GEORG JOSEPH BEER (1763-1821), A pioneer in Ophthalmology, ophthalmic surgeon specialist, and a great teacher

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INTRODUCTION

The establishment of Ophthalmology as an independent scientific specialty came about through the efforts of Georg Joseph Beer in Vienna in the early nineteenth century. Beer was outstanding in his clinical practice of ophthalmology and surgery as a teacher and author. He was the founder of the first ophthalmological school and clinic. His greatest work was his 'Lehre von den Augenkrankheiten', the first volume of which appeared in 1813 and the second in 1817. In 1819, George C. Monteath translated the work into English, published in 1821. This translation remains the finest testament to Georg Beer's genius and perception

Fig. 1: George Joseph Beer (1762-1821)

HIS LIFE

Joseph Beer was born in Vienna on December 23, 1763, in the former Koenigin-Kloster (Queen's Convent) at the Joseph Palace. Beer's parents were Jewish but converted to Catholicism prior to his birth. Georg showed a strong interest in music, painting, and observing nature. His father died when Georg was 15 years old, and he became responsible for his mother and siblings. His artistic talents led him to the School of Painting of the Academy of Fine Arts, and the curator was impressed with Beer's talents and proposed that he travel to Rome to study art. Beer had a great interest in medicine and started medical studies. Beer returned to the Jewish religion and was the first Jew to graduate from the University of Vienna. Viennese School of Ophthalmology began to gain fame at the end of the 18th century and, by the middle of the new century, established itself as a leader in the development of Ophthalmology.

Fig.2: Das kaiserliche Lustschloß Schönbrunn, Ehrenhofseite Painting by Bernardo Bellotto

Joseph Barth (1743-1818) from Malta became a professor of Ophthalmology and Surgery in Vienna in 1773. Emperor Joseph II drew up a contract with Barth to train two oculists for the Imperial States. And these were Johann Ehrenritter and Johann Adam Schmidt (1759-1809). The second became Associate Professor of Anatomy and Surgery at the Joseph's Academy in 1788. Another student of Barth's, Georg P. Prochaska, practiced in Prague. Joseph Barth called back and continued his duty as an instructor in ophthalmology, and Georg Joseph Beer attracted his attention. Barth recognized his talents as an anatomical illustrator and, for seven years, engaged him to record Barth's dissections. Beer graduated from the University of Vienna in 1786 with an MD degree. Beer referred to his years of apprenticeship as 'years of torture.'

Fig.3: Prospect of the imperial palace called the Favorita in the suburbs of Vienna, coloured copperplate engraving, 18th century

LIFE AND CAREER

Georg Beer started as a general practitioner and elected ophthalmology and, in 1786, opened a private ophthalmic practice. In the subsequent years, Beer faced the hostility of Barth and Schmidt. Beer was actually his own teacher in ophthalmology. In 1798 he led a scientific program at the opening of the 2nd Practical Private Course on Ocular Diseases, and in 1802 became an associate professor at the University. By 1806 Beer's reputation as an ophthalmologist and teacher were considerably expanding. In 1818 an eye department was founded in the General Hospital of Vienna, and Beer was named director and extraordinary professor. This was the continuity of his private institute, which became earlier the birthplace of Ophthalmology in Europe. In 1819 Beer suffered a stroke that left him incapacitated, and he died in Vienna in 1821 at 57 years of age. His successor was Anton Rosas, a highly competent surgeon.

Fig. 4,5: Josephus Barth (1746-1818), he called by Emperor Joseph II (1741-1791) to train Austrian physicians in ophthalmic Surgery

Fig.6: Wien, General Hospital

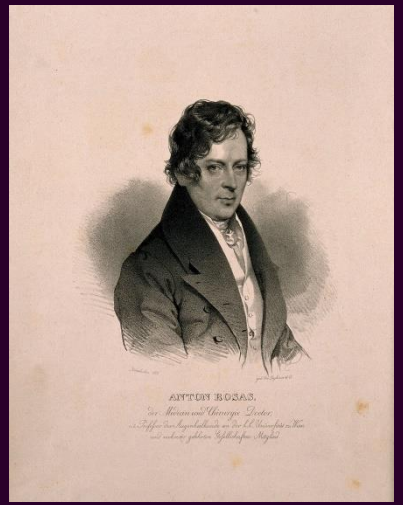


Fig. 7: Prof. Anton Edler von Rosas, Beer's successor in the chair of 'Universität Wien die Titel Doktor der Medizin und Magister der Augenheilkunde

Fig.8: Friedrich Jäger von Jaxtthal, Pupil and son in law of Joseph Beer

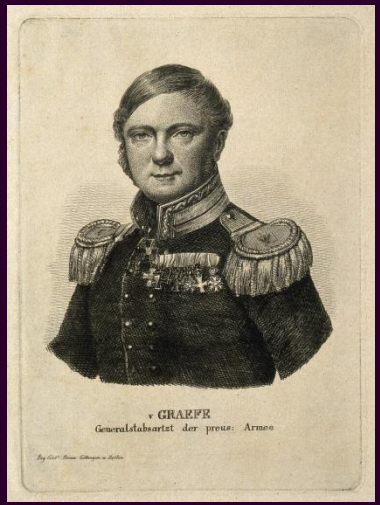


Fig. 9: Karl Ferdinand von Graefe, father of Albrecht von Graefe and pupil of G.J.Beer

Lehre
der
Augenkrankheiten.

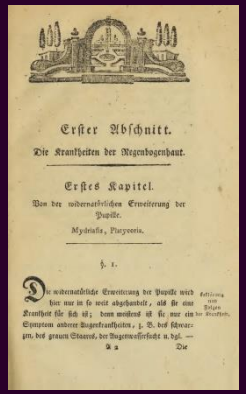
Von
Joseph G. Beer,
der Arzneywissenschaft Doctor und approbirtem
Augenarzte.

Zweyter Theil
von den
innerlichen Krankheiten des Auges.

Mit gemahlten und ungemahlten Kupfern.

Wien,
bey Christian Friedrich Wappler.
1792.

Fig. 10 :The monumental work of GEORG JOSEPH BEER, published in 1792 that was a landmark in the establishment of Ophthalmology as a new medical specialty



Erster Abschnitt.
Die Krankheiten der Regenbogenhaut.

Erstes Kapitel.
Von der widernatürlichen Erweiterung der Pupille.
Mydriasis, Platycoria.

§. 1.

Die widernatürliche Erweiterung der Pupille wird hier nur in so weit abgehandelt, als sie eine Krankheit für sich ist; denn meistens ist sie nur ein Symptom anderer Augenkrankheiten, z. B. des schwarzen, des grauen Staares, der Augenwassersucht u. dgl. —

Fig. 11: The first chapter of the treatise with the functions of the iris

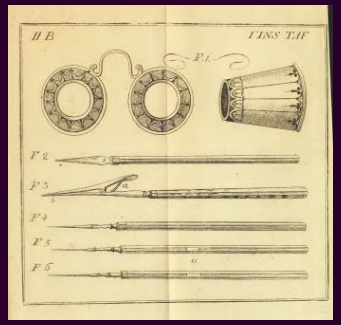


Fig.12 : Beer's tools for his surgical operations

HIS CONTRIBUTION TO OPHTHALMOLOGY

His brilliant thought and open mind made him a great scientist, outstanding teacher, and competent surgeon. The most distinguished ophthalmologists of the next generation were his pupils, Friedrich Jaeger his assistant and son in law, Anton von Rosas, his successor as a professor of Ophthalmology at the Imperial Royal University of Vienna, Philipp Franz von Walter, Carl Ferdinand von Graefe, Max Tetzer, Johann Nepomuk Fischer, Konrad Johann Martin Langenbeck, Franz von Chelius, Friedrich von Ammon, Carl Heinrich Weller, Friedrich Philipp Ritterich, Carl Heinrich Dzondi, Traugott Wilhelm Gustav Benedikt, Francesco Fraerer, Giuseppe Albini, Johann Gottlieb Fabini, Walther Flemming, William Mackenzie and George E. Frick. After returning to their countries and homes, all of those brilliant physicians became professors of Ophthalmology and attracted many students contributing to the establishment of ophthalmology as a surgical specialty from the first to be recognized.

G. J. Beer and his colleagues had to confront the itinerant quacks who had practiced under the appellation 'oculists'. The most important operation performed on the eye in Beer's time was cataract extraction, and Beer became an innovator and master. He based his practice on new anatomical concepts. He did persist in the 'membranous cataract' and knew the true nature of most cataracts and the Morgagnian hypermature kind. Beer noted in his Repertorium that reclination was the best method of couching the cataract. If it was mature could remain in vitreous for many years (20), but it also noted the rise of the lens 30 years after couching. As the dispute between extraction and couching raged in Europe, discussion of the 'needling; of the cataract became an important operation. Beer realized that this method should be performed when the cataract is soft and the patient young. Beer recognized the importance of Daviel's extraction and attended to improve his method. From Hirschberg's report, Beer published 58 cases of intracapsular extraction: 43 'perfect', 10 'mediocre', and 5 with purulent infections. An essential contribution to cataract surgery was the use of Beer's triangular cataract knife. He also used an anterior chamber irrigator.

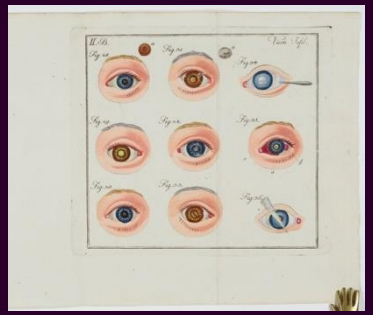


Fig.13 : From his work ;Augenkrankheiten' a plate depicting cataract and surgical procedures

Fig. 14: Plate IV of Beer's icons of cataract relating ocular conditions

GEORG JOSEPH BEER'S KNOWLEDGE

Of greater importance was his invention of iridectomy. Numerous infectious diseases left scarred corneas and occluded pupils. Beer in 1798 can create an 'artificial; pupil by excision of a wedge-shaped piece of iris, the first iridectomy. In 1805 he published his method in which, using his triangular knife or a keratome, he made a small incision at the limbus and then pulled a fold of iris out of the eye with forceps. He excised this tissue with scissors, created a new peripheral pupil, and restored some vision to the eyes with the occluded pupil or a central corneal opacity.

The Lehre von den Augenkrankheiten' is his main work and greatest contribution to ophthalmic surgery (1792) published in Vienna by: Christian Friedrich Wappler. The book consists of 497 pages, two plates of surgical tools, and 5 color plates of medical conditions and procedures. One of the most important contributions to the study of ophthalmology was the first precise description of 'iritis' in the 1813 edition. In the earlier edition (1792), he described precisely the 'syphilitic iritis' and suggested the systemic application of mercury, but he failed to recognize trachoma (even in table I, fig. 4 is an illustration of trachoma). Although Beer had a faulty grasp of ophthalmia neonatorum, he was a pioneer in ophthalmic hygiene. He proposed using cold compresses immersion of the eyes with the lids open in cold water.

GEORG JOSEPH BEER'S CONTRIBUTION TO MEDICAL LITERATURE

1.-Praktische Bemerkungen weber verschiedene ..

2.- Praktische Beobachtungen weber den grauen Star und die Krankeheiten der Hornhaut , Wien 1791

3.- Lehre der Augenkrankheiten ,Vienna 1792

4.-Bibliotheca Ophthalmica…Repertorium aller bis zu dem Ende des Jahres 1797 erschienenen Schriften ueber die Augnkrankheiten. Wien 1797

5.-Methode, den grauen Star mit der Kapse auszuziehen, nebst einigen anderen Verbesserungen der Star-Operation ueberhaupt. Wien 1799

6.-Auswahl aus dem Tagebuch eines praktischen Augenarztes

7.-Praktische Bemerkung ueber Augenkrankheiten Wien, 1800

8.-Pflege gesunder und geschwaechter Augen nebst einer Vorschrift, wie man sich bei ploetzlichen Zufaellen an den Aufordern, elbst helfen kann, Wien, 1800, Leizig, Weidmann Bookstore 1800

9.-Ansicht von der staphylomatoesen Metamorphose des Auges und der kuenstlichen Pupillen-Bildung , Wien 1805

10.-Queries proposed to those medical gentlemen who have opportunities of observing the epidemical ophthalmia, which has long prevailed in the British Army. Vienna:1806. Reprinted in the Medical and Phys. Journal of London (XIV,317-20,1810)

11.-Geschichte der Augenkunde ueberhaupt und der Augenheilkunde insbesondere ,Wien :1813

12.-Uebersicht aller Vorfaelle in dem oeffentlichen klinischen Institut der k.k. Universitaet zu Wien, 1813-1816.

13.-Das Auge, oder Versuch, das edelste Geschnek der Schoepfung von den hoechst verderblichen Einfluessen unsres Zeitalters zu sichern Wien , 1813

14.-Lehre der Augenkrankheiten, Volume I, Vienna 1813; Volume II, Vienna: 1817.

Fig. 18: A Plate with surgical instruments for eyelids, and lacrimal glands' infections

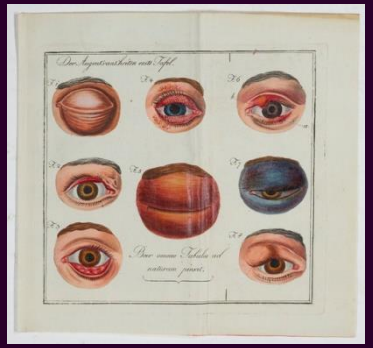
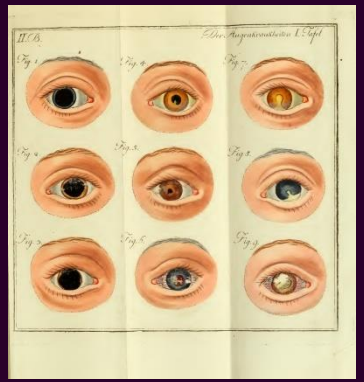


Fig. 19: Color Plate IV with lid pathological conditions



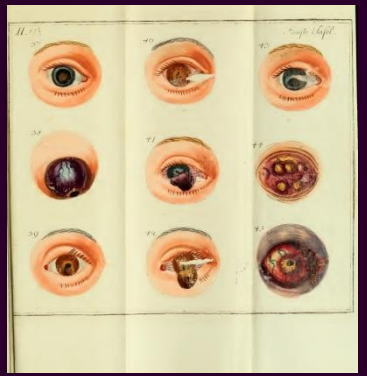


Fig. 20-21: Color plates,drew by Beer from his own book with a selection of ocular conditions

GEORG JOSEPH BEER'S INSTRUMENTS

Fig.14: Georg J. Beer's set of cataract operation tools (knife and couching needle) with a case. Science Museum collection, London

Fig.15: Another Pocket set for his surgical tools Science Museum collection, London

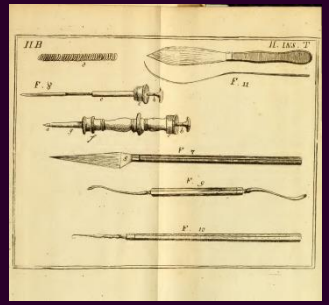
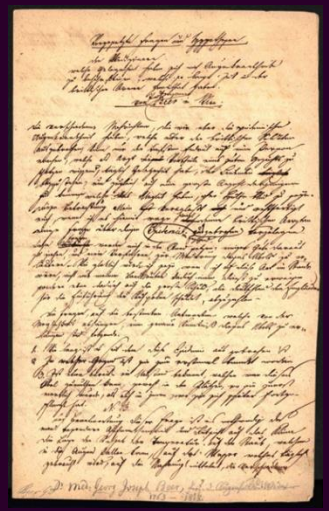


Fig. 17: Plate II of Beer's surgical tools from his book 'Augenkrankheiten'. Beer designed and combined tools for his operations, cataract, iridectomy, lachrymal irrigation and removing of purulent collection.

When Beer's discussion of glaucoma was one of the best, which then appeared in literature: he thought that glaucoma, next to cancer, was the most malignant disease which could afflict the eye and was relentless and incurable. Beer also gave the best descriptions of constrictions of the visual fields at that time (visus interruptus). Other important contributions are the description of 'floaters' (visus muscarum), first signs of retinal detachment, congenital and senile changes of the eyes, coloboma of the iris, arcus senilis (Marasmus senilis corneae). He was far ahead of his time in refractive errors.

It resulted from his knowledge of the work of mathematician George Albert Hamberger and his 1696 book Optica Oculorum Vitia. Another area in which Beer was superior to his colleagues was the lid abscesses and orbital cellulitis. Schmidt et al. attributed to lacrimal gland Inflammation Beer clearly understood their pathogenesis.



EPILOGUE

Georg Joseph Beer was the father of modern Ophthalmology in Europe. Gifted with ingenuity, open-mindedness, he trained himself and several students, later distinguished physicians in the newly created surgical specialty of Ophthalmology. Despite Joseph Barth's and his colleagues' hostile and undermining behavior, he emerged as a leading scientist, surgeon, and, beyond all, a dedicated teacher in the History of Medicine.

THERE IS NO ANY FINANCIAL INTEREST FROM THE AUTHORS

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