RICHARD LIEBREICH, 1830–1917*† FIRST ICONOGRAPHER OF THE FUNDUS OCULI

BY
SIMON BEHRMAN
London

RICHARD LIEBREICH was at the zenith of his fame when the Third International Ophthalmic Congress met in Paris in 1867. He owed his pre-eminent position on the international ophthalmological stage to his "Atlas of Ophthalmoscopy" published 4 years earlier in Paris, and also to his long-standing collaboration with Albrecht von Graefe from 1854 until he settled in Paris in 1862. According to Liebreich's own account:

"I had the good fortune to be associated with our great physiologist Helmholtz as his assistant, when in 1851 he invented the ophthalmoscope in Königsberg, and thus I first became acquainted with it through the inventor himself. I soon afterwards in Berlin made the acquaintance of von Graefe who was just then commencing his brilliant career".

Liebreich, born in Königsberg in 1830, completed his medical studies in Halle in 1853, and after a short visit to Donders's Clinic in Utrecht, joined von Graefe's Clinic to become his assistant in 1854. "With von Graefe, and on his patients, I made the first practical applications of the new ophthalmoscope". Progress was rapid and the first volumes of *Archiv für Ophthalmologie* (in 1854/1855) contained several contributions by Liebreich on the appearances of normal and pathological fundi, and the correlation of the ophthalmoscopic findings with histology. The first descriptions of renal retinopathy and of cotton-wool spots ("rounded, bright, milk-white, slightly raised spots") is given in one of these papers. He also devised methods of biomicroscopy of the anterior segment of the eye by means of oblique illumination, a new method which was highly esteemed by von Graefe. Many engravings in these early volumes of the *Archiv* carry the legend "LIEBREICH PINX".

Liebreich wrote:

"The uncertainty with which step by step we advanced upon an unknown territory, soon showed the necessity of securing what had been won, by means of drawings. Thus a comparison between new cases and those already observed became easy, and results of autopsies became more valuable in explaining what had been seen with the ophthalmoscope".

Liebreich was preoccupied with the problem of securing satisfactory recordings of the ophthalmoscopic observations and at the meeting of the Berlin Association of Physicians held on August 4, 1858, he described in detail the method he had developed for the photography of the fundus. He must, therefore, be credited with priority in this field of ophthalmoscopy. von Graefe's clinic grew rapidly in importance and von Graefe secured new premises in Karlstrasse where there was room for 100 patients. The clinic also became a large post-graduate centre, and much of the teaching fell on the shoulders of Liebreich. Among the papers which Liebreich published during his Berlin period was one on the influence of consanguinity on retinitis pigmentosa. In 35 cases of this disease he was able to prove, in fourteen, a descent from blood relations. This paper is generally regarded as the first in the field of ophthalmic genetics. In 1860 von Graefe, asked to advise the Russian Government on a suitable candidate for a new chair of ophthalmology in St. Petersburg, recommended Liebreich who, however, declined the post. Perhaps because of

* Received for publication February 24, 1967.

† Address for reprints: Moorfields Eye Hospital, London, E.C.1.

Tendenz:

Diese Zeitung concentrirt zweimal allwöchentlich das Neueste und Wissenswerteste aus den Gesamtgebieten der theoretischen und praktischen Heilkunde aller civilisirten Völker.

Preis:

Der Jahrgang der Zeitung, aus 103 kl. Folio-Bogen nebst Registern bestehend, kostet 4 $\frac{1}{2}$ Thlr. Pr. Cour., wofür man ihn mittelst aller Buchhandlungen und Postanstalten beziehen kann.

Allgemeine**Medicinische Central-Zeitung.**

Redigirt vom Sanitätsrath Dr. L. Fesner (Spandauer Strasse No. 6.)

Inhaltsübersicht:

I. Liebreich: Photographie des Augengrundes. — II. Kritik (Metszig: Gegen das Amputiren gleich nach schweren Verletzungen; Schultz u. Angerstein: Leitfaden für den gesamten Turnunterricht). — III. Wissenschaftliche Mittheilungen (Vollheilmittel gegen Hydrophobie; Leperdriel: Leberthran mit Kochsalz; Yeza: Leberthran mit Eisen. — IV. Tagesgeschichte (Berlin, Breslau, Jena, Zürich). — V. Miscelle. — VI. Personalien. — VII. Medicinische Preisfrage.

I. Photographie des Augengrundes.

Von

Dr. R. Liebreich.

(Vortrag, gehalten im Verein Berliner Aerzte, Sitzung vom 4. August 1858).

Untersuchen wir mit dem Ophthalmoscop den Augengrund im umgekehrten Bilde, so liegt dieses Bild zwischen dem Spiegel und dem beobachteten Auge, und wir schneiden daher, wenn wir es auf einer Platte auffangen wollen, in demselben Moment das vom Spiegel zum Augengrunde gehende Licht ab. Verrücken wir nun den Spiegel seitlich, so können wir zwar irgend einen andern, niemals aber gerade denjenigen Theil des Augenhintergrundes erleuchten, von dem ein Bild auf der auffangenden Platte entworfen wird. Um dies zu erreichen, brachte ich zuerst den Spiegel dicht vor das zu beobachtende Auge, zwischen dieses und die Objectiv-Linse; dann musste aber der beleuchtende Apparat so eingerich-

grundes vereinigt zu werden. Dieses Bild kann man auf einer zerstreuen Glas-Platte auffangen, die an dem hintern Ende der Camera obscura befestigt ist. Hat man dann durch Vor- und Zurückschrauben des Objectes die genaue Einstellung des Bildes regulirt, so vertauscht man in der gewöhnlichen Weise die zerstreue Glasplatte gegen eine photographisch präparirte und fixirt das Bild.

Wenn man sich vielleicht nur selten veranlasst finden wird, den Augengrund zu photographiren, so glaube ich, das Instrument um so mehr zu anderen Zwecken empfehlen zu können; nämlich zur Demonstration des umgekehrten Bildes, zu genaueren Zeichnungen, und vor allen Dingen zu Messungen, da man hierbei Cirkel, Maassstab und Transporteur direct an das Bild selbst anlegen kann. So würde man z. B. objective Bestimmungen der Neigungen des verticalen Meridians unter physiologischen und pathologischen Verhältnissen an diesem Apparat mit Genauigkeit ausführen können.

von Graefe's illness and the possibility of an imminent dissolution of the Clinic, Liebreich settled in Paris in 1862.

Liebreich's "Ophthalmoscopic Atlas", dedicated to Albrecht von Graefe and Herman Helmholtz, was published in Paris in 1863. It contained 57 drawings in colour and was received with acclamation the world over. Zachariah Laurence (1830–1874), founder of the Royal Eye Hospital (The Ophthalmic Eye Hospital, Southwark), greeted the "Atlas" as follows:

"It would be an act of supererogation to confine ourselves to a simple eulogy of Dr. Liebreich's labours and a mediocre tribute to this magnificent work. These plates are rendered incomparably more valuable than they would have been otherwise by Dr. Liebreich having been both the observer and the artist of the appearances they represent. They are not mere ideal diagrams but are scrupulous copies of nature".

Liebreich rapidly established himself in Paris as a leading ophthalmologist. He drew attention to the greater degree of heaping of nerve fibres on the temporal side of the disc. He recognized that this was caused by the fibres which we now call the papillo-macular and superior and inferior arcuate bundles. He also considered the perimetric implications of this anatomical arrangement of the nerve fibres. He wrote several papers on the surgical treatment of squints and on "a new method of cataract extraction", the latter published in English (Liebreich, 1871).

Theodor Leber (1840–1917) acted as his assistant in Paris for a time. By a curious coincidence the last work from Leber's pen was an account of the life-work of Liebreich, which was published in the very issue that contained his own obituary.

Liebreich operated successfully for bilateral glaucoma on Comtesse de Montijo, the mother of Empress Eugénie. Emperor Louis Napoleon, always under his wife's influence, tried to get Liebreich appointed to the Chair of Ophthalmology, but these efforts were repelled by the opposition of the entire medical faculty of Paris. Liebreich remained a staunch friend of the Emperor's family, and because of this association left Paris for London on the day the Third Republic was declared.

In characteristic manner, Liebreich later wrote: "When I arrived in England, little thinking that a short vacation tour would end in my permanent residence here, I at once paid a visit to the National Gallery". Shortly after his arrival, he was appointed ophthalmic surgeon and lecturer to St. Thomas's Hospital. To qualify for this post it was necessary that he should hold a British degree, which he obtained—it was rumoured—with the help of his accommodating examiners, his knowledge of English being quite inadequate at the time. Years later, when he had mastered the language, he was liable to lapse into either German or French in moments of excitement.

The second enlarged edition of his "Atlas" was published in English in 1870, and for many years remained a potent influence in ophthalmology.

When Guy's Hospital was erected in 1725 it was intended to be an institution for incurables and lunatics, and it was to be complementary to the adjoining St. Thomas's Hospital founded some five centuries before. A contemporary engraving contains an inscription "Guy's Hospital for Incurables". The two hospitals became known as the United Borough Hospitals and a breach between them occurred in 1836 when a fight, which had to be stopped by the police, broke out between the dressers of the two hospitals. The separation of St. Thomas's and the alterations to the hospital necessitated by the construction of the new London Bridge, led to its temporary decline. In 1862 the whole of St. Thomas's was pulled down to make room for the railway. The Hospital secured temporary habitation in the Surrey Gardens now occupied by the Oval cricket ground.

When St. Thomas's was rebuilt on its present site on the Albert Embankment in 1871, it became the foremost hospital in Europe, and Liebreich was given the task of equipping the new Eye Department. The *Lancet* in a long leader lambasted St. Thomas's for appointing Liebreich to the charge of the ophthalmic department:

"The medical staff of St. Thomas's acts like a petted heiress who tried to throw her charms and her fortune into the arms of a whiskered and *soidisant* count, and who requires relegation to the nursery and a week upon bread and water in order to restore her to the proper senses. . . . We hold Dr. Liebreich in esteem and respect. But our esteem for him must not betray us into forgetfulness of duty; and in the name of the profession in this country, we protest emphatically against a gratuitous insult to English ophthalmologists".

A rejoinder to this censure appeared in the *Medical Times and Gazette* the following week:

"Now just at this moment when the new medical school is in act of organization, there comes to London for a temporary shelter from the hazards of war, Dr. Liebreich who, when a student, carried the first ophthalmoscope from Helmholtz to show it to Graefe, and who since the death of Graefe has been acknowledged leader of the German school. The medical staff of St. Thomas's seized this opportunity and without one dissentient voice invited Dr. Liebreich to associate himself with them in their school".

The following appeared in the *Lancet's* reply one week later:

"The 'first' ophthalmoscope was made by Mr. Babbage in 1847 four years before that of Helmholtz. Mr. Babbage showed his invention to a London ophthalmic surgeon who assured him that it would be of no manner of use, and caused it to be thrown aside and forgotten".

Six clinical lectures on ophthalmology given by Liebreich at St. Thomas's in 1871 were published in the *Medical Times and Gazette*.

Liebreich now lived at 16 Albemarle Street, W.1., within a few doors of the Royal Institution, where in 1872 he delivered a lecture on the effects of faults of vision on painting, and traced the effects of progressive lens opacities on the paintings of Turner.

"After 1833 in consequence of this, light was no longer evenly diffused in all directions, but principally dispersed in a vertical direction . . . Nature gradually changed for him while he continued in an unconscious, I might almost say, in a naïve manner to reproduce what he saw. And he reproduced it so faithfully and accurately that he enables us distinctly to recognize the nature of the disease of his eyes.

"I have now to draw your attention to other cases which happen more frequently. The lens always gets rather yellow at an advanced age, and with many people the intensity of the discolouration is considerable. This, however, does not essentially diminish the power of vision. In order to get a distinct idea of the effect of this discolouration, it is best to make experiments with yellow glasses of the corresponding shade, only the experiment must be continued for some time, when everything again appears in their true light and colour. A careful examination, however, shows that a pale blue, or rather a certain small quantity of blue cannot be perceived. A painter whose transparent media of the eye become yellowish will paint everything too blue. To me their pictures have so characteristic a tone of colour, that I can easily point them out while passing through a picture gallery. Patients on whom I have operated for cataract, very often spontaneously declare, immediately after the operation, that they see everything blue. In these cases I invariably found their crystalline lens to be of an intense yellow colour" (Liebreich, 1872)

Liebreich possessed exceptional powers of discrimination of the nuances of colour and one of his papers was devoted entirely to the consideration of the variations of colour of different parts of normal fundi. Though concerned with the physiology of vision, Liebreich nevertheless did not consider accurate pictorial representation as essential in art. Indeed he commended the "taste which regards that which is entirely sound and healthy as commonplace, trivial and uninteresting". Liebreich betrays his divination of the artistic climate of the next century when he finds himself

"Fascinated (in art) by that which approaches the border of disease and even goes beyond it. In poetry, we rank some poems among the highest productions of art in which the imagination of the poet goes far beyond the normal region of the mind:

The poet's eye, in a fine frenzy rolling,

Doth glance from heaven to earth, from earth to heaven".

These few excerpts suffice to reveal Liebreich the painter and artist. In a sense they foreshadow his resignation from his appointment at St. Thomas's in 1878, when he returned to Paris to devote himself to the search for the varnishes and pigments used by the painters of the Renaissance. Edward Nettleship and J. B. Lawford succeeded him in the Eye Department at St. Thomas's. In 1893 Liebreich attended the International Ophthalmic Congress at which was exhibited the portrait he had painted of Albrecht von Graefe. He subsequently retired to Catania in Sicily, but returned to Paris at the end of his long life and died there on January 19, 1917.

REFERENCES

- LIEBREICH, R. (1871). *Med. Times and Gazz.*, **2**, 671.
 — (1872). *Proc. roy. Inst. Great Britain*, **6**, 450 (Turner and Mulready—On the effect of certain faults of vision on painting, with special reference to their works).
 TOWER, P. (1961). *Arch. Ophthal. (Chicago)*, **65**, 792 (R. Liebreich and his Atlas of Ophthalmoscopy).