

‘OPHTHALMIC SURGERY’
A Clinical manual of 19th and 20th Century For the Practitioners and Students of
Medicine, by ROBERT BRUDENELL CARTER and WILLIAM ADAMS FROST

Dr GEORGIOS N. BALANIKAS¹ MD, PhD

1. Aⁿ Ophthalmologic Clinic, Aristotle University, AHEPA Hospital, Thessaloniki



HELLENIC SOCIETY OF INTRAOCULAR IMPLANT
AND REFRACTIVE SURGERY

38TH INTERNATIONAL CONGRESS
MEGARON, Athens International Conference Centre
FEBRUARY 29TH -MARCH 2ND, 2024



Fig. 1: „Robert Brudenell Carter“
Caricature by "Stuff", from Vanity Fair, 9 April 1892

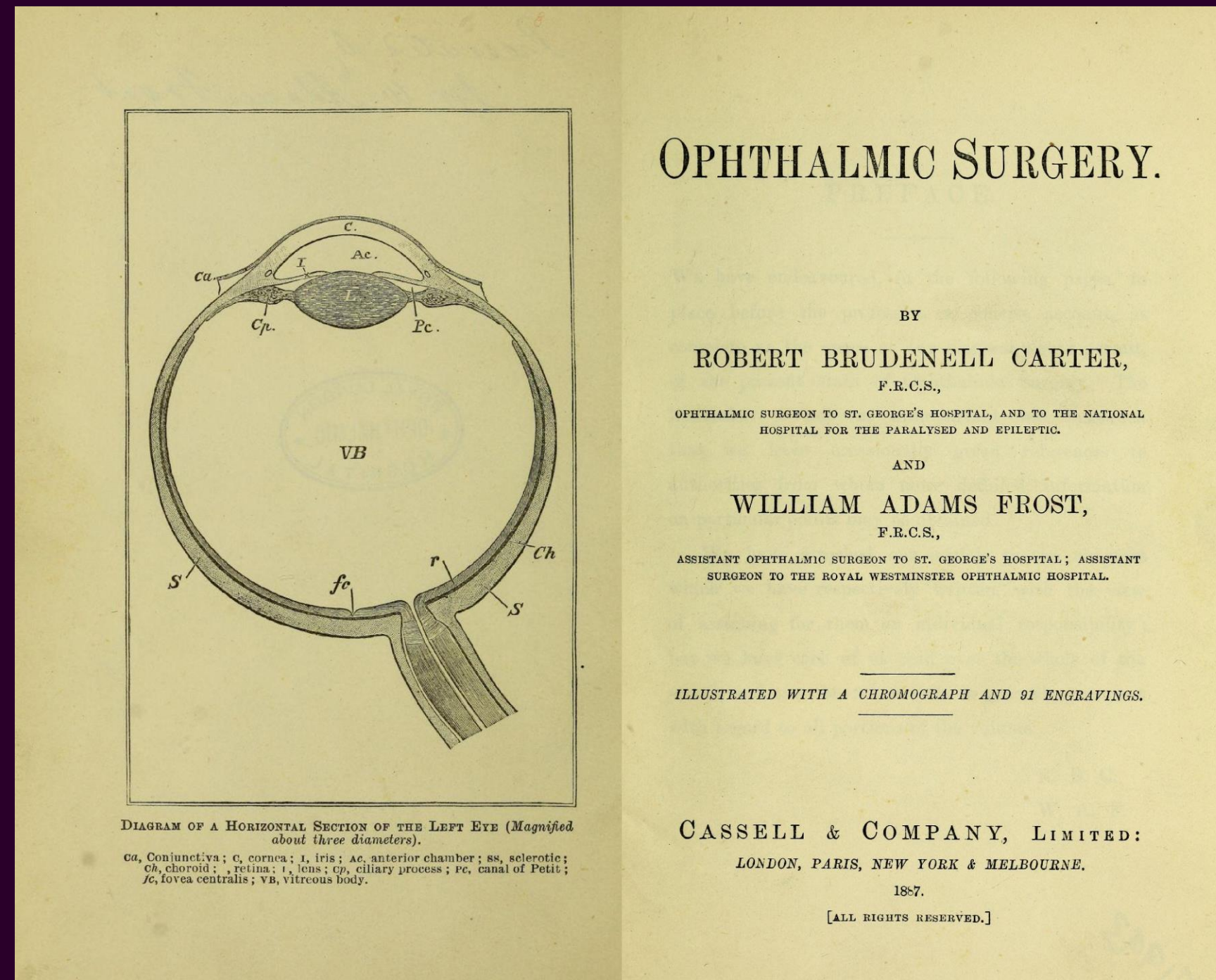


Fig.2 : OPTHALMIC SURGERY
By ROBERT BRUDENELL CARTER and WILLIAM ADAMS FROST, 1887

Co-Authors : Dimitrios Peirounides¹ MD, PhD, Elena Papadopoulou¹ MD,
Nikolaos Vasileiadis¹ MD, Petros Rasoglou² MD, PhD, Emeritus Prof. Vasileios Karampatakis³ MD, PhD

THERE IS NO ANY FINANCIAL
INTEREST FROM THE AUTHORS

1. Aristotle University of Thessaloniki, A' Ophthalmologic Clinic, AHEPA Hospital, Thessaloniki, Greece,
2. Department of Refractive Surgery, Institute Ophthalmica
3. Aristotle University of Thessaloniki, Department of Medicine, Laboratory of Experimental Ophthalmology, Thessaloniki, Greece.

INTRODUCTION

The 19th century was the era when the foundations of modern medical science were laid. More than 100 years before, a text by two famous physicians was published and became popular among the young students of medicine: “Ophthalmic Surgery” by Robert Brudenell Carter (1828- 1918) and William Adams Frost (1853-1935). The book was published in 1887 when Carter was 59 years old and one of the most influential figures in English Medicine. His student and friend William Adam Frost was 34 years old, and this manual helped to establish him as an essential figure in Ophthalmology. At the time of Frost’s death in 1935, copies of this work were still exciting and valuable to read.

The authors were two of the leading ophthalmologists of Victorian England. They were in the forefront of the generation of ophthalmologists that had succeeded Graefe, Bowman and Donders, the founders of modern ophthalmology. Carter due to his fame as skillful and keen observer had won a place on the editorial staff of The Times of London and he was an editor of the Lancet as well.

ROBERT BRUDENELL CARTER

Robert Brudenell Carter was born at Little Wittenham, Berkshire, on October 2nd, 1828. His grandfather, the Rev. Henry Carter, was Rector of the Lower Wittenham for 57 years. His grandfather's sister was Elizabeth Carter, the Greek scholar who translated Epictetus and was a friend of Samuel Johnson, Edmund Burke, and Horace Walpole. His father was Major Henry Carter, Royal Marines, and he left him to his neighbor and friend Robert Brudenell and raised by Mrs Fearne. He received his education at a private school and began his medical training as a general practitioner. In 1851 at twenty-three years old, he became a member of the Royal College of Surgeons.

He became assistant to Stephen Mackenzie, a physician who practiced in Leytonstone, close to London. He remained in general practice until he was forty years of age. In 1851 Macenzie died suddenly by an accident after he was thrown from his carriage. Mackenzie had a private institution in Leytonstone for the treatment of acute and chronic hysterics. Carter was impressed with Mackenzie’s knowledge and views of hysteria and he published in 1853 his first book, an important work entitled On the Pathology and Treatment of Hysteria, as a memorial to his mentor. His book on hysteria was concise and well organized.

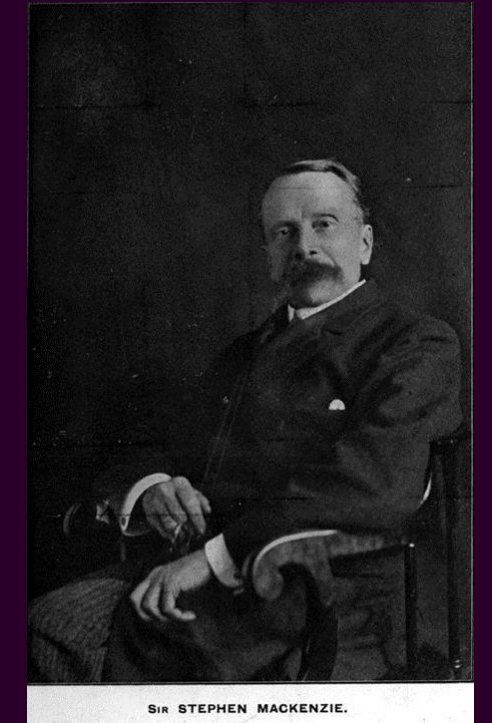
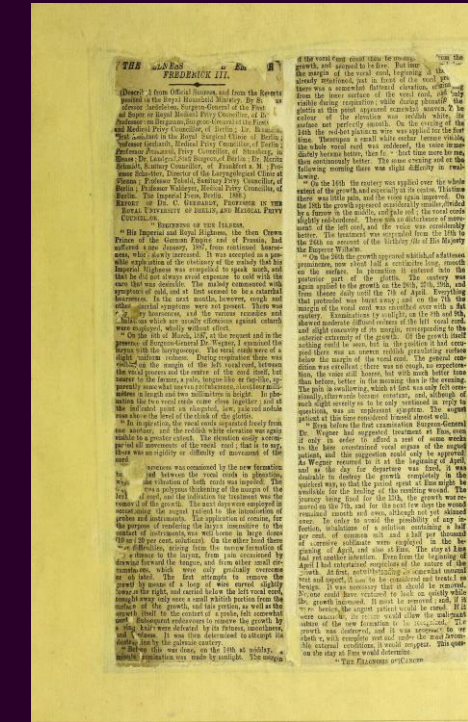
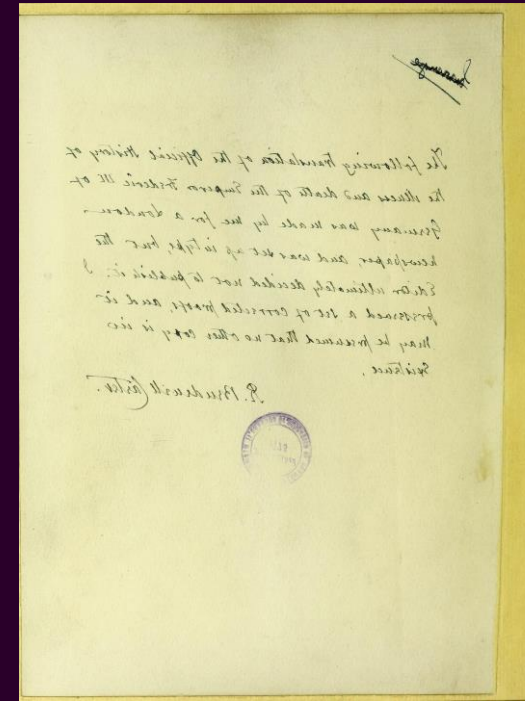


Fig. 3-4: The illness of the Emperor Frederick III, R. Brudenell Carter work

Fig.5: Stephen Mackenzie (1848-1909)

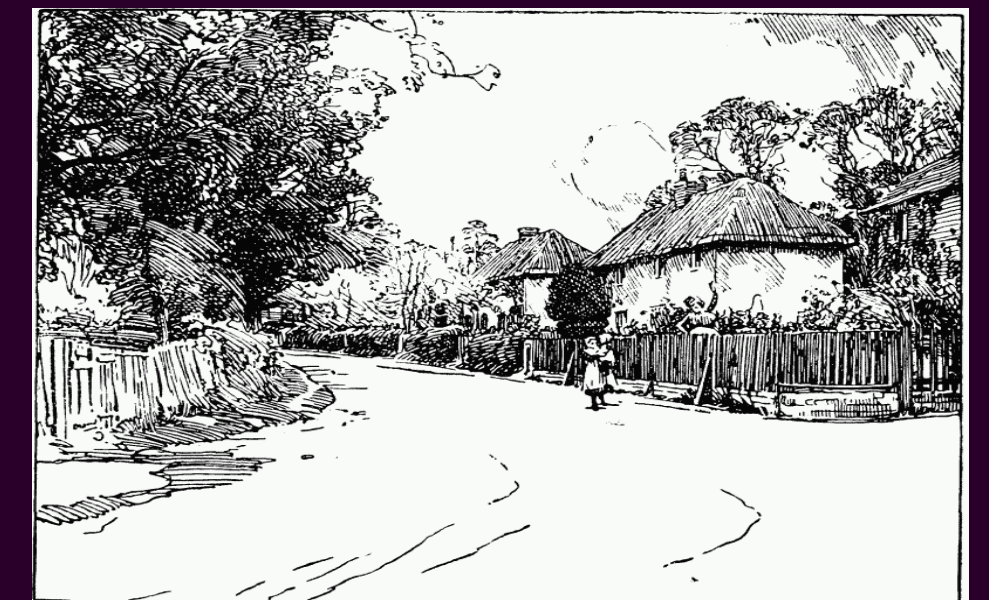


Fig. 6: Little Wittenham, East Wittenham
Little Wittenham: A View in The Village (xvii cent.)

In 1854 his interests in hysteria were permanently interrupted when he volunteered for service in Turkey and was appointed an army staff surgeon in the Crimean War and for his services, he received both the English and Turkish War Medals. His second book, „The influence of Education and Training in Preventing Diseases of the Nervous System“ (1855), soon followed and he played a large part in establishing the Nottingham Eye Hospital in 1859. It was from this date that Carter decided to work as an eye surgeon. In 1862, he moved to Stroud, Gloucestershire, and was made an honorary assistant surgeon to the 1st Gloucestershire Light Horse Volunteer Corps in May 1864. Earlier in the year, he became a fellow of the Royal College of Surgeons. He also helped to set up the Gloucestershire Eye Hospital in 1866. Carter moved back to London in 1869 and joined the staff of the Royal South London Ophthalmic Hospital in Southwark, before moving on to practice and teach students at St George's Hospital, then located in Belgravia.

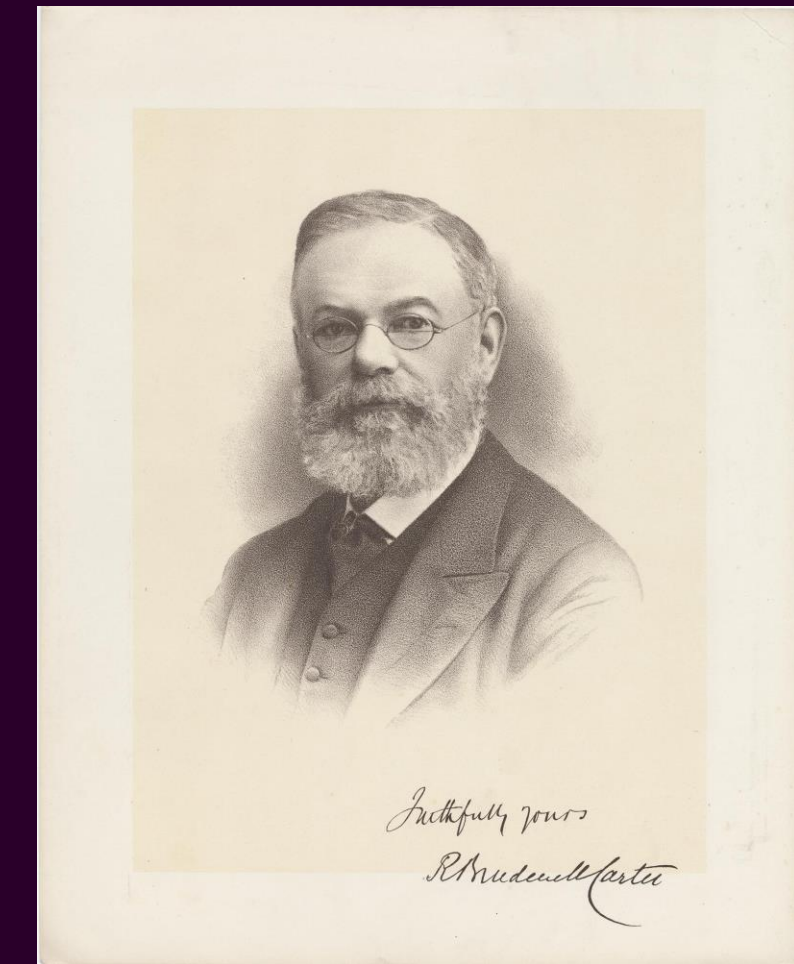


Fig. 7: Robert Brudenell Carter, portrait with autograph, The Osler Library Prints Collection.

In 1875, Carter published his „Practical Treatise on Diseases of the Eye“, a book that consisted of the courses that he delivered at St Georges Hospital, and which became one of the core texts for students.

Carter continued to teach until 1883 and served on the Council of the Royal College of Surgeons until his retirement in 1887. In 1896, he was awarded the Honour of Knight of Grace before receiving the Order of the Hospital of St John of Jerusalem in 1910. Carter was to live out his remaining years in Clapham, South London, and died on 23 October 1918, at the age of 90.



Fig.8: St. Georges Hospital, 1872

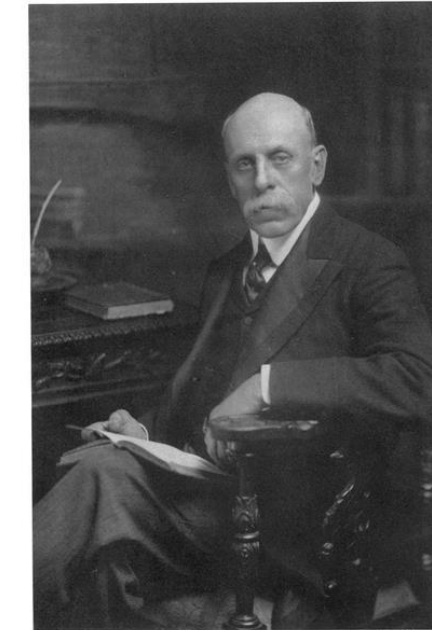
WILLIAM ADAMS FROST (1853-1935)

When William Adams Frost retired from practice in 1906 at fifty three years of age, he was generally regarded as the best known of British ophthalmologists.

William Adams Frost was born in 1853 and was the son of Charles Maynard Frost, a surgeon in practice in Ladbroke Square and surgeon at the Kensington Dispensary. Frost studied medicine in St. George's Hospital in 1874, and he took the N.R.C.S. from there and was appointed house surgeon and demonstrator of anatomy at that hospital. Sir William Bennet was his colleague in office. He went to Vienna for postgraduate study, and after his training in Moorfields, he obtained F.R.C.S. in 1878. In 1881 Frost was elected Assistant Ophthalmic Surgeon to St. George's under Carter, with whom he had a good working relationship and friendship.

Frost's co-authorship of "Ophthalmic Surgery" with Carter helped him to establish his reputation in ophthalmology.

But his best known work was his impressive '*Atlas of the Fundus Oculi*'. During his training at Moorfields, he recorded interesting fundi, supervising the talented artist A.W. Head. Frost had Head's paintings reproduced by color lithography, and this collection was widely cited as "the finest plates of the fundus that have ever been produced".



WILLIAM ADAMS FROST (1853-1935)
Photo by Elliot & Fry

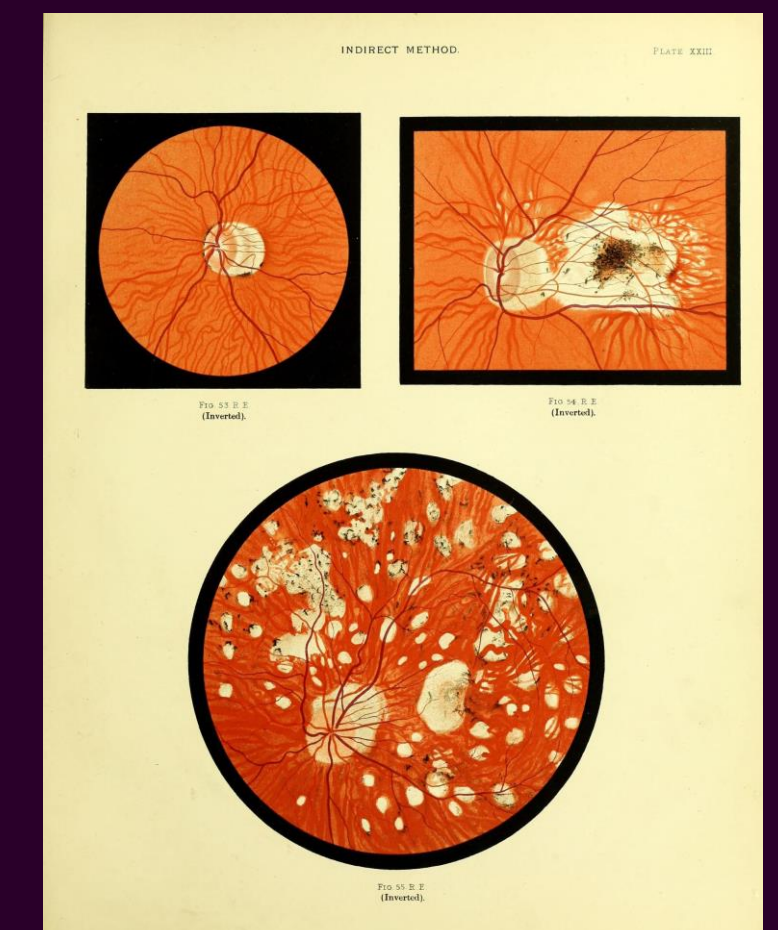
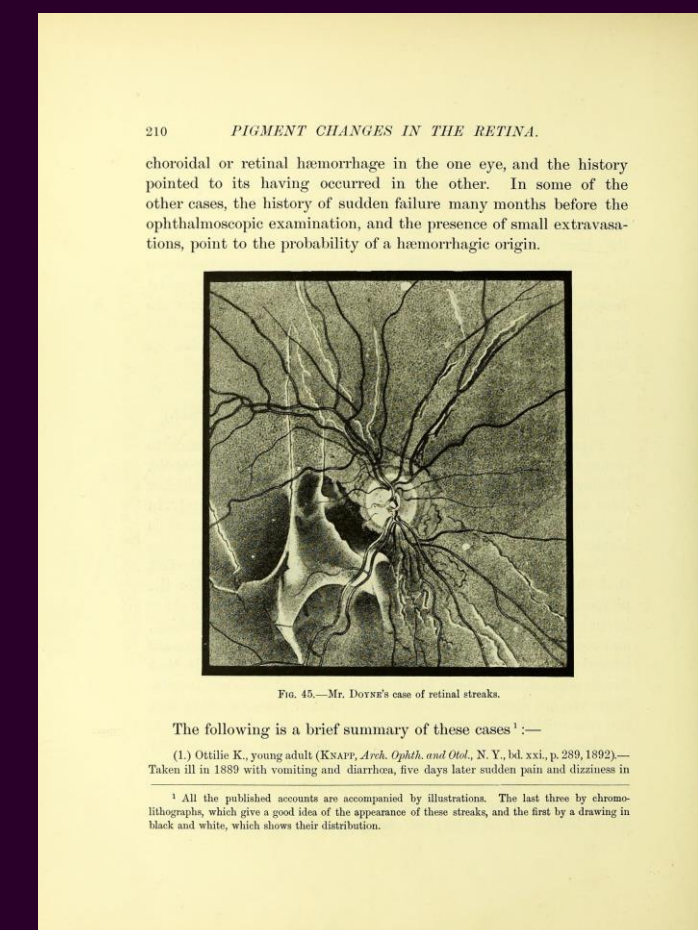
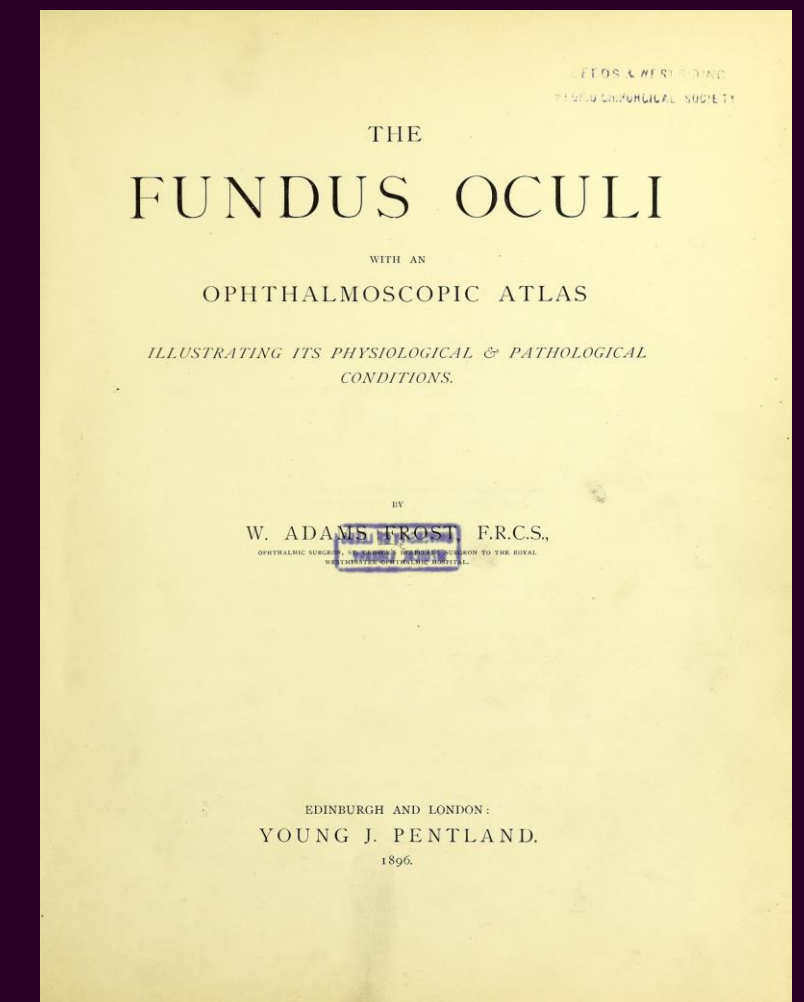


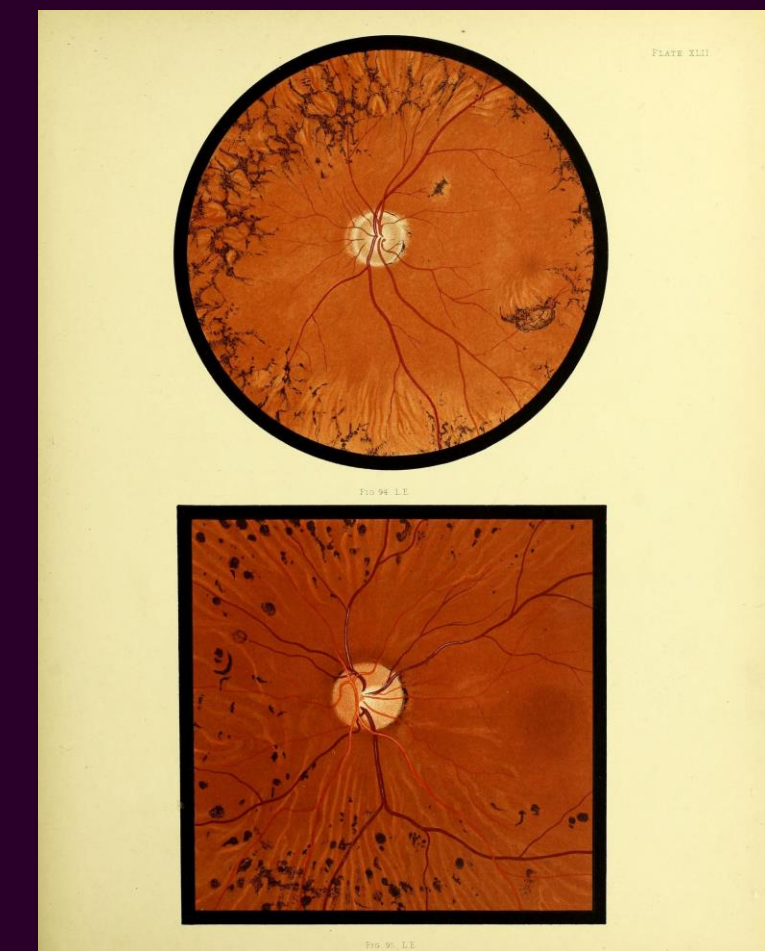
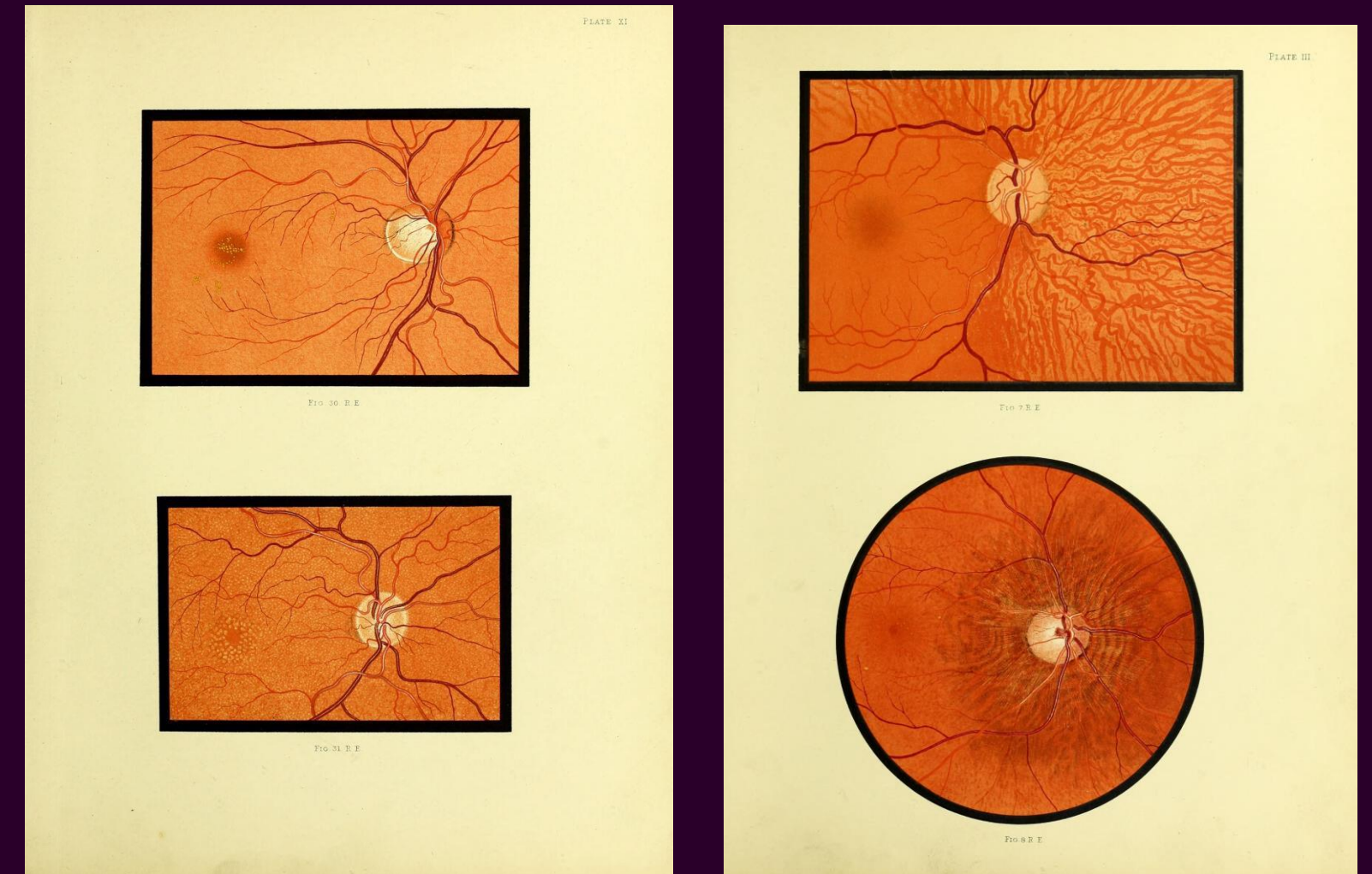
Fig. 9: A portrait of W. Adams Frost, Fig. 10-12 : His marvelous work „THE FUNDUS OCULI

The book, published in 1896, was used for teaching all over the world and was valued not only for the quality of illustrations but also for the accuracy of the contents. The ophthalmoscope he used throughout his career was much admired by his contemporaries. It was a reflecting ophthalmoscope modified after Morton's design. It had two wheels set close together by which the batteries of plus and minus lenses were moved to the sight hole. Frost retired from practice in 1906 but during the latter part of World War I, he resumed practice as a visiting ophthalmic surgeon to the London County War Hospital at Epsom.

At the time of his retirement, Frost enjoyed golf and riding, although he had several accidents. In 1918 he lost one eye due to secondary glaucoma, and later the remaining eye was affected by primary glaucoma, and although treated, he gradually lost his vision until he was nearly blind. Roberts Rustin James notes: „He was a pathetic figure at hospital gatherings, an old friend used to generally to come with him to lead him about. But in spite of his handicap, Frost was always cheery“.

Fig. 13,14: Another four artistic images of Retina (normal fundus variants)

Fig.15, Retinitis Pigmentosa and Chorioido-Retinitis unusual



THE BOOK

In 1875 Carter published his *Practical Treatise on Diseases of the Eye*. It consisted almost entirely of lectures he delivered to the students in St.

George's Hospital. In 1887 he published „Ophthalmic Surgery“ written with Frost. The manual comprises 540 pages, four appendixes, and a 6-page index. It is decorated with in text detailed icons, diagrams, and tables (number 91 at all) depicting anatomical structures, ophthalmoscopes, and surgical tools. All these constitute a complete practical manual of ophthalmic surgery for medical students and young ophthalmologists.

THE FIFTEEN CHAPTERS

I: ANATOMY AND PHYSIOLOGY, II: EXAMINATION OF THE EYE, III: AFFECTIONS OF THE EYELIDS, LACRYMAL APPARATUS, AND CONJUNCTIVA, IV: THE CORNEA, AND THE ANTERIOR ZONE OF THE SCLERA, V: DISEASES OF THE IRIS, VI: THE LENTICULAR SYSTEM, VII: AFFECTIONS OF THE VITREOUS, VIII: GLAUCOMA, PRIMARY AND SECONDARY, IX: OPTIC DISC, RETINA, CHOROID, AND POSTERIOR HALF OF SCLERA, X: AMBLYOPIA AND AMAUROSIS, XI: COLOUR VISION AND ITS DEFECTS, XII: INJURIES, XIII: ERRORS OF REFRACTION, XV: AFFECTIONS OF THE OCULAR MUSCLES, XV: AFFECTIONS OF THE ORBIT, and the APPENDIX: A. A SNELLEN'S DISTANCE TYPES, B. READING TYPES, C. ARMY TEST DOTS, D. FORMULAE

ANATOMY, PHYSIOLOGY, EXAMINATION, EYELIDS, CONJUNCTIVA, LACHRYMAL APPARATUS

The first chapters are dedicated to the basic anatomy and physiology of the eye (p.1-29), with details and a schematic sketch of the cornea, followed by the examination of the eye (chap. II, p.30-51). This chapter includes figures of eye examination, ophthalmoscopes, perimeters, and schematic route of the light. Chapter III describes lachrymal apparatus, eyelids conditions, and surgical instruments for use by the surgeon. Chapter IV is dedicated to the corneal, anterior sclera (p.131-203), iris, and pathological and surgical conditions.

CATARACT SURGERY

The sixth chapter dedicated to the lenticular system discusses the cataract surgery techniques (p.204-257). This section is ornamented with several surgical instruments (forceps, knives, suction curette, lid elevator, testing drum, scissors, shell spoon, Graefe's cystitome, shell spatula, iris knife, Pagenstecher's Spoon, Taylor's Vectis, eye bandage after the operation and anatomical figure. He describes the tools and the way of the extraction of the cataract, and he presents the extraction in hard nuclei and the suction in liquid and soft cores and iridotomies

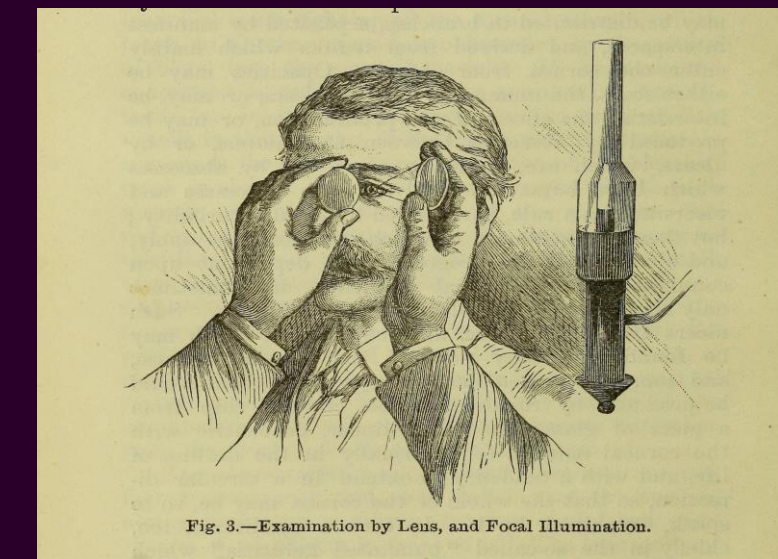
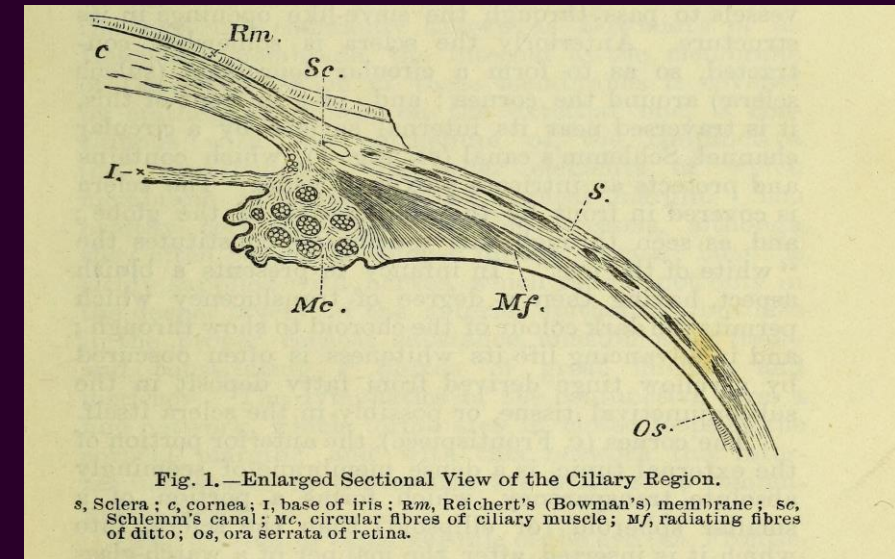


Fig. 16: The ciliary region, Fig. 17: Examination by the lens and focal illumination

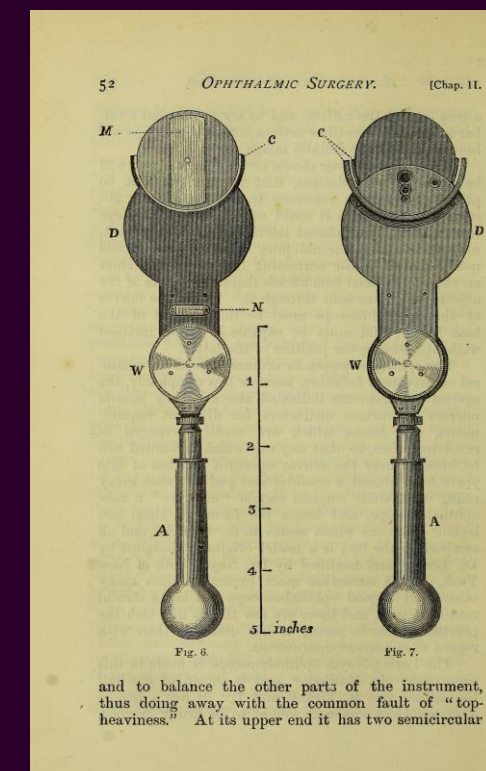


Fig. 18: Ophthalmoscopes

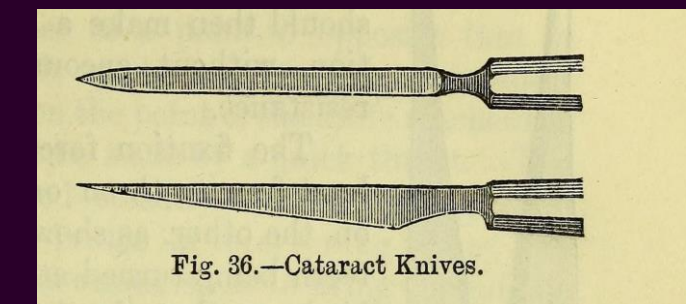
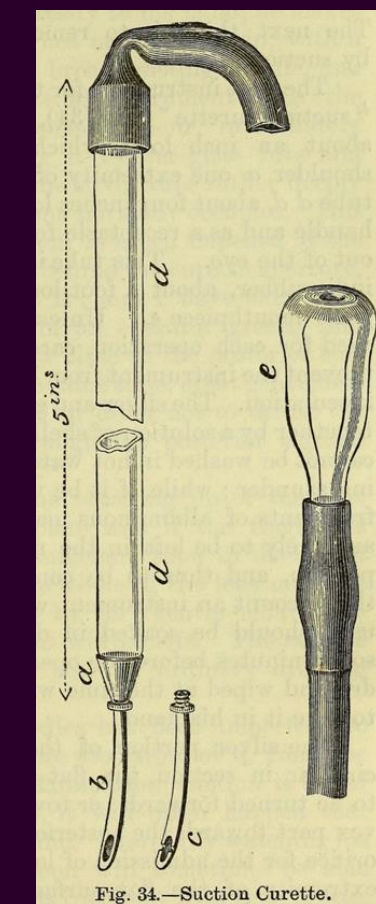


Fig.19, 20: Tools for cataract surgery:
Suction Currete and Cataract knives

VITREOUS AFFECTIONS, PRIMARY AND SECONDARY GLAUCOMA, OPTIC DISC, RETINA, CHOROID AND POSTERIOR HALF OF SCLERA

Chapter VII is dedicated to affections of the vitreous, „muscae volitantes“ (floaters, etc.), „hyalitis“, vitreous and membranous opacities, sparkling synchysis, haemorrhage, blood-vessels, pseudo-glioma, detachment, and the foreign bodies (p. 258-274). Chapter VIII is dedicated to glaucoma (p.274-294). There is a distinction between primary and secondary glaucoma depending on the mechanism of the pathogenesis, the physiology, the treatment, and the consequences. The chapter also includes the surgical method (iridectomy, sclerotomy) and is enriched with an icon of Iridodesis Knife (Weiss). The ninth chapter is dedicated to the fundus conditions, such the anomalies and diseases of the optic disc, neuritis, choked disc, atrophy, retinal „embolism“, retinal haemorrhage, retinitis, pigmentary retinitis, detachment of the retina, choroidal sarcoma, retinal glioma, choroiditis, choroid haemorrhages, and coloboma (p. 295-342).

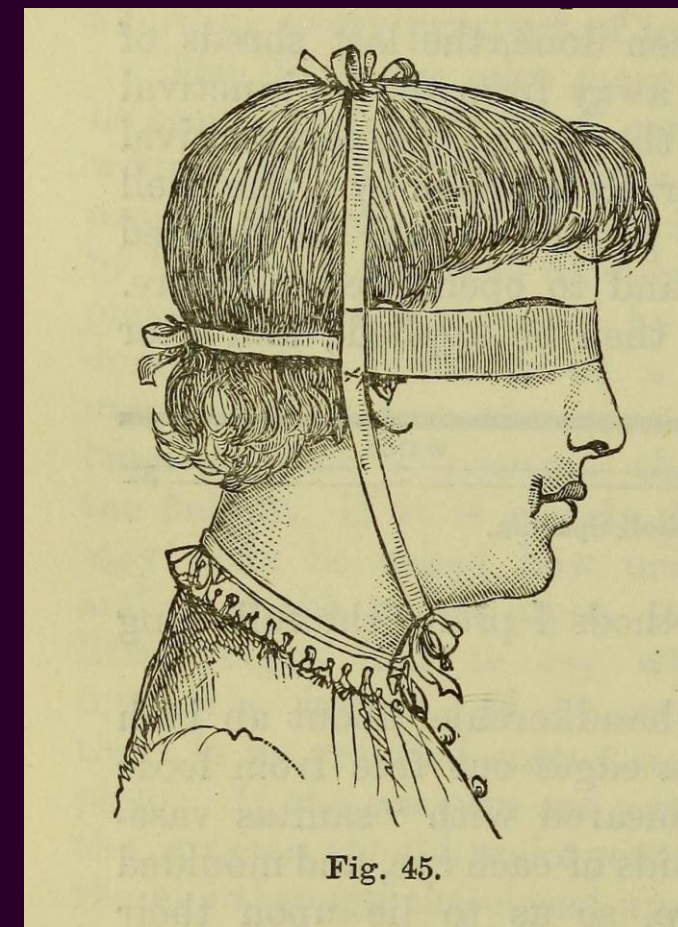


Fig. 45.

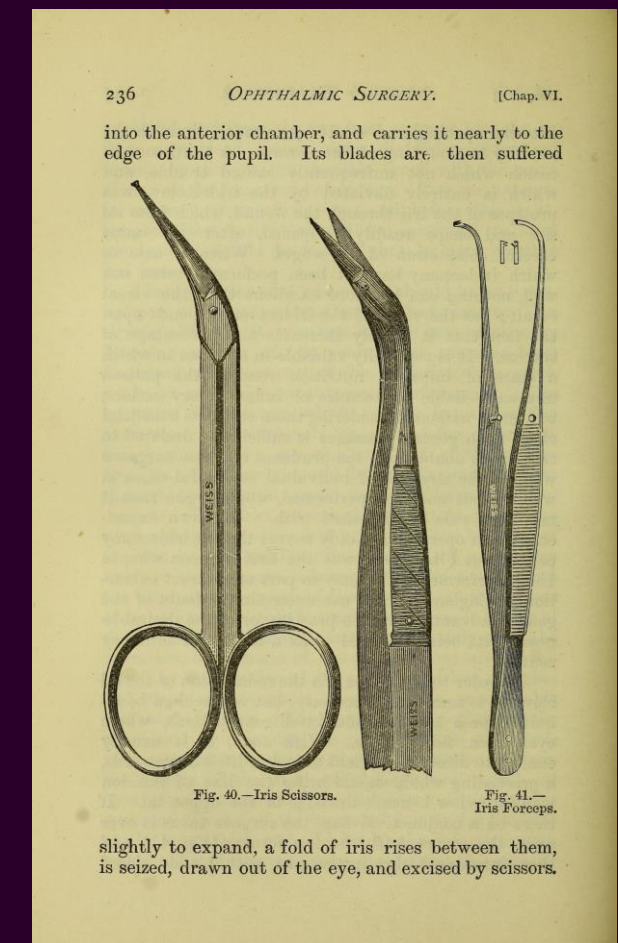


Fig.21: Bandage after cataract surgery, Fig. 22: Iris scissors

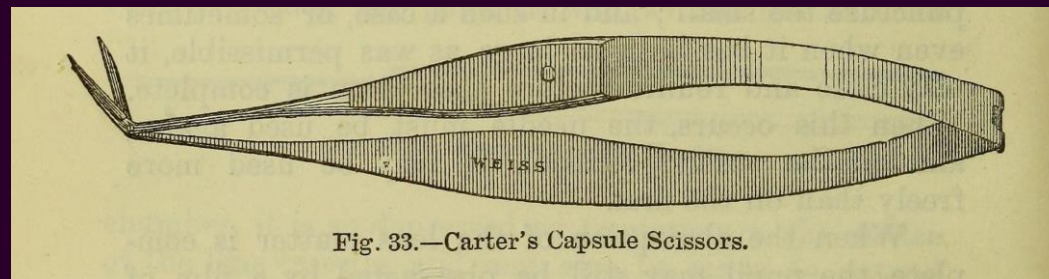


Fig. 33.—Carter's Capsule Scissors.

Fig. 23 :Robert Carter"s Capsule scissors,
Fig. 24: Iridodesis knife

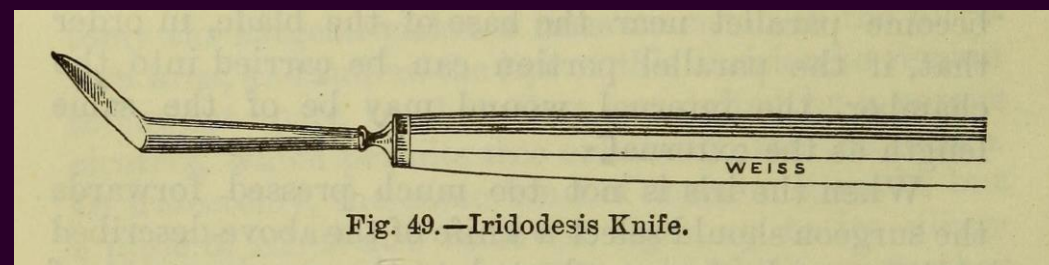


Fig. 49.—Iridodesis Knife.

Fig.25-27: Graefe"s cystitome,
Irridectomy knife, Pagenstecher"s Spoon

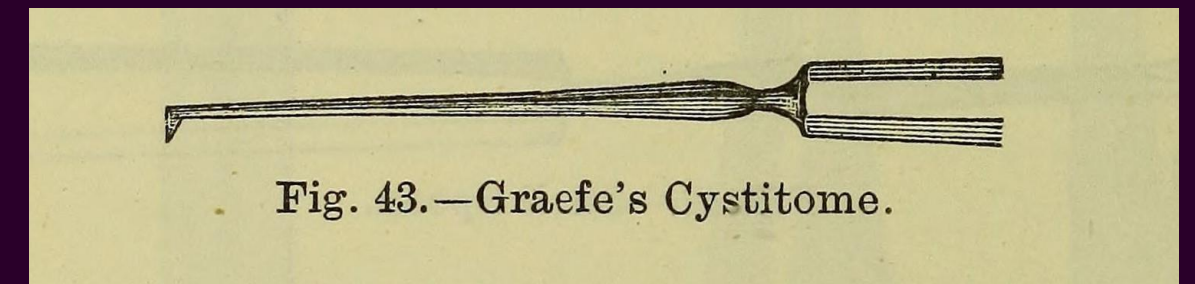


Fig. 43.—Graefe's Cystitome.

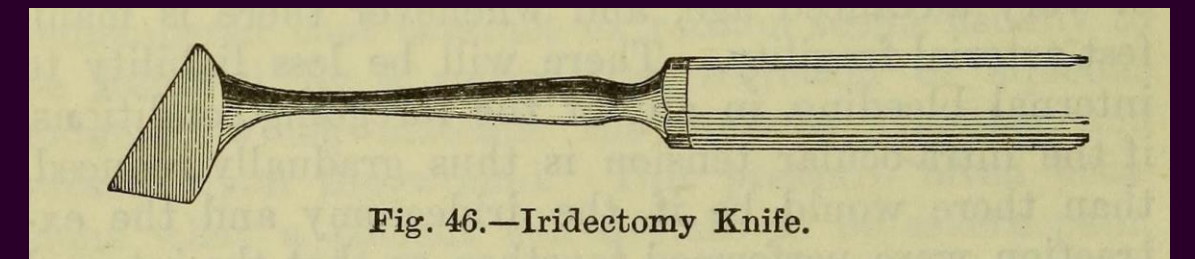


Fig. 46.—Iridectomy Knife.

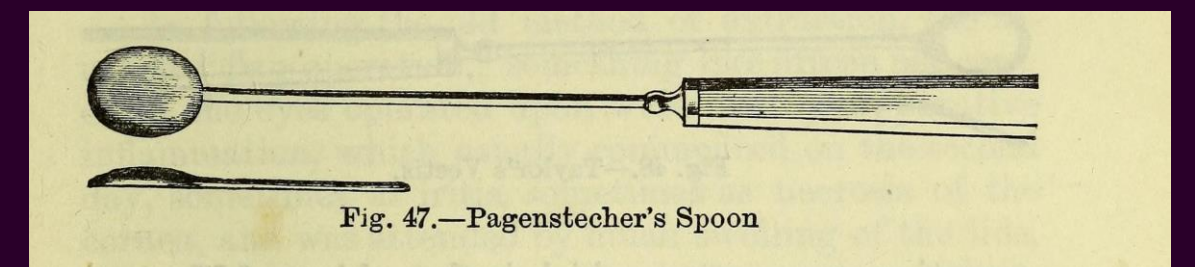


Fig. 47.—Pagenstecher's Spoon

EPILOGUE

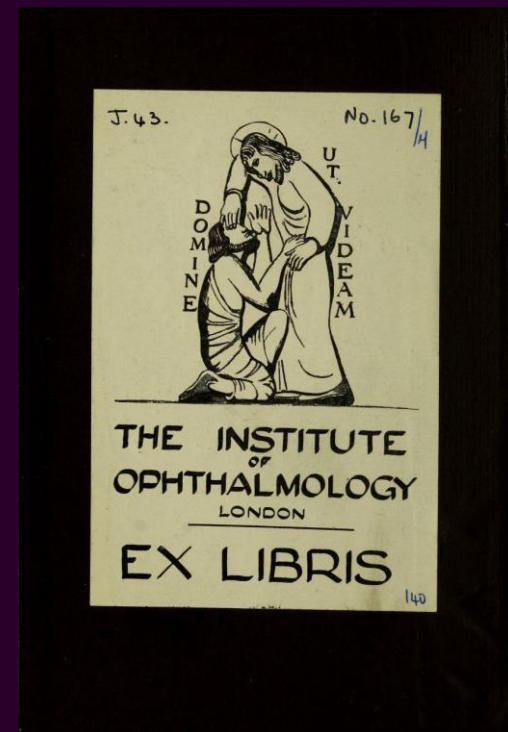
The nineteenth century was a revolutionary period in medicine. After the Renaissance, there was an explosion in the arts, literature, science, and philosophy.

This century was the connecting link between the past and the future. Robert Brudennel Carter and William Adam Frost were the frontiers to this explosion in medicine.

Their work “Ophthalmic Surgery” and other personal manuals are the products of this impressive period. Valuable, concise, and beautiful illustrated helped and guided the new generations of physicians for the 20th century. This work is dedicated to those great pioneers of our Science: Ophthalmology



Une Opération du Strabisme, printed lithograph
The Osler Library Prints Collection



Bookplate of the Carter's
& Frost's book, 1887 edition
from The Institute of Ophthalmology



Royal College of Surgeons, Court of Examiners (1894)
by Henry Jamyn Brook



For more Info: Dr GEORGIOS N. BALANIKAS
dioskouridis@yahoo.com
+306977207133