142).

The President said he was sure they would all highly appreciate Mr. Rheinberg's kindness in giving them such an excellent demonstration of his method of coloured illumination, which he had done at some considerable personal inconvenience. They would remember that Mr. Rheinberg first brought this subject to their notice in a paper read before the Society in 1896 (see Journal of that year, p. 373). In that paper all the various applications of his new method of illumination were fully dealt with, and it would therefore be unnecessary for him to go over that ground again; therefore he did not propose to discuss the merits of this method in connection with the colour differentiation of structure in histological and other preparations, but he believed that one of the chief values of this new illumination was that it might make it possible to use a larger axial cone than heretofore.

Sometimes cases arose where, from the tenuity of the object and other causes, they were compelled to use less than a 3/4 cone, and thus ran the risk of manufacturing spurious diffractive effects and other false images; if then this new method made it possible to use the 3/4 cone in such cases, it would be a distinct gain.

The Gifford screen had already accomplished much in this direction.

This screen, as they were aware, had the F line for the centre of its band, and it was found, from the experiments which were carried out by Mr. Gifford and himself, that it was not possible to go higher up the spectrum into the blue without incurring a loss visually, although photographically something was gained. Now, if they could only combine the Gifford screen with this new method by making the peripheral portion a blue whose spectrum began at F, and the centre a green in which the spectrum ended at F, he believed an advantage would be secured. Some words of caution were however necessary about the selection of the colours; for if they chose two that were widely separated in the spectrum, they might exaggerate the effects of the residual chromatic aberrations in the objective they employed; this of course applied with more force to semi-apochromatics than to apochromats. Suppose, for instance, that they used a deep red for the centre and a blue for the periphery, with a semi-apochromat, it was more than likely that that objective would have a sensibly shorter focus for the blue rays than for the red; then if their object should be a diatom having fine structure above a coarse, it was not improbable that the image, under these circumstances, might be reversed, and the fine structure appear by focal adjustment to be beneath the coarse.

In photomicrography, Mr. Rheinberg's method would prove useful, for there were certain objects having different parts that required different exposures; some diatoms formed an excellent example of this, for it sometimes happened that a strong eye-spot would be so brightly illuminated as to quite blot out a finely perforated membrane lying above it; that is to say, the eye-spot would require a very short exposure, while the delicate membrane above it required a longer one. Now, with this method they were able to impart a yellow or orange tinge to the eye-spot, and so equalise the exposure throughout. He hoped that Mr. Rheinberg would continue his valuable investigations, and, now that he was a Fellow of their Society, communicate any further discoveries he might make at some future meeting.

The thanks of the Meeting were then, upon the motion of the President, cordially voted to Mr. Rheinberg, and to those opticians who had so kindly provided the Microscopes for the purpose of the exhibition.

The President announced that at the next Meeting Mr. Lewis Wright would give them an exhibition of his Lantern Microscope.

The following Instruments, Objects, &c., were exhibited:—

The Society:—Microscope by Jas. Smith.

The President:—Powell's Iron Microscope.

Messrs. R. and J. Beck:—New Reversible Compressorium, and coloured sectional diagram of the same.

Mr. C. L. Curties:—Photomicrographs by Mr. W. C. Rowden.

Messrs. Watson and Sons:—New Model of the Van Heurck Microscope; New Cover-glass Clip for making blood-films.

Mr. J. Rheinberg:—List of Objects shown by Multiple Coloured Illumination:—

	Objects Exhibited.		Objective used.	Disc placed.
	Low-Power Colour Illumination.			
1	Blue ground	Section of gill bone of carp ..	1 in.	In condenser carrier.
2	„ „	Feather of humming-bird ..	„	„
3	Red on blue ground..	Transv. sect. *Cidaris* spine ..	„	„
4	Olive-green ground ..	Human muscle	„	„
5	Red on olive-green ground.	Section of saw of saw-fish ..	„	„
6	Malachite green ground	Various diatoms (from Bori, Hungary)	„	„
7	Red on malachite green ground.	Skin of plaice	„	„
8	Violet ground	Hair of rat	„	„
9	Red ground	Camphor crystals	„	„
10	Blue on red ground ..	Fibres of Egyptian cotton ..	„	„
11	Green on red ground	Spiracle of larva	„	„
12	Red on white ground	Foraminifera from Adriatic Sea	„	„
13	Red and green halves on black ground.	Sponge, *Geodia*, Honduras ..	„	„
14	Blue and red quarters on black ground.	Japanese silk fabric: horizontal threads blue, vertical threads red.	„	„
15	Green on red ground	Rotifers	„	„
16	Black ground	Hydrozoid zoophyte showing tentacles fully extended.	„	„
	Composition Method Colour Illumination.			
17	Green to red on white	Transv. sect. bone of human humerus.	1/4 in.	„
18	„ „	Tape-worm from duck, *Cysticercus cypriccinerea.*	„	„
19	„ „	Various diatoms	1/6 in.	„
20	„ „	Marine algæ, *Plocamium coccineum.*	„	„
	High-Power Colour Illumination.			
21	Red on blue ground ..	Saw-fish spine	Apoch. 1/3 in. Zeiss	Focal plane of objective.
22	Blue ground	Teased-out fibres of human muscle.	1/5 in. Beck (with correction collar).	Between two lowest lenses of objective.
23	Green ground	Acarus, *Oribata gracilis* ..	1/4 in. Beck (with correction collar).	Above objective in focal plane.
24	Red on white ground	Transv. sect. bone of human femur.	1/6 in. Beck	Do. do.
25	„ „	Scales of butterfly, *Vanessa urticæ.*	D D Zeiss	Do. do.
	Double Image Colour Illumination.			
26	The red centre of disc has plane parallel surfaces; the green circumference is prismatic in form.	Diatoms. Two images are formed of each diatom, the red image showing scarcely any detail, the green image formed almost wholly of diffraction fans minus the central or dioptric ray, showing plenty of detail (partly incorrect).	A A Zeiss	Above objective in focal plane.
27	Own Microscope with changing illuminator.	Group of diatoms.		

New Fellow:—The following was elected an *Ordinary* Fellow of the Society:—Mr. Julius Rheinberg.

MEETING

HELD ON THE 15TH OF MARCH, 1899, AT 20 HANOVER SQUARE, W., THE PRESIDENT (E. M. NELSON, ESQ.) IN THE CHAIR.

The Minutes of the Meeting of 15th February last were read and confirmed, and were signed by the President.

The List of Donations to the Society, exclusive of exchanges and reprints, received since the last Meeting, was read, and the thanks of the Meeting were voted to the donors.

	From
Veley, V. H. and Lilian J., The Micro-Organism of Faulty Rum. (8vo, London, 1898)	*The Publisher.*
Slater, Chas., and Spitta, Edmund J., An Atlas of Bacteriology. (8vo, London, 1898)	*The Publishers.*
Cole, R. S., A Treatise on Photographic Optics. (8vo, London, 1899)	*The Publishers.*
Ewart, J. C., The Penicuik Experiments. (8vo, London, 1899) ..	*The Publishers.*
The Naturalist's Directory, 1899. (8vo, London, 1899)..	*The Publisher.*

The President called attention to another donation (a fine example of Wilson's Screw Barrel Microscope), received from their Treasurer, Mr. Suffolk. This instrument was probably 150 years old, and would be a valuable addition to the Cabinet, and he asked the Meeting to give the Treasurer a very hearty vote of thanks for the donation. This was carried by acclamation.

The President said Mr. Curties had sent an old Microscope for exhibition. It was one made by Chevalier, of Paris, *circa* 1840, and was interesting as being one of the earliest Microscopes made after the introduction of achromatism, and it also appeared to be one of the last remnants of the box foot, a form of stand first adopted in 1704. He did not think that this instrument was nearly so well made as some of the old English instruments produced about the same time by Powell, Ross, and Smith.

The thanks of the Meeting were voted to Mr. Curties for his exhibit.

Mr. C. F. Rousselet said he had brought to the Meeting that evening a mounted slide of more than usual interest—being a specimen of the rare rotifer *Trochosphæra*. The first species of this remarkable genus of the Rotifera was originally found in 1859 in the ditches in some rice fields in the Philippine Islands by Prof. Semper, who described it in 1872. A translation of his paper was afterwards printed in the 'Monthly Microscopical Journal' for 1875. The organism was perfectly spherical, and was divided into two hemispheres by the ciliary wreath running round its equator, from which character it was named *Trochosphæra*