

The Wills hospital of Philadelphia : the influence of European and British ophthalmology upon it, and the part it played in the last 100 years in developing ophthalmology in America / by William Campbell Posey and Samuel Horton Brown.

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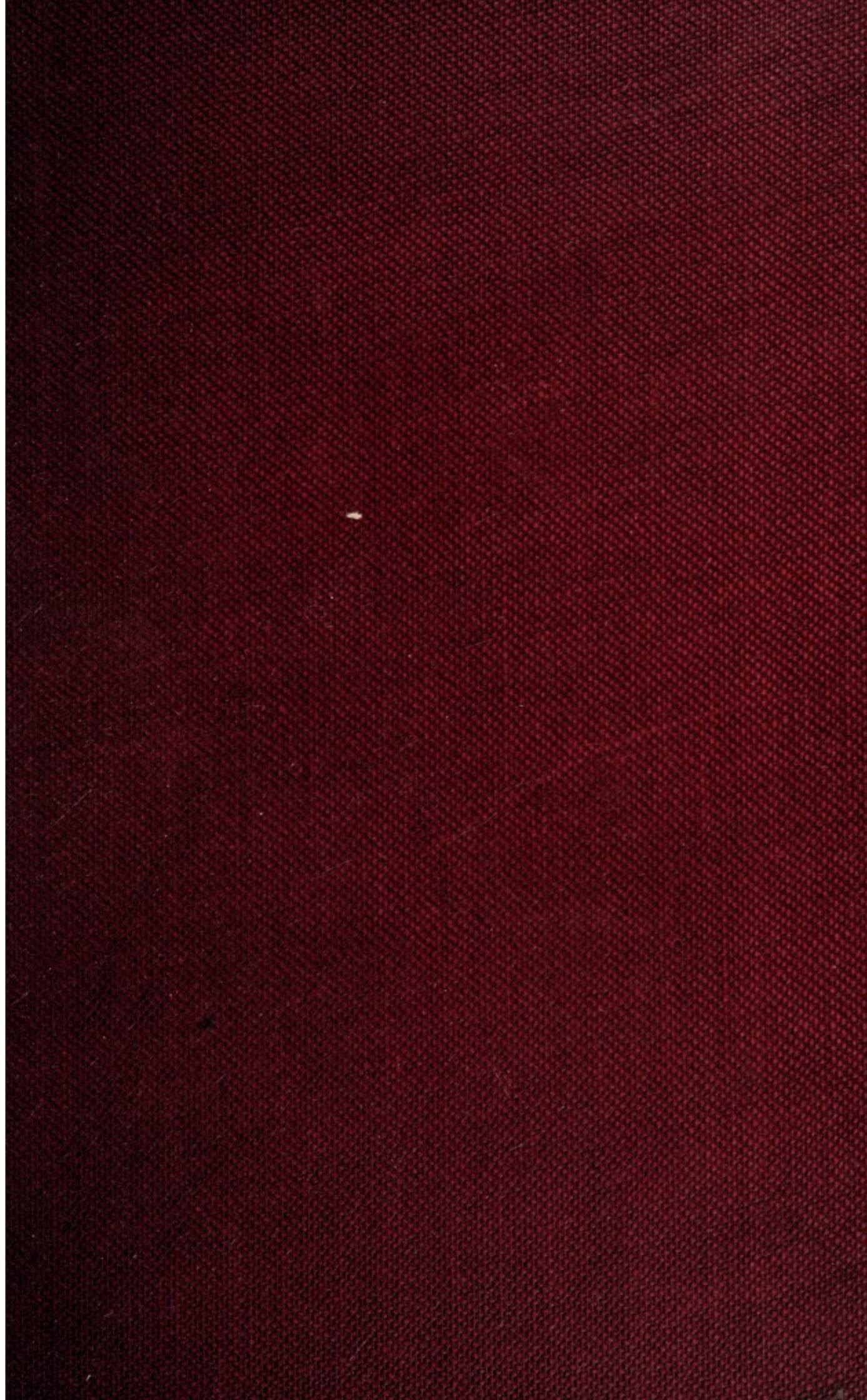
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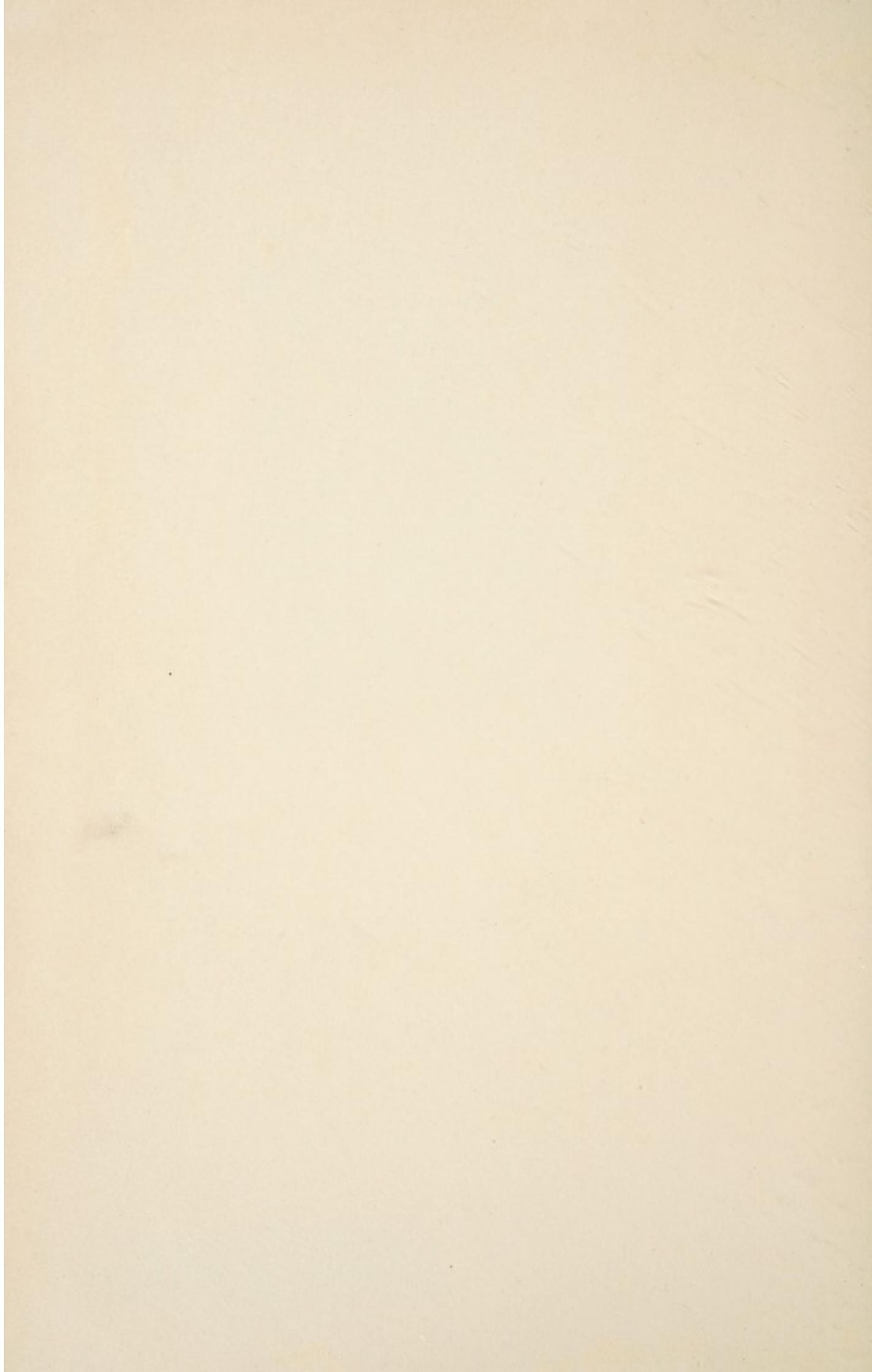
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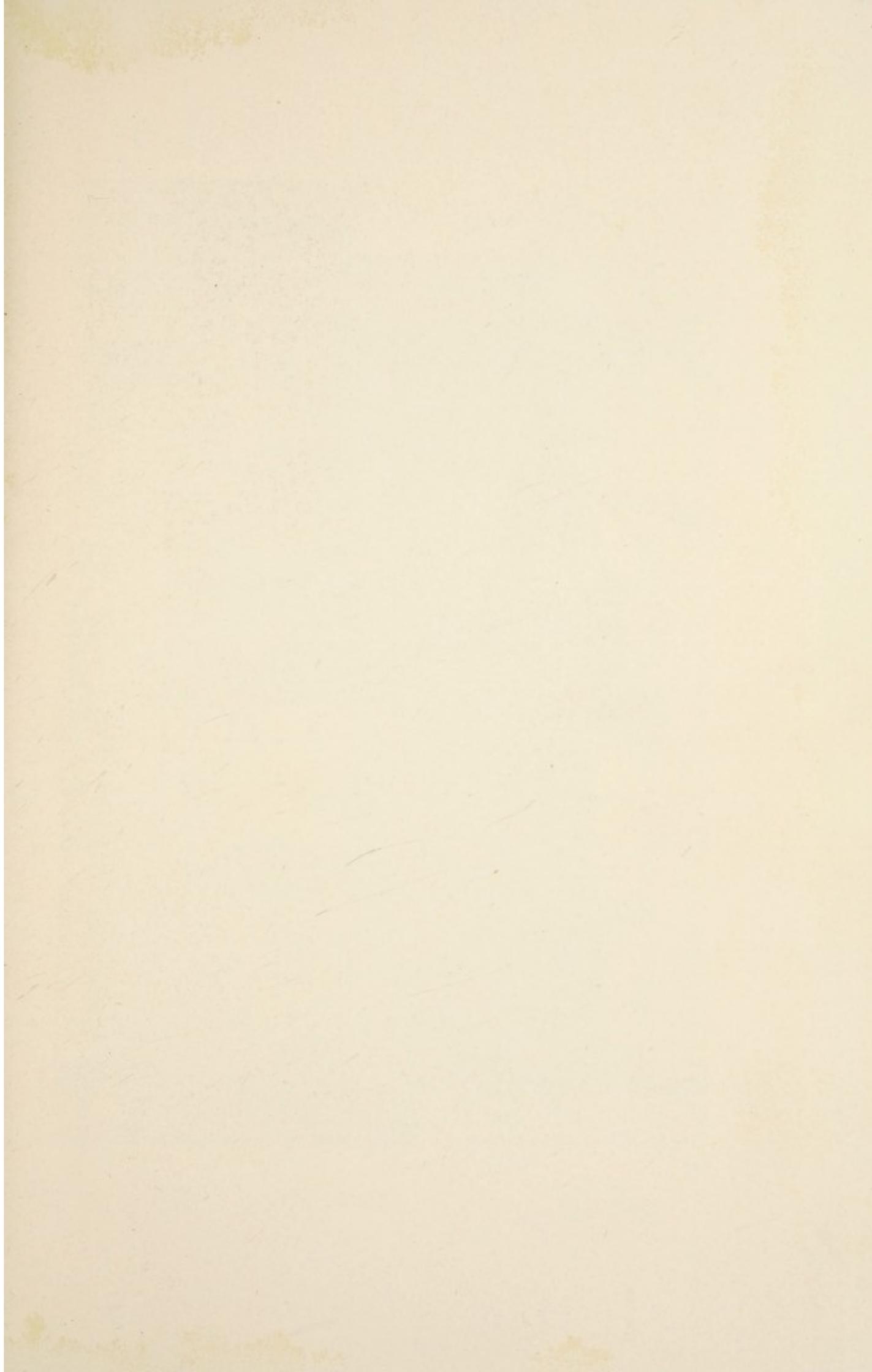
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Original Wills Hospital building.

THE WILLS HOSPITAL OF PHILADELPHIA

THE INFLUENCE OF EUROPEAN AND
BRITISH OPHTHALMOLOGY UPON
IT, AND THE PART IT PLAYED IN
THE LAST 100 YEARS IN DEVELOPING
OPHTHALMOLOGY IN AMERICA

by

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PREFACE

ANY institution which is about to celebrate its Hundredth Birthday deserves to have its history perpetuated, especially if it has lived as useful a life as the Wills Hospital. It has been the aim of the authors, therefore, in this volume, to render a faithful account of the various happenings in this Institution since James Wills endowed it, to suggest a probable reason for the gift, and to sketch briefly the medical forerunners and associations of the first Staff. They have portrayed, though briefly, the lives of the members of the Staff who are deceased, and they have endeavored to indicate the sources of their education in ophthalmology, and to show what they themselves did to extend the knowledge of this subject in this country.

This Hospital witnessed the birth of ophthalmology—its emergence as a branch of general surgery into the highly developed and specialized science of to-day. The authors have described the part which each member of the Staff played in this development, and have shown the steady growth of the Hospital under the judicious and faithful management, first, of City Councils, later, of the Board of Directors of City Trusts.

The literary labors and productions of the Staff have been recorded, also the parts some of its members took in establishing societies devoted to ophthalmology.

As a school for ophthalmology, no other institution in America, perhaps, has been of so great influence in the education of physicians in that branch of medicine, and through its students its influence has spread far and wide.

The recent creation of new departments, making the Hospital sufficient in itself, has brought the Institution in full touch with the times, fully ready to assume future responsibilities.

The authors desire to express their thanks to the Board of Directors of City Trusts for giving them free access to the records of the Hospital and for the publication of this volume, also to the Secretary of the Board, Dr. Louis Heiland, and the Superintendent of the Hospital, Mr. Stephen Wierzbicki, for aid in the compilation of the statistical data, and to all others who supplied them with information.

The Authors

Philadelphia,
July 1, 1931.

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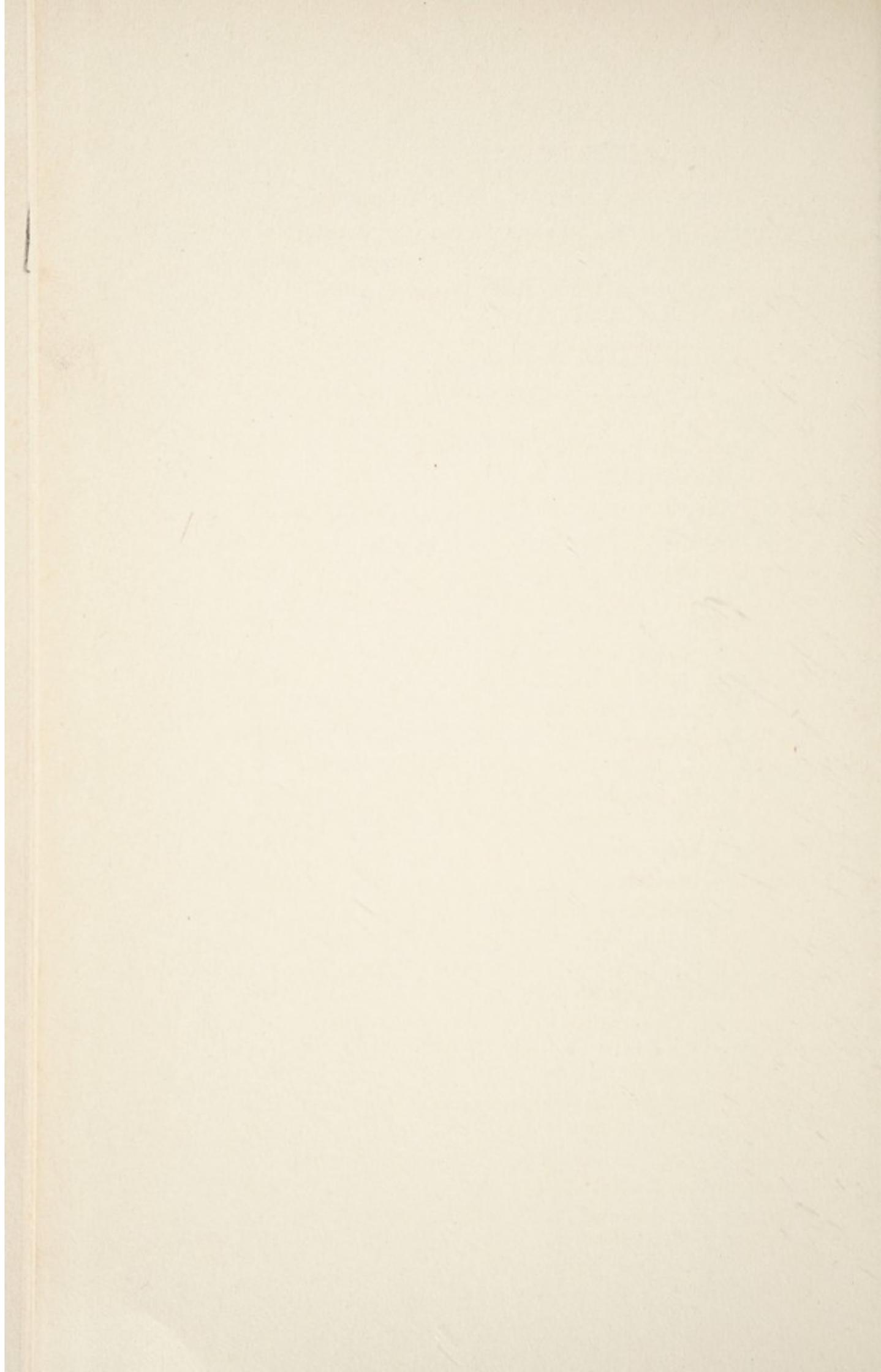
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THE WILLS HOSPITAL
OF PHILADELPHIA

CHAPTER I

THE EARLY SURGICAL FACULTY AT THE UNIVERSITY OF PENN- SYLVANIA AND ITS INFLUENCE UPON THE FOUNDING OF PIO- NEER OPHTHALMOLOGICAL IN- STITUTIONS IN AMERICA INCLUD- ING THE WILLS HOSPITAL

OPHTHALMOLOGY had been practiced in Philadelphia long before the Wills Hospital was founded, and medicine had been on a solid basis in that city for a good many years. The Medical Department of the University of Pennsylvania had been established in 1765, the first in our country, and was everywhere recognized as a school of merit and its faculty, men of learning and ability. Its founder, John Morgan, had received his education in London and Edinburgh and others of the early faculty of the University had likewise been trained in those great medical centers.

In describing the profession of the time (1758) Dr. Joseph Carson¹ quotes a prominent physician of New York as saying:

"A few physicians among us are eminent for their skill. Quacks abound like locusts in Egypt, and too many have been recommended to a full practice and profitable subsistence: this is less to be wondered at as the profession is under no kind of regulation. Loud as the call is, to our shame be it remembered, we have no law to protect the lives of the King's subjects from the mal-practice of pretenders. Any man, at his pleasure, sets up for physician, apothecary and chirurgion. No candidates are either examined, licensed or are sworn to fair practice."

¹ History of the Medical Department of the University of Pennsylvania, 1869.

The same conditions prevailed in Philadelphia, though no quacks anywhere in America attained the eminence and notoriety of the famous English charlatans of the eighteenth century, Thomas Woodhouse and Chevalier John Taylor.²

It is impossible to dwell upon the early history of the Medical Department of the University, further than to say it was not until 1805 that surgery was established as an independent chair, and Dr. Philip Syng Physick chosen to fill it. Prior to that time surgery, anatomy and obstetrics had all been united in one chair, Dr. William Shippen, Jr., and Dr. Caspar Wistar, Adjunct, filling the position immediately prior to the election of Doctor Physick.

This illustrious surgeon was born in Philadelphia in 1768, and after receiving his college education at the University of Pennsylvania entered its Medical Department, but after a time went abroad to complete his studies. Of an old British family, his father having been one of Penn's agents, he was fully equipped with letters and was well received. In London among others he met John Hunter who became much attached to him, and invited him to become a member of his household. Through Hunter's influence Physick obtained a position on the House Staff of St. George's Hospital, where it is said he obtained much of his surgical skill. After a valuable experience in that institution and having profited greatly by his intimate association with Hunter, Physick went to Edinburgh and was graduated in medicine from that famous university. With this splendid equipment, he returned to Philadelphia in 1792 and began his career as a surgeon. Like all surgeons of his day, Doctor Physick treated diseases of the eye and was noted for his operations upon that organ. He wrote but little; fortunately, how-

² "The History of the Travels and Adventures of the Chevalier John Taylor, Ophthalmiater, *etc.*," written by himself, London, 1761.

ever, record of his work has been preserved for posterity through the medium of his gifted nephew, Dr. Philip Syng Dorsey, and of his son-in-law, Dr. Jacob Randolph.

Dorsey was also a Philadelphian, and after preliminary study in his native city, began the study of medicine with his uncle, Doctor Physick, at fifteen years of age, and graduated at the University of Pennsylvania in the class of 1802 when he was but nineteen years old, special action by the Board of Trustees being necessitated to enable him to receive his diploma before he was of age. Dorsey then went to England and studied in London and Edinburgh. He, too, had the doors of St. George's Hospital opened to him, and among others saw Everhart Home, one of the great London surgeons of his day, operate. In one of his letters to Philadelphia, Dorsey, who was young at the time and always humorous, wrote as follows:

"Home let me into a wonderful secret to-day, which is that in operating upon the eye we should always wait until it becomes fixed. Doctor Physick taught his pupils that for at least five years past. Home thinks that in one of 100 cases the artificial pupil will succeed. I saw it succeed in America in three cases out of five."

From London, Dorsey followed in Physick's footsteps and studied in Edinburgh and Paris. Of the latter city Dorsey wrote: "As to French surgery, I have learned nothing from it." Perhaps he lacked a sufficient knowledge of the French language to gain much profit from his visit. If so, he would not have been the last American to be thus handicapped.

Dorsey returned to Philadelphia in 1804, and three years later was chosen an associate to his uncle, Doctor Physick, in the chair of surgery at the University, remaining in that position until 1815, when, upon the death of Doctor Barton, he was elected Professor of *Materia Medica*. In 1818, Dr. Caspar Wistar died and Dorsey was

made Professor of Anatomy, but unfortunately died after delivering the introductory lecture.

Dorsey was a brilliant surgeon and the author of one of the most popular text-books on surgery of his day, "Elements of Surgery," the work running through eight editions. In this work, Dorsey has left a permanent record not only of his own knowledge of surgery but that of his uncle, Doctor Physick, as well.

As associate to his uncle in the chair of surgery at the University, Dorsey transmitted the knowledge he had acquired from him, as well as that gained from his studies abroad, thus continuing the teaching and tradition of the British School of Medicine.

Testimony regarding Physick's ophthalmic skill and practice is offered by his son-in-law, Dr. Jacob Randolph, who wrote a biography of him. In it he said of Physick:

"In 1795, he commenced keeping a journal of the most remarkable and interesting cases which occurred in his practice, most especially such as possessed a surgical character. The first case recorded is that of a lady affected with blindness from cataract. In this case he performed the operation of extraction of the opaque crystalline lens with complete success, and restored his patient to sight. I may mention here that Doctor Physick's favorite operation for cataract was that of extraction. He gave it a decided preference over all other operations and always performed it whenever the condition of the eye was suitable. He acquired such a perfect degree of skill in extracting the lens that his operations were almost invariably followed by success. I am of the opinion that his operations upon the eye, in conjunction with those for stone in the bladder, did as much in establishing Doctor Physick's great surgical character as any others which he ever performed."

Doctor Dorsey died in 1819, compelling a reorganization of the teaching department of the University of Pennsylvania, and Doctor Physick was transferred to the chair of anatomy, Dr. William Gibson, of Baltimore,

assuming the chair of surgery. Like his predecessor, Gibson was also a graduate of the Medical Department of the University and had also studied in London and Edinburgh. He continued as Professor of Surgery until his resignation from that chair in 1855.

Gibson was a great surgeon and teacher, and in the first volume of his work on "The Institutes and Practice of Surgery," the careful résumé of diseases of the eye and their treatment which may be found there indicates that he was as thoroughly conversant with the subject of ophthalmology as the times permitted. He was the first to operate for convergent strabismus, but unfortunately failed to make record of the fact; this was as early as 1818. After dividing the recti muscles for this purpose, upon a number of cases, he finally relinquished the procedure upon the advice of Physick, though Gibson himself remained convinced of the value of the procedure.

To avoid the dislocation of the lens which so frequently attended needling operations upon that structure, Gibson invented a special form of scissors with which to "cut to pieces the crystalline lens in all cases of cataract"; he also aimed to absorb cataract by "passing a common sewing needle slightly curved and armed with a single thread of silk through the sclera and lens, in such a way as to act on the diseased lens in the manner of a seton." He operated upon two cases successfully by this method, but in the third the iris was wounded and the eye lost. Belladonna was employed in the first case but not in the third, and to this he imputed the loss of the eye.

Gibson revisited London and Edinburgh in 1839, and has left an interesting account of his journey, "Rambles in Europe, 1839." He met his old master, Sir Astley Cooper, who had been a potent factor in the creation of Moorfield's Hospital, and was overcome by his kindness to him. Gibson entitled Sir Astley Cooper "the Wellington of

British Surgery." He met a Mr. Tudor of Bath, also, who had been a fellow-student of Physick's while he was living with John Hunter, and was delighted with the praise given Physick. He was told that Hunter loved him as his own child and that he had invited him to remain in London as his assistant. The fruits of the labors of these early teachers will become apparent as this narrative progresses.

Such is a short account of the early teachers of surgery at the University of Pennsylvania. All were brilliant surgeons and teachers, and all of them were versed in the practice of ophthalmology. All had been trained in London and Edinburgh, and what they taught reflected the methods of the surgeons in these medical centers.

It will now be our purpose to show the influence they exerted upon some of their students and to trace the rise of some early ophthalmic institutions in America to their teaching and inspiration.

The founder of the first ophthalmic institution in America was Elisha North, of Connecticut, a student in medicine at the University of Pennsylvania in 1793-1794. This pioneer in ophthalmology was born in Connecticut in 1771, and studied medicine with his father, who was not a regular physician but had a natural talent for medicine and enjoyed a large practice. The younger North, after serving his apprenticeship with his father, became a pupil of Dr. Lemuel Hopkins', a physician of prominence in Hartford. Returning to his native town—Goshen, Connecticut—he practiced there until he had made enough money to equip himself properly in medicine.

In the Fall of 1793,³ he entered the Medical Department of the University of Pennsylvania as a student. Ex-

³ Steiner, Walter R.: *Johns Hopkins Hospital Bulletin*, October, 1908.

actly what determined him to prefer the Philadelphia school is unknown. Bolton says:⁴ "Unless by reason of its being the first established and on account of the celebrity of its teachers." Near at hand was Harvard, founded in 1782, and the Medical School of Columbia, established in 1768.

How long he remained in Philadelphia we do not know, but in his book, entitled "The Science of Life,"⁵ North refers to Doctor Rush's lectures on animal life and mentions Doctor Shippen as having shown him, in 1795, in his hasty dissection of the human brain, "a little thing called the pineal gland." Elsewhere he states: "In the year 1794 we visited Philadelphia on purpose to obtain the information which dissection affords."

Not many students in medical schools in those days remained to acquire a diploma. "In the first fifteen years of the Medical School of Philadelphia, the number of graduates averaged about five and one-half a year, while as many as seventy students were in attendance at one time. In the latter half of the eighteenth century, attendance at a medical school was resorted to but by few of those who took upon themselves responsibilities of practitioners of medicine."⁶

After a successful career in Goshen, North moved to New London in 1812 and continued the practice of medicine in that seaport.

As Doctor North had never secured a diploma, the State Medical Association of Connecticut in 1813 voted to confer upon him the honorary degree of M.D. In New London, Doctor North paid especial attention to diseases of the eye, and writing of himself says:

⁴ *Proceedings of the Connecticut Medical Society*, Hartford, 1877, New Series, vol. 3, No. 4, p. 135.

⁵ Steiner: *Johns Hopkins Hospital Bulletin*, p. 301, October, 1908.

⁶ Bolton: *Proceedings of the Connecticut Medical Society*, New Series, vol. 3, No. 4, 1887.

"I have had the pleasure to prevent total blindness and restore sight to twelve or thirteen persons during the last three years. These would now probably be moping about in total darkness and be a burden to society and to themselves, had it not been for my individual exertions."

Elisha North's entrance into the medical profession without a medical degree serves to call attention to certain prevailing customs in that period which are seldom stressed in works of this character. For instance, it was not until 1824 that it was obligatory for the resident physicians of the Pennsylvania Hospital to be graduates in medicine. Prior to that time, the position was filled by apprentices in medicine, who were regularly indentured as students in the hospital for a period of five years.

His success as an oculist led North in the Spring of 1817 to open an eye infirmary in New London, which was without question the first institution exclusively devoted to eye surgery in the United States. Of this he writes:

"We had attended to eye patients before that time, but it occurred to us then, that we might multiply our number of cases of that description, and thereby increase our knowledge, by advertising the public in regard to an eye institution. This was done and we succeeded, although not to our wishes in a pecuniary view of the case. Our success or exertions probably hastened in this country the establishment of larger and better eye infirmaries."⁷

The future of this institution is uncertain, though it is probable it was still in operation as late as 1829, as Hubbell⁸ says that Doctor North at that time added to his name, on the title page of a book which he brought out, the words, "Conductor of an Eye Infirmary."

While at the University of Pennsylvania, North had

⁷ "Science of Life," pp. 88-90.

⁸ Hubbell, Alvin A.: "The Development of Ophthalmology in America," Buffalo, 1800-1870.

come under the tutelage of Doctor Shippen, who filled the chair of surgery and anatomy at that time. Like Physick, Dorsey and Gibson, Shippen had had the benefit of a London and Edinburgh training. He, too, had the power to impress those with whom he came in contact, and was a great favorite among his students.

North doubtless obtained his knowledge of ophthalmology while at the University, listening to Shippen's lectures on surgery, and may well have received his inspiration to found his Infirmary during his student days in that institution.

A very good idea can be had of the state of ophthalmology in our country at this time from an article by the pen of Isaac Hays which appeared in "A Quarterly Review of the Work Done in the Wills Hospital" and which was published by Doctor Hays in the *American Journal of the Medical Sciences* in 1839, vol. 24:

"Ophthalmic surgery, it must be conceded, has not been sufficiently cultivated in this country. There are unquestionably a limited number of practitioners among us who are well versed in the subject; but the great mass of the profession are entirely unacquainted with its comprehensiveness—the variety of affections it embraces—and consequently they have but a faint conception of its importance; it is to them, in short, a complete *terra incognita*. We have been told by a professor of surgery in a school of high standing, that he found three lectures ample for teaching every thing of consequence relative to the diseases of the eye, and in none of our schools, so far as we can learn, are these affections considered of sufficient moment to require half a dozen lectures to be devoted to them. There is not, moreover, with one solitary exception, we believe, a private course delivered in this country, on the subject of these diseases.

"Very different is the estimation in which ophthalmic surgery is held in Europe. In the principal German and Italian universities, in the University of Glasgow and in the Birmingham Royal School of Medicine and Surgery, the teaching of this branch is made the province of a distinct

profession; and numerous independent courses are delivered at the various hospitals, infirmaries and dispensaries established for the relief of those afflicted with diseases of the eye.

"As to the extent of the subject, some idea may be formed from the fact that Professor Beer, of Vienna, occupied in his course of instruction ten months, giving five or six lectures weekly, and this on the practical part of the subject alone, Prochaska being Professor of General Ophthalmology in the same school."

A favorite pupil of Beer's was another son of Pennsylvania, George Frick, of Baltimore, who received his Doctor's degree in medicine from the University of Pennsylvania in 1815. After a course of study in Vienna, Frick returned to his native city and in 1823 organized a special clinic for diseases of the eye in connection with the Baltimore Dispensary, and established a course of lectures on the eye in the University of Maryland. In the same year he published the first American book on ophthalmology, entitled "A Treatise on the Diseases of the Eye, Including the Doctrines and Practice of the Most Modern Surgeons, and Particularly those of Professor Beer."

Hubbell⁹ honors Frick by making a reproduction of a crayon portrait of him the frontispiece of his book and says of the Treatise:

"The book is a precious souvenir of the early ophthalmology of America, (1) because it was the first American treatise on diseases of the eye, and (2) because it was the production of a young man who had had unexcelled training and diversified experience under the tutelage of Dr. George Beer, of Vienna, the greatest ophthalmologist that the world had then ever known."

Hubbell designates Frick as "The Father of American Ophthalmology." This seems rather sweeping and scarcely deserved, for Frick's influence upon his fellows or upon

⁹ *Loc. cit.*

posterity was slight in comparison with that exerted by Physick, Gibson, Hays and other early surgeons in New York and Boston. In point of chronological priority, as well as on account of his learning and the excellence of his text-book, Frick may well be considered one of the fathers of ophthalmology in this country, but if the title of Father of American Ophthalmology be given him, that of the Grandfather of American Ophthalmology should be awarded Physick, Frick's teacher and mentor, and whom he especially honored by dedicating his book to him: "To Philip S. Physick, M.D., Professor of Anatomy in the University of Pennsylvania, *etc.*, as a testimony of high esteem for his character and admiration of his talents, this work is inscribed, by his faithful friend and servant, the author."

In the preface of this book Frick says: "It is a lamentable truth that the pathology of the eye has not kept progress with the advanced state of pathological science in general; and this is attributable no doubt to the circumstance, that this branch of the healing art has been confined for so long to exclusive oculists." What is meant by "exclusive oculists" is not clear, unless Frick means the quacks already referred to. It is possible that opticians were referred to, but artisans of that class were but few in number, and as we shall see presently in the case of the McAllisters of Philadelphia, were extremely well thought of.

In 1825, another school of medicine came into being in Philadelphia, the Jefferson Medical College, the offspring of the University and fathered by one of its sons, George McClellan, a graduate of the medical class of 1819 and a private pupil of Dorsey.

George McClellan was a man of great brilliancy, full of ambitious projects, though somewhat erratic. A surgeon of remarkable ability, he early manifested particular in-

terest in operations upon the eye and was very successful in them. As a teacher of anatomy and surgery in the Jefferson Medical School he was very popular, and, full of magnetism, attracted a large number of students.

One of his most distinguished pupils, Dr. Samuel D. Gross, no doubt impressed by McClellan's teaching of this subject, was later on to dedicate his thesis on "The Nature and Treatment of Cataract" to him.

In a monograph upon his illustrious ancestor, Dr. George McClellan, a grandson, states that Doctor McClellan, Sr., possibly imbibed from Physick's lectures at the University some of the earnestness of purpose which led him to undertake the founding of the Jefferson Medical College.

As we have seen, all three of these men, who founded early ophthalmic institutions in America, had been students of the University of Pennsylvania, and naturally under the influence of their teachers, and, in the case of Frick and McClellan, directly under the tutelage of Physick. No one in this country exceeded Physick in surgical wisdom and reputation, and he was generally acclaimed "The Father of American Surgery." His influence upon the student body was very great, and it was, in consequence, upon a request to that purpose, drawn up and signed by a very large proportion of the students attending the University, that a series of lectures by Physick at the Pennsylvania Hospital was inaugurated some years before he was made professor at the University. Though frail and delicate, he was a skilful operator and devoted much time to his patients. He was extremely conservative and never recommended an operation when it could be avoided.

He was a great lecturer and teacher. One of his former pupils, Charles Caldwell, of Louisville, Kentucky, in an

address upon Doctor Physick some time after his death, said of him:¹⁰

"He was not eloquent, in the far too common acceptation of that term. He never indulged, I mean, in a tempest of sound, *etc.* . . . In a different and more substantial sense of the word, however, he was eloquent. If to expound his subject with the clearness of a sunbeam—to be abundant in solid matter—and rich and pertinent in illustration and argument—to command the respect and observance of his class—to rivet their attention—to pour out to them a stream of instruction, which they were eager to imbibe to the last drop—to carry along with him their feelings and mould them at pleasure—to make them grave when he was grave, and light up their countenances with an approach to a smile, when his features relaxed—and to dismiss them brimful of the remembrance of his lecture, and anxious to retain it to the minutest portion—if this were eloquence (and I know not by what other name to call it) Physick I say was eloquent."

Such a man was Physick, and we have dwelt upon him at length, as it is the conviction of the authors that it was from him came the urge and the inspiration to found a number of the pioneer institutions for the treatment of the eye in our country. A great eye surgeon himself, his students were impressed by the brilliancy of his operations, as well as by his magnetism and knowledge. Many of his students chose ophthalmic titles as subjects for their theses which they presented upon graduation. Isaac Cleaver, for instance, dedicated a thesis on "Cataract" in 1805 to Dr. Philip Syng Physick, and Elisha DeButts also dedicated a dissertation on "Vision" in the same year to Dr. Caspar Wistar. Both of these essayists were graduating from the University of Pennsylvania at this time. Another graduate from this institution, David Morre, in 1807, dedicated a thesis on "Ophthalmia" to Doctors Claiborne and Walker, of Virginia.

¹⁰ "A Discourse Commemorative of Philip Syng Physick, M.D., 1838" by Dr. Charles Caldwell, Louisville, Kentucky.

Physick, Dorsey, Gibson and McClellan may, therefore, justly be considered the forerunners of ophthalmology in Philadelphia, and, through their students, exercised a great influence upon the practice of ophthalmology throughout the entire country.

The influence of British medicine upon all four of these surgeons has been shown; all were more or less familiar with medical affairs in London; they knew of the establishment of Moorfields Eye Hospital in 1805, and of its remarkable growth. They were also familiar with the founding of the Eye and Ear Infirmary in New York in 1820, and of the Massachusetts Eye and Ear Infirmary in 1824. Being acquainted with these projects and full of enthusiasm and public spirit, it is characteristic of McClellan, who had just graduated from the University of Pennsylvania and was but twenty-four years of age, that he should have attempted to create a hospital for the treatment of diseases of the eye in his own city. This occurred in 1821, McClellan's announcement of his project appearing in the journal of his friend, Dr. John Eberle,¹¹ as follows:

"Dispensary for Diseases of the Eye. For the increasing number of indigent blind people in the city of liberties, a number of gentlemen have been contemplating the institution of a society to afford gratuitous relief; and though circumstances at present prevent more than a limited foundation, they indulge reasonable expectations of being able, in the course of a few months, to establish a more extensive charity.

"The object of this communication is to notify those who, afflicted with any diseases of the eyes, cannot compensate medical services, that arrangements have been made with Doctor McClellan for surgical attendance, and with Mr. Marshall, Chestnut Street, for medicines, which will be afforded gratuitously. Application to be made at Dr. McClellan's office, Swanick Street near Walnut, above Sixth."

¹¹ *American Medical Recorder*, vol. 4, p. 402, April 14, 1821.

In 1822, a further publication was made, announcing a still more ambitious program¹² as follows:

"The Institution for the Diseases of the Eye and Ear has, during the past year, been conducted in the form of a dispensary, and the poor have been supplied with medicines and attendance, at the expense of a few subscribers, from the office of Dr. McClellan in Swanick Street. The operations which were performed for cataracts, *etc.*, on a respectable number of blind people, proved so successful that considerable interest has been excited, and we are happy to announce that the institution has in consequence recently been extended into a hospital. We understand that more than one hundred of the most influential citizens of Philadelphia have associated themselves together to support this interesting establishment, that a charter has been obtained from the Supreme Court and attorney-general, and that in a few days it will go into regular operation as an organized hospital, for the relief of diseases of the eye and ear."

McClellan had persuaded some prominent citizens, among them Chief Justice Tilghman and Bishop White, to be on his Board of Managers, and his next announcement refers to that fact.

"Gentlemen: In the month of March, 1821, an association of ten individuals was formed in this city for the purpose of establishing an institution for relief of diseases of the eye. By the gentlemen who composed that association, S. Badger, Esq., was elected treasurer with power to make all necessary purchases; Mr. Marshall, in Chestnut Street, apothecary; and I was honored with the appointment of surgeon. On the 14th of April, 1821, an advertisement was inserted, by a committee appointed for that purpose, in the *Medical Recorder*, and in some of the daily prints of this city, announcing the formation of the institution, and inviting the poor to partake of its benefits. Since that period many physicians and other respectable citizens have recommended poor persons afflicted with diseases of the eye to my care, and in no instance has any patient so recommended, or in any other way introduced, been refused the charities of the institution."

¹² *American Medical Recorder*, vol. 5, p. 393.

This announcement was made over his signature and was followed by an abstract of some of the work done in the clinic. There had been ten cataract operations, two of which were by extraction, and eight by "division" or by "depression." Eight other cases of cataract had not yet been operated on. The total number of cases of all kinds was fifty-one, twenty-five of which had applied and been registered during the "present month."

The third announcement dealing with the institution in 1823,¹³ published the fact that its name had been changed to the *Philadelphia Hospital for Diseases of the Eye and Ear*, and that "it is now so far organized under the provisions of the charter as to provide for the gratuitous treatment of patients from every part of the country." It adds that "Dr. McClellan, surgeon of the institution, invites his professional brethren to send poor patients. This will confer a favor on the managers and will forward the interests of the science."

This was the last announcement from McClellan, and no other record can be found of the life or death of this institution, though it is fair to suppose that the latter occurred in 1824. This may have been in consequence of McClellan's energy being diverted in establishing the Jefferson Medical College the following year, 1825. It may be also that the project was abandoned by the appearance of another institution of similar scope, but better organized and probably better financed: the Pennsylvania Infirmary for Diseases of the Eye. This Institution never claimed for itself the title of hospital, and, unlike that of McClellan's, whose staff consisted of himself and his brother, Dr. Samuel McClellan, had a number of the most prominent medical men of the time associated with it.

¹³ *American Medical Recorder*, vol. 6, p. 384.

We are indebted to Dr. C. A. Oliver,¹⁴ who found the original minute book of this organization in the handwriting of Isaac Hays, for the following account:

The Pennsylvania Infirmary for Diseases of the Eye and Ear. Several gentlemen in Philadelphia met on February 8, 1822, for the purpose of organizing an infirmary for treating the poor afflicted with diseases of the eye and ear, when, as appears from the first address to the public in which the constitution was included, with the names of the officers, the following managers were chosen: James Gibson, William Meredith, Charles M. Baucher, Manuel Eyre, Robert M. Patterson, M.D., Clement C. Biddle, William McIlvaine and Richard C. Wood. Mr. James Gibson was made chairman of the meeting; Dr. Isaac Hays, secretary, and Mr. Richard C. Wood, treasurer. Drs. George B. Wood, Isaac Hays, John Bell and Robert E. Griffith were appointed surgeons, and Drs. Philip S. Physick and William Gibson, consulting surgeons. The surgeons were ex-officio members of the board of managers.

Among other transactions of the meeting, a resolution was passed constituting the surgeons a committee, "with authority to procure a room for an infirmary and to make arrangements for carrying into effect the objects of the institution." The committee was also instructed to prepare an address to the public, to have two hundred and fifty copies of it and a constitution printed in pamphlet form, and to frame a system of by-laws, all of which was to be reported on at the next meeting of the board.

A managers' meeting was held twelve days later at which Mr. William Meredith presided. The committee reported a second-story room at No. 4 South Seventh Street at one hundred dollars a year, that it had made arrangements

¹⁴"A Brief Account of the Pennsylvania Infirmary for Diseases of the Eye and Ear in the City of Philadelphia in the Year 1822." *Medical Library and Historical Journal*, New York, April, 1903.

with Messrs. A. M. and E. L. Cohen to furnish medicines at a reasonable rate, and that it had prepared an address and a constitution and had them printed, as authorized, in pamphlet form. A body of by-laws was also adopted at this meeting, and certain forms and methods for carrying on the work of the institution were agreed on.

The original "Address to the Public" of 1822, with the constitution omitted, as published by Doctor Oliver, is as follows:

"The Pennsylvania Infirmary for Diseases of the Eye and Ear at Philadelphia.

"In calling the attention and soliciting the patronage of the public to an institution which is to embrace the relief of a class of diseases having so important a bearing on individual happiness and social comfort, we need but advert to the success which has attended similar ones in Europe, more particularly those established at London and Vienna. In these cities thousands have been annually relieved and cured of diseases of the eye and ear, who otherwise would have lost the use of these all-important organs, and proved a burden to themselves and to society. Like benefits have resulted from institutions of the same nature in some of our own cities, and we may now confidently hope that the citizens of Philadelphia, distinguished for their zeal and liberality in the support of whatever tends to usefulness and charity, will not suffer the present opportunity to escape without testifying their approbation of the institution already organized, and prepared to commence its beneficial operation, as will be seen from the subjoined constitution adopted at a respectable meeting of the contributors on Friday last."

Oliver concludes that the study of this address and constitution at once shows that it states three important but not well-known facts: (1) The existence of institutions for the treatment of diseases of the eye and ear in this country prior to the year 1822; (2) the certainty of the establishment of a special infirmary for the treatment

of diseases of the eye and ear in the city of Philadelphia; (3) that there were opportunities for clinical instruction in such diseases at this institution.

The last meeting of the board of managers of the Pennsylvania Infirmary was held in 1829, when a committee was authorized to collect subscriptions and other action taken towards its continuance. Although McClellan's infirmary, or hospital, as he had later termed it, had been in operation for a year or more, it will be noted that no mention is made of it.

It was about this time that a greater project was being agitated and which, perhaps, diverted the interest of the public as well as that of the medical profession from the infirmary, namely, the Wills Hospital. While the two dispensaries which have been described were of ephemeral existence only, and had no connection with the Wills Hospital, their existence indicates that the profession was alive to the need of a separate institution for the care of eye cases, and that the public mind was being prepared for the establishment of such an institution.

In 1825, Philadelphia had a population of 138,000 people with but sixty-nine physicians to care for them. In addition to these physicians, there were twenty-five "cuppers and leechers." This was the greatest number attained by these "practitioners," for in 1860, when the population of the city was nearly five times larger, only sixteen of them were recorded, showing a healthy reaction upon the part of the public to this heroic form of treatment. According to Henry¹⁵ it is certain that the profession in the few years before and after 1825 was less numerous in proportion to the general population than at any other time in the history of the city. This author wrote:

¹⁵ "Standard History of the Medical Profession of Philadelphia," p. 149, 1897.

"It was a period of reconstruction and disaffection of various sorts, not the least being an awakening resistance to the old systems. It was a period of transition to the extreme skepticism that foreshadowed the modern scientific spirit, and one of reconstruction that sought to work out new conditions."

The paucity of physicians may have been accounted for by the epidemics which had preceded this period. Then, too, the professional strife, attending the organizing of the Jefferson Medical College, may have driven some practitioners to more peaceful fields of endeavor. Frequent changes in the faculty of the university had stirred up disaffection in that institution, despite its strength in many of its chairs. The school, however, was easily first in the country, four hundred and eighty students were enrolled, more than twice as many as in any other school.

Although few in number, the profession contained men of great brilliancy, and the faculty of medicine in the university as well as in that of its recently born child, Jefferson College, contained some illustrious men.

The Pennsylvania Hospital, which had been in existence since 1751, was as well managed as it had ever been, and had an able staff of physicians and surgeons. The Philadelphia Hospital, which grew out of the Almshouse, or Bettering House, as it was called, also had a capable staff. The College of Physicians established in 1787 had a membership of eighteen Fellows. Though few in number, the Fellows upheld strongly the ethical principles upon which the college had been founded, and as teachers and authors were busily engaged in advancing the science of medicine.

In the period between 1800 and 1825, countless beneficial societies, mutual aid societies, mutual savings funds, soup societies, fuel societies, humane societies, houses of industry, and even a fresh-air society for children were

created. The Friends were particularly active in these movements, and took a leading part in the education of children, especially female and black children. They organized the Pennsylvania Society for the Abolition of Slavery and were strong advocates of peace. A majority of the board of managers of the Pennsylvania Hospital and many of its staff belonged to this Society.

Prosperity in the main abounded, although there were intervening periods of business depression as in 1820, but the community was growing by leaps and bounds. The green country town was assuming metropolitan proportions—the problems outgrowing the improvements, so that it behooved the citizens to create new community forces to meet them. Out of these grew the philanthropies.

JAMES WILLS

THERE lived in Philadelphia about 1800 a Friend, James Wills, Jr. His father, of the same name, was born in England in 1760 and came to Philadelphia when quite young. He served for a time as coachman to one Anthony Benezet, who was one of the most noted philanthropists in Philadelphia during the eighteenth century. Benezet had been born in Picardy, France, in 1713, and on account of religious persecution was taken shortly thereafter by his parents to England. There the family became members of the Society of Friends, and when they emigrated to Pennsylvania in 1731 were well received by representatives of that Society in Philadelphia. Anthony Benezet was particularly devoted to the emancipation and education of the colored race.

After acting as Benezet's coachman (how long cannot be ascertained), James Wills, Sr., went into the grocery business under his own name. In 1791, his place of business was on Chestnut Street near Front Street. Sutor¹ states that Wills started with a capital of only ten dollars, but with care and frugality built up a considerable trade and that he associated his son, James Wills, Jr., with him. The same writer is authority for the statement that the lady who became Wills's wife was shunned by her friends for having married a man of such humble attainments.

Prosperity attended the Wills business, but father and mother, as well as son, avoided society, doubtless on account of the treatment they had received and as far as possible shunned publicity. The records of the Friends'

¹ Caspar Sutor's "History of Chestnut Street."

Meeting in Philadelphia show that "James Wills, his wife Hannah and son James requested admission to meeting in 1802, and that Hannah was deceased between 1802 and 1809."

With his son in the firm, their place of business was moved in 1800 to 84 Chestnut Street, then above Third Street, which was considered to be at the very edge of the rapidly growing business neighborhood. In fact, this move was regarded by his business contemporaries as not devoid of considerable risk, as being "too far out." Wills also purchased 82 and 86 Chestnut Street but resided in 84, where his business was located. He and his wife and son carried the plain living of the Friends into every feature of their daily life, so that when they died but few of their acquaintances knew of the degree of prosperity which they enjoyed.

The elder Wills died in 1821 or 1822, leaving his entire estate to his son, James, Jr., his wife having died earlier. The son lived a bachelor's existence and followed out the precepts and the example of his father. His frugality is attested by the tradition that his yearly expenses were \$400, while his benefactions amounted to \$1500. (S. D. Risley.)

It is unfortunate that there is no likeness of James Wills, Jr., extant. So far as is known, no portrait of him was ever painted. It was thought for years that a male portrait which hung in the Board room at the Hospital was a portrait of him, but the question arising a few years ago as to the ground for this belief, the matter was investigated and the interest of Mr. John F. Lewis, president of the Academy of Fine Arts of Philadelphia excited, who, after a careful study of the portrait, discovered that it was not of Mr. Wills at all, but of Mr. John Wright, a benefactor of the Hospital.

James Wills, Jr., died January 22, 1825, a few years

after his father, leaving an estate of over \$116,000. His will was found to be dated on the eighth day of the fifth month, 1823, and came to probate January 26, 1825. His entire estate (barring a few legacies such as: \$1000 to each of his tenants; \$5000 to the Friends' Asylum for the Insane; \$2500 to each of the four monthly meetings of the Society of Friends; \$1000 to the Philadelphia Society for the Support of Charity Schools; \$5000 to the Magdalen Society; his residence, 84 Chestnut Street, to the Orphan Asylum; premises 82 and 86 to the City Dispensary and the Dispensaries of Southwark and the Northern Liberties—these latter may be identified as the Philadelphia Dispensary and its offshoots, the Northern and the Southern Dispensaries;—and an annuity of \$200 to be paid Rachel Wise for her natural life) was devised for the purposes of the Hospital. To quote the rest of the will—"all the rest, residue, and remainder of my estate, real, personal, and mixed, both that which I now hold and all that I may hereafter acquire, I give and bequeath to the Mayor and Corporation of the City of Philadelphia for the time being and their successors in office for ever, in trust for the purchase of sufficient plot of ground in the city of Philadelphia, or in the neighborhood thereof, and thereon to erect or cause to be erected suitable buildings and accommodations for an hospital or asylum, to be denominated—"The Wills Hospital for the Relief of the Indigent Blind and Lame." The funds thus appropriated to be put out on good mortgage security, or city stock, and after expending the necessary sum for the lot and the improvements heretofore mentioned, the income of the remainder is to be exclusively applied to the comfort and accommodation of as many of the Indigent Blind and Lame as the income will admit of, after defraying the necessary expenses incident to such an establishment. And to the aforesaid Mayor and Corporation of the said city and their successors in

office is intrusted the duty of appointing Trustees or Managers and all other matters and things in any wise appertaining to the due fulfillment of the aforesaid bequest; the right regulating the establishment, and ensuring the right application of the funds to the purposes heretofore stated, and for the sole use and benefit of the Indigent Blind and Lame, giving a preference to those persons resident in Philadelphia and its neighborhood."

As so frequently happens in connection with bequests of this character, the collateral heirs sensing undue influence from sources without, or experiencing the pangs incident to fancied unjustified neglect, arose to contest the validity of the will, but, the case coming ultimately to the attention of the Supreme Court of Pennsylvania, a decision was rendered March 21, 1831, in favor of the Corporation of the City of Philadelphia, and the existence of the Wills Hospital was thereby assured.

It is of interest to know the following: it was found that the bequest equalled the sum of \$108,396.35, but the delay incident to court procedure and getting work on the building started allowed the amount to accumulate until it equalled \$122,548.57. The cost of the ground was \$20,000, while that of the building totaled \$57,203.69, a balance of \$65,344.88 being left. The annual income from the amount equalled approximately \$3,000.

THE MANAGEMENT UNDER CITY COUNCILS

The city administration, anticipating a favorable decision from the Court, passed an ordinance March 10, 1831, permitting the city to administer the Wills Estate. Under this ordinance, the Mayor (then Benjamin Richards, Esq.) and the City Treasurer (Cornelius Stevenson, Esq.) were permitted to receive the funds and administer them subject to such orders as the Select and Common Councils should make from time to time concerning the funds. It

should be borne in mind that the admirable system of this city for the administering of such bequests, known to us now as the Board of Directors of City Trusts, did not come into existence until 1869.

A subsequent ordinance dated September 26, 1833, provided for the specific title of the Hospital as "Wills Hospital for the Indigent Blind and Lame," as well as created a special management of a Board of Managers, eighteen in number, not members of Councils, nine appointed by Select and nine by Common Council, the terms of one-third expiring each year. The enactment of this end was as follows:

"Section 1. Be it ordained and enacted by the Citizens of Philadelphia, in Select and Common Councils assembled, that the Select and Common Councils shall assemble in joint meeting, at the last stated meeting in November, instant, and shall then and there choose by ballot, eighteen suitable persons, who shall reside in the city, to be denominated Managers of the Wills Hospital.

"Section 2. And be it further ordained and enacted by the authority aforesaid, That as soon as the said election shall be completed, the clerks of the Select and Common Councils shall divide the persons so chosen by lot, into three classes of six each; the first class to serve one year, the second to serve two years, and the third to serve three years, and shall record the results on the minutes of the joint meeting.

"Section 3. And be it further ordained and enacted by the authority aforesaid, That on the last stated meeting in November of each succeeding year, the Select and Common Councils shall elect, in joint meeting, six persons to serve as Managers of said Hospital for three years, in place of those whose term of service shall then expire, and whenever any vacancy shall occur at the said Board, by death, resignation, or otherwise, the same shall be supplied in like manner, at such time as Councils may direct."

Up to the end of 1869 one hundred seventeen members were appointed, thirty-one of whom were physicians.

The presidents of the Board of Managers from the founding of the Hospital to the time of the creation of the Board of Directors of City Trusts were five in number, *viz.*:

Dr. Joseph Parrish, December 2, 1833–March 2, 1840. Died.

Frederick Erringer, May 4, 1840–November 6, 1843. Resigned.

Dr. J. Rodman Paul, December 12, 1843–July 5, 1864. Resigned.

Dr. Andrew Nebinger, October 3, 1864–December 4, 1865. Not reappointed.

Charles Ellis, December 4, 1865–to Board of Directors of City Trusts.

It is interesting to note that of the thirty-six years that the "Managers" had charge, a medical man was president for twenty-seven years—Doctor Parrish for seven years and Doctor Paul for over twenty years.

Several members of the staff served for a time as managers—two, before they were elected attending surgeons: Ezra Dyer from 1866 to 1870, an attending surgeon from 1872 to 1873, and Peter D. Keyser, a manager from 1865 to 1870 and an attending surgeon from 1872 to 1897. Dr. George Fox was a member of the Board of Managers from 1851 to 1854, and Dr. John Neill was made a member in 1859, both upon their resignation from the staff.

Dillwyn Parrish, a son of Joseph Parrish, was a manager from 1841 until 1870. John McAllister, Jr., the well-known optician and scientist, who served as manager from 1848 to 1854, and again from 1857 to 1859, must have proved a valuable councillor. William Morrison, executor of the will of James Wills, was one of the original members of the Board of Managers and served until his death in 1848, and, with Joseph Parrish, must have been a strong factor in seeing that Wills's wishes were properly carried out.

One may ponder over the unusual wording of the will of the donor, the terms "indigent blind and lame" not being the customary combination of these infirmities, but it should be remembered that the testator was a very pious individual and doubtless perused his scriptural texts with intense application. Likewise, it may be assumed that he and his advisers were in no little way influenced by Benjamin West's celebrated painting in the Pennsylvania Hospital. This artist had been commissioned by that hospital, or perhaps volunteered, to execute a painting from the scriptural text: "And great multitudes came unto him, having with them those that were lame, blind, dumb, maimed, and many others, and cast them down at Jesus's feet; and He healed them."² The painting was finished in 1810 and exhibited in England, where it was sold with considerable profit. West thereupon promised to paint another for the hospital from the same text. Things moved slowly in some lines in those days, and the promised painting did not come into the possession of the Pennsylvania Hospital until about 1817. It was then placed upon public exhibition, a small sum being charged to view it and considerable money was raised for the institution in this manner.

With the legal difficulties out of the way, Councils appointed a building committee made up of the following: Joshua Lippincott, David Groves, Joseph Worrell, R. M'Mullin, Enoch Robins, R. M. Huston, and B. H. Yarnall. The lot which had been purchased for \$20,000 extended from Sassafras Street (now Race Street) to Cherry Street on the south, and from Schuylkill Fourth (now Nineteenth Street) to Schuylkill Fifth (now Eighteenth Street). In those days, it will be remembered that the streets were numbered from the Delaware River west and the Schuylkill River east, hence the curious designa-

² Matthew, chapter 15, v. 30.

tion of the streets mentioned above. Sassafras Street was renamed Race Street by reason of the fact that being unpaved and a good dirt road, it had become a favorite route to a race track near the Schuylkill River, ordinance of Council having prohibited the use of Market and Arch Streets for speedway purposes. Chagrined, indeed, must have been the Friends when they found their Meeting at Sixteenth and Race Streets exposed to the shouts and cries of those racing alongside their place of worship.

LOGAN SQUARE

The Hospital faced Logan Square, one of the four original squares laid out by Penn as breathing spaces for the city. They were originally dedicated for "the same uses as Moorfields in London, as open spaces for air." In 1835, the Square was described as follows: "Logan Square lies between W. Sassafras and W. Vine Streets, and extends westward from Schuylkill Fifth Street beyond Schuylkill Fourth Street. This square is not yet improved."

Of the four original squares, Logan and Franklin Squares were slightly larger than Washington and Rittenhouse Squares, the two former containing a little over seven acres and the two latter a little more than six acres.

In his first report made of the medical activities of the hospital, Squier Littell envisioned the possibilities of this great open space, as evidenced by his statement: "Logan Square will furnish a cool, umbrageous promenade, where the eye of the invalid may repose on an extensive field of verdure, relieved at intervals by clustering trees and rendered more grateful and refreshing by its contrast with the busy scene without."

When the Wills Hospital was built, the Asylum for Widows and Orphans and the Institution for the Instruction of the Blind at Eighteenth and Cherry Streets were the only buildings near at hand. Not far off at Bushill

(approximately Nineteenth and Wallace Streets) a hospital for the treatment of contagious disease had been built in 1818, the first municipal hospital of its kind in the city. A map of Philadelphia made about 1840 shows that the Wills Hospital was the only building directly upon any of the streets bounding the Square.

The Cathedral of Ss. Peter and Paul at the corner of Eighteenth and Race Streets was not built until 1846, and it required several years to complete it. When religious services were held for the first time on Easter Sunday, 1862, the building was still incomplete, and, as it had not been consecrated, mass was not held.

Although the cornerstone of Girard College, which was only a little way farther north, was laid in 1833, the building was not finished until 1847, more than fourteen years later.

The Southeast Square (now Washington Square) was long used as a burial ground, also the Northeast Square, to some extent. The encroaching, however, of dwellings around these squares led to the discontinuance of this practice in them, and the more remote squares like Logan were utilized for this purpose.

The Square was named for James Logan, the secretary of William Penn, by act of Council in 1825. As was the case of nearly all the streets of the city west of Broad Street at the time, Race Street as well as the two cross streets of Eighteenth and Nineteenth were unpaved.

In 1821, the Orphans' Society, whose buildings were nearby, had Councils lease them the Square as a pasturage for their cattle; a wooden fence being erected to prevent carts driving through and other encroachment. But the Square was still but little more than an open and remote place. A public execution by hanging in 1823 drew a large concourse of people there and resulted in much damage to the fences and many of the smaller trees.

An ordinance of 1832 authorized the City Commissioners "to lay out and mark off a passage or a strip of ground fifty feet in width and the length of the Square along its western boundary." This lane or passage was designated as Logan Street. Only those who had property upon this street were permitted to use it; the public was barred. Another ordinance of 1842 prohibited any but pedestrians from entering the Square and despoilation of it in any way whatsoever.

Logan Square was now under adequate regulation and became a small park, as Penn had originally intended. The ground was levelled off, walks laid out, trees planted and intrusion prevented by an open paling fence. The public was excluded from the Square until 1852. In that year the grounds of the Square were improved and enclosed by an iron fence which rested on a stone basement; walks were graded and benches provided, and the Square thrown open for public use as planned. In 1864 the great Sanitary Fair was held there, but so much care was taken that very little damage was done to the trees or foliage.

An ordinance of May 20, 1915, enlarged the Square, adding thereto all the land between the western boundary of Logan Square and Twentieth Street, from Race Street to the Parkway.

To conform with the extensive plans of Jacques Greber and become part of the monumental Parkway which connects City Hall and Fairmount Park, the Square has undergone further changes so that it is no longer recognizable. From a square it has been converted into a circle. The iron fences are gone. Gone are the lofty trees. Gone are the quiet streets and lanes of former days. A fountain with gigantic figures adorns the center of the circle, and huge jets of water thrown high into the air please the eye. Myriads of automobiles roar by and of quiet or of repose there is none. But the recollection of the blind and semi-

blind with their black patches and their dark glasses, who in the past utilized Logan Square as a waiting room for Wills Hospital, can never be effaced from the memories of those who served the Hospital in the past.

THE HOSPITAL BUILDING

With the purchase of the lot, the draughting of plans followed in proper order. Thomas Ustick Walter, a rising young architect, was selected to draw the plans and supervise the construction of the Hospital. His plans were presented to Councils and adopted by that august body January 13, 1833. In passing it may be noted that the Franklin Institute, incorporated in 1824, had from its beginning provided courses of instruction for ambitious mechanics. Thomas Ustick Walter, then a hard-working bricklayer, availed himself of the privileges thus offered, and by industry and perseverance perfected himself to the degree that not only was he called upon to design Wills Hospital but Girard College also, a few years later, and some of the outstanding work on the United States Capitol at Washington, D. C., all of which redound everlasting credit, not only to this individual, but to the opportunities existing in that day to the youth with the determination to succeed. Walter's rise in his chosen profession was rapid, and not the least of his honors was his appointment as Professor of Architecture in the faculty of the Franklin Institute in 1842.

With the purchase of the lot as already noted, and the drawing of the plans, the cornerstone was laid April 2, 1832, and on March 3, 1834, the Hospital was ready for the reception of patients. (See Frontispiece.) The original building was eighty feet long and fifty feet deep, with a piazza on the south side, twelve feet wide, running its entire length, and was sufficiently spacious for the accommodation of about seventy patients and their attendants.

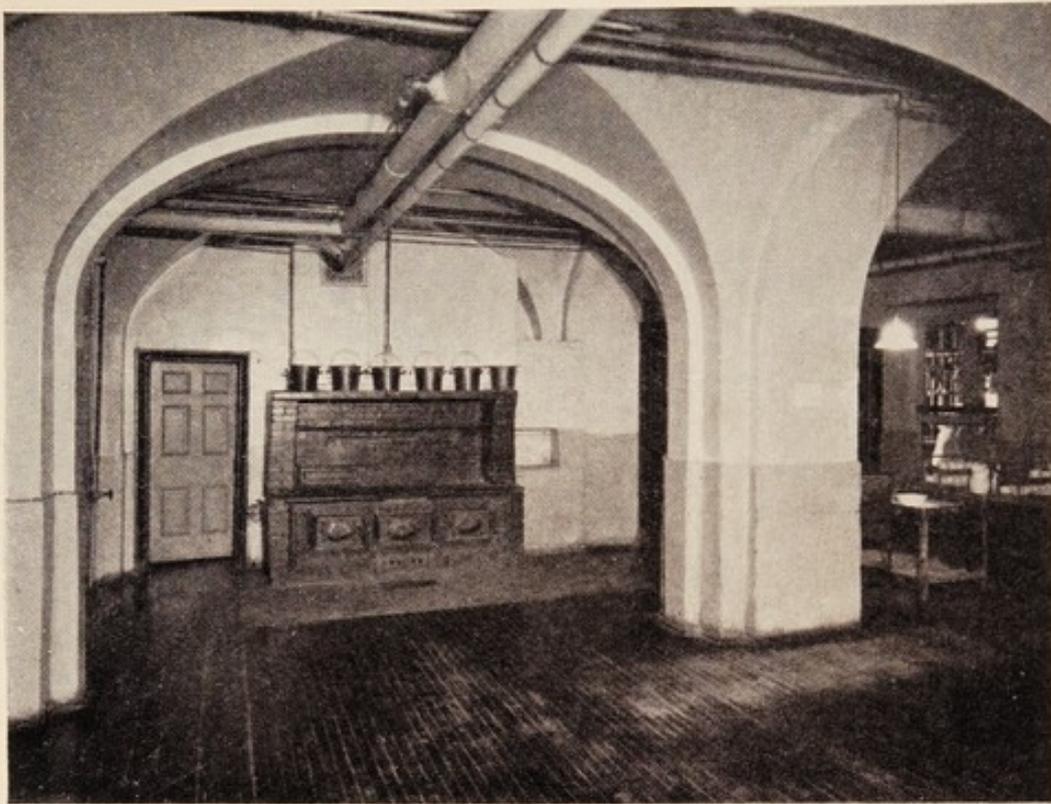


FIG. 1.—*Basement. One of the kitchens, showing massive arches.*

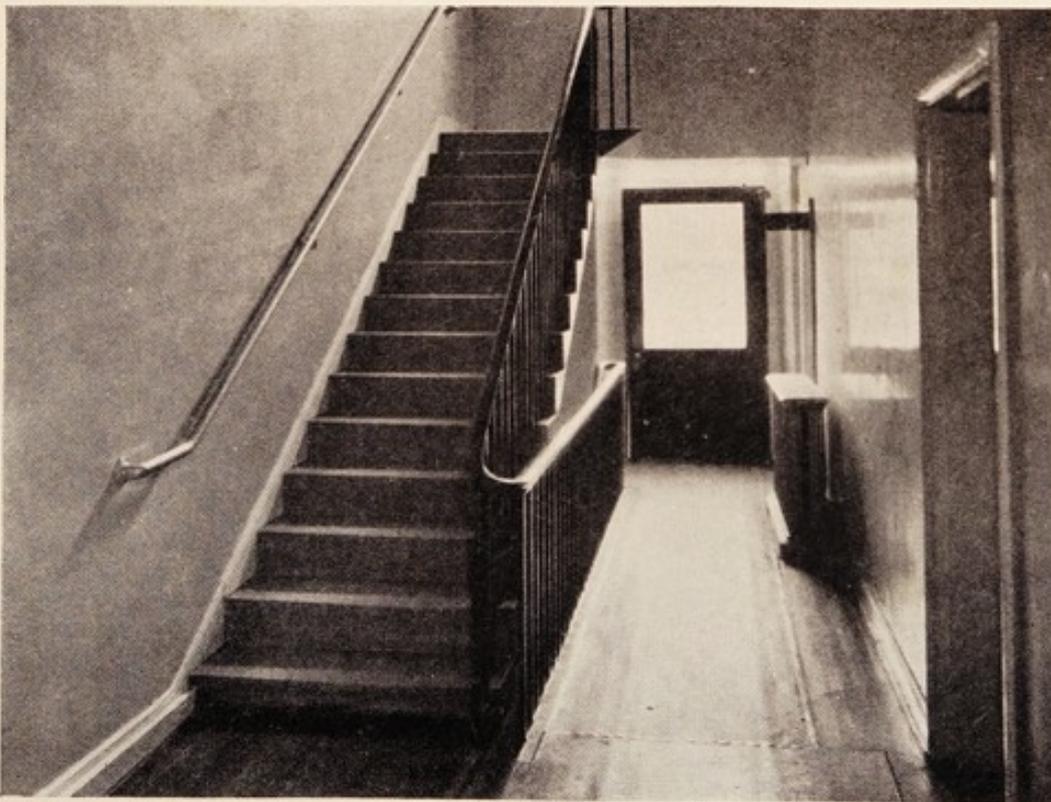


FIG. 2.—*Original stairway. In service past hundred years.*

It consisted of three stories—a basement, a middle and an upper, with an attic twenty-four feet in width and eighty in length. (Figs. 1 and 2.) The whole building, including the piazza, was roofed with copper. Around the lot was placed a wall of cut stone two feet high, surmounted by an iron railing, forming a quadrant from each corner of the front steps, extending to the line of the street from which the building receded fifty feet.

The front of the building on Sassafras Street (Race Street) was composed of sandstone ornamented with six Ionic pilasters supported by proportionate entablature and pediment. The front door was in the principal story and was surrounded by a Grecian Ionic portico of four columns, the whole of which was composed of the same material as the rest of the front.

The Hospital was opened with appropriate ceremonies on March 3, 1834, and an eloquent and impressive address made by the Honorable Joseph R. Ingersoll. The following week divine service was performed for the first time in the chapel by the Rt. Reverend Dr. White, the chaplain of the Revolutionary Congress and the friend of Washington.

After the building had been completed there was some doubt for a time as to the terms of the will and the wishes of the testator. Was it James Wills's wish that the Institution should be a hospital for the treatment of the blind and lame, or should it become an asylum where those who were incapacitated by either of the two maladies might find a home? There was considerable discussion about the matter, but finally the committee, with admirable foresight, determined it should be used as a hospital. As has been well said:³ "Had the asylum idea prevailed, but twelve or fifteen persons could be housed and fed annually, while as a hospital thousands would be spared from

³ Risley, S. D.: *Founders Week Memorial Volume*, p. 766.

blindness and pauperism through its benefactions under the conscientious and skilful care of its surgical staff."

Another question of moment had to be settled by the Managers at this time since it is recorded that "On the twenty-first of January, 1833, a number of citizens of Philadelphia met in the hall of the Philosophical Society to consider the propriety of establishing a School for the Blind, at which it was resolved to make an effort to obtain for the use of the proposed institution, the legacy recently left to the city by Mr. James Wills." This appeal, however, was rejected by the Managers and it is noted that "At a subsequent meeting held February 21st, the committee of citizens who had the matter in charge reported that, in the opinion of Councils, no part of the legacy could be used for the purposes of education, as it was designed to erect a hospital for the Blind and Lame."⁴

It is interesting to speculate as to why James Wills bequeathed his fortune as he did. Why should he, a layman, and, so far as known, himself sound in eye and in limb and thus not disposed by personal sympathy to aid fellow sufferers, be acquainted with the need of a hospital to care for those so afflicted? Is it not likely that he, his parents dead, himself unmarried, a retiring person and more or less shy, would seek counsel and aid of someone in whom he had confidence and whom he knew to be in a position to give him sound advice? Despite his seclusion he would be compelled to see a physician, and when this physician happened to be a man of strong character, and at the same time a Friend, is it not likely that he should have told his wishes to such an one and taken his counsel as to the disposal of his estate? By good fortune Wills had such a person to appeal to—Joseph Parrish, who possessed all the qualities just enumerated and was at the

⁴ *Twenty-first Annual Report of the Pennsylvania Institute for the Instruction of the Blind.*

same time the leading physician as well as one of the most prominent citizens of Philadelphia.

With an enormous practice it is most likely that Parrish had Wills, a fellow Friend, as a patient, and the fact that Doctor Parrish became the first president of the Board of Managers of the Hospital, and his son, Isaac Parrish, though but twenty-one years old, one of its first surgeons, would seem to indicate that the Parrishes were very close to Wills when he was devising his plans for the Hospital. A great doctor, philanthropist and man of affairs, none knew better than Joseph Parrish the need of an institution such as was planned. Parrish was well acquainted with the abortive attempts which had been made in Philadelphia to found the two dispensaries for the treatment of eye diseases a few years previous. Who more likely than he—a daily visitor making his surgical rounds at the Pennsylvania Hospital—to be impressed by West's portrait and to transmit the impression to his patient and neighbor Wills!

Another thought which suggests Joseph Parrish's influence in the Wills legacy is indicated by the fact that in addition to the Wills Hospital legacy, all the other legacies left by James Wills were charities in which Joseph Parrish was interested—as for example, that of \$5000 to the Friends Asylum at Frankford, which was founded in 1812, and to which institution Joseph Parrish was one of the first attending physicians.

It becomes appropriate, therefore, in giving short sketches of the lives of the men who carried on the surgical work of the Hospital during this period to include that of the first president of the Board of Managers, for while Joseph Parrish did no surgical work in the Hospital, his influence upon its early life and the prominent part he may have played in suggesting to James Wills the idea

of founding such an institution awakens the desire to know more of this unusual man.

JOSEPH PARRISH

President of the Board of Managers, 1834-1840

Perhaps the most outstanding figure in connection with the Wills Hospital in its early days was Dr. Joseph Parrish, the first president of its board of managers. Of a family long settled in this country and of distinguished lineage, Doctor Parrish was born in Philadelphia in 1779. His father before him had long entertained the desire to become a physician, but was financially unable to gratify this ambition. In consequence, he was compelled to seek his fortune in other channels, and took up the trade of a hatter. Prosperity attended his endeavors and he married the daughter of his employer, by whom he had eleven children, Joseph Parrish, the subject of this sketch, being the youngest.

Since the parents were members of the Society of Friends, Joseph Parrish received his early education in their schools, with rather intensive instruction in the higher branches, especially Latin. Being of a studious disposition, he yearned to study medicine, but the prejudice of the Friends, together with other factors, compelled him to curb his ambition and, like his father, to learn the trade of a hatter, in the latter's shop. When he was twenty-two years old, he overcame the prejudice against his studying medicine and became a pupil of Dr. Caspar Wistar, entering the Medical Department of the University of Pennsylvania, from which institution he was graduated in 1805, his graduating thesis being entitled "Upon the Influence of the Passions in the Production of Disease."

Custom, in his day, prescribed for the medical student in a physician's office a course of more or less menial

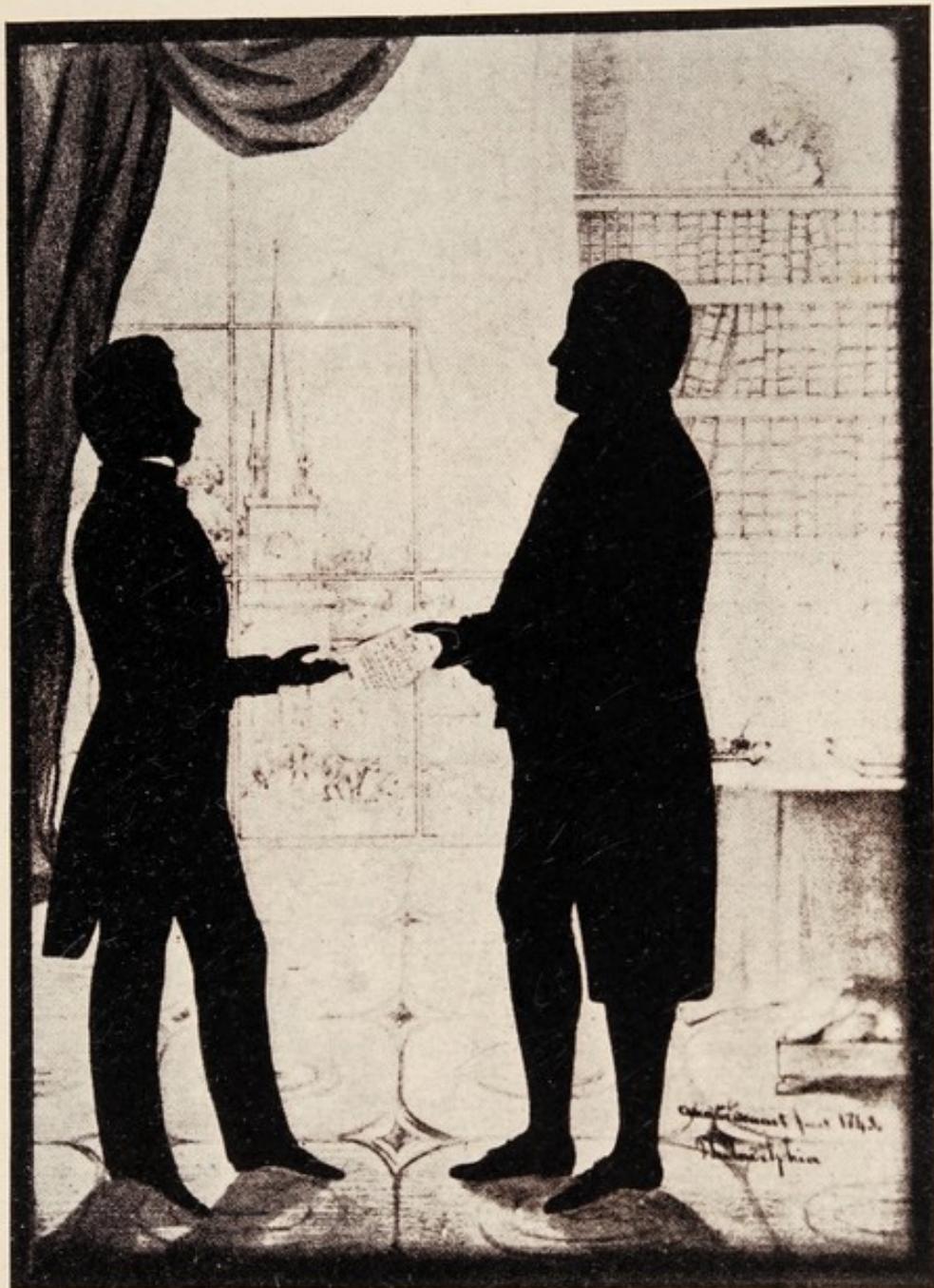
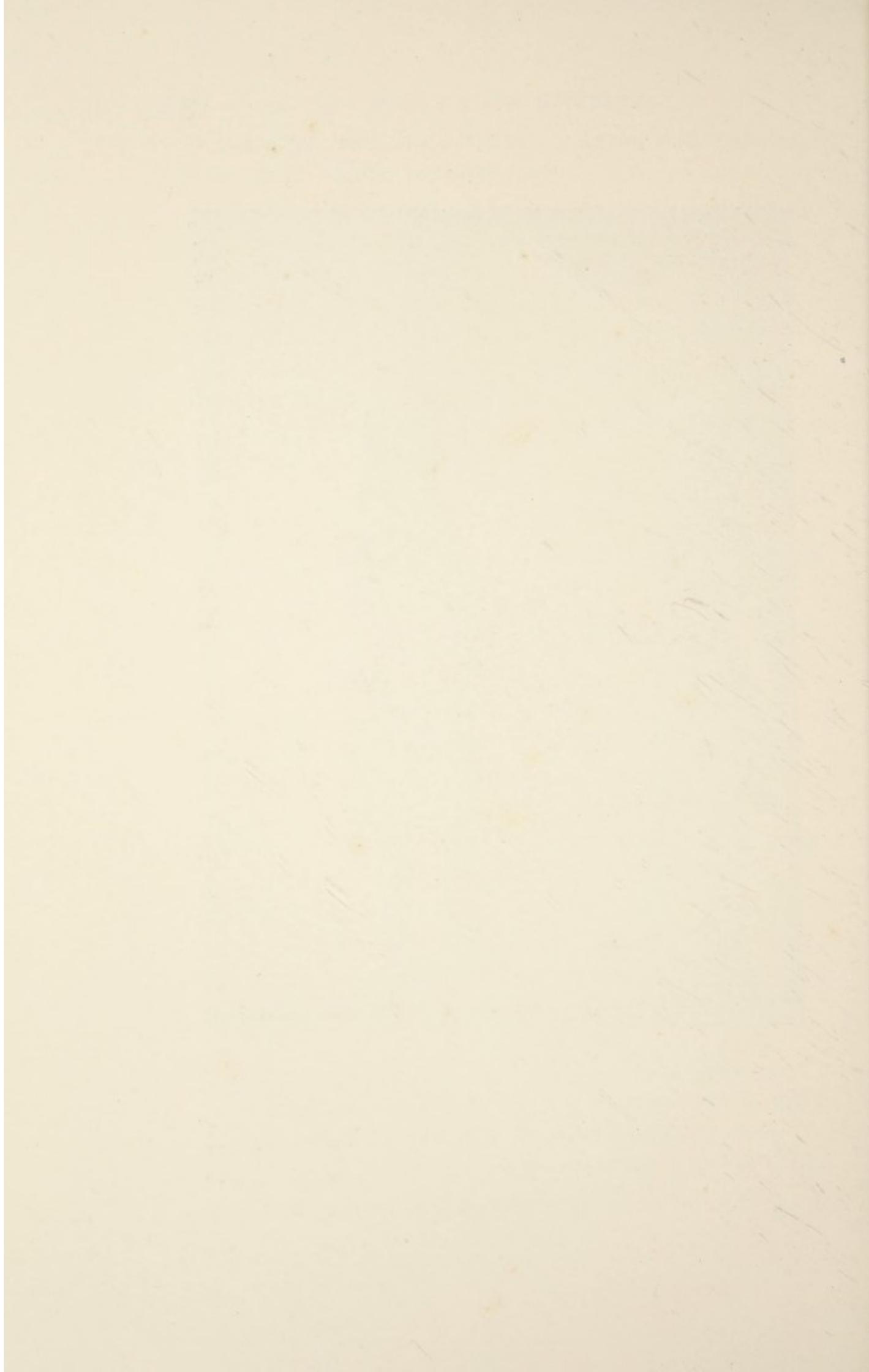


FIG. 3.—Dr. Joseph Parrish presenting to his son, Dr. Isaac Parrish, the certificate of membership in the College of Physicians, 1836.

(From "The Parrish Family" by Susanna Parrish Wharton.)



duties, such as running errands, compounding laborious formulas for the sick, sitting up nights with patients, and often acting in place of the physician himself, when the latter was unable to respond to the calls for his services. As an offset to this there was the privilege of consulting the preceptor's library and being quizzed upon the knowledge such collateral reading would afford him, and greater than all was the continuous association with a skilled and talented member of the cult. Dr. George B. Wood, the biographer of Doctor Parrish, believed that this contact had no little influence in molding his subsequent career, and wrote:

"The peculiarities of his education were to be traced in the subsequent course of Dr. Parrish, and to this origin we may ascribe the strong bent of his mind, towards practical observation and experience, in preference to abstract reading and theoretical disquietude in medicine."

Perhaps his earliest hospital appointment was that of resident physician to the Yellow Fever Hospital. His public life began, however, with a series of lectures upon chemistry (1807-1810), a subject but little understood at the time by the layman. These lectures did much to enlighten the public mind on that branch of science. Doctor Parrish also served the Philadelphia Hospital from 1807 to 1811 as a member of the medical staff, and was then transferred to the surgical service which position he filled until his resignation in 1821. He was elected to the staff of the Pennsylvania Hospital in 1816 and served in this capacity until 1829.

Doctor Parrish was a Fellow of the College of Physicians of Philadelphia and for a time was its vice-president. He was made a member of the American Philosophical Society in 1815. He was also president of the Pennsylvania Society for Promoting the Abolition of Slavery and Im-

proving the Conditions of the African Race, which was founded by his father in 1775. Not the least of his accomplishments was the bringing to a satisfactory conclusion the effort of the Friends to establish what is now the Friends Asylum for the Insane in Frankford, Philadelphia.

A noteworthy feature of the early part of his career was the rapidity with which he acquired an enormous practice, at first general, and later, largely surgical, so that it was second only to that of Doctor Physick, the leading surgeon of Philadelphia at the beginning of the nineteenth century. Being an excellent teacher he was in great demand, and had as many as thirty private students at one time in his office.

One of his sons, Dillwyn, succeeded him as president of the Abolition Society, holding office until 1886. He it was who, as one of the incorporators of the Women's Medical College, in order to demonstrate his disregard for the popular resentment and prejudice against the women students—marched at the head of a body of women students through the streets of Philadelphia, while a mob of men students hooted and derided the procession from the sidewalks. This son also served as president of the College of Pharmacy, and for many years was a member of the Board of Managers of Wills Hospital.

In passing it may be mentioned that in looking over the list of charitable institutions in Philadelphia during the first half of the nineteenth century, it would appear that the name of Parrish, either that of Joseph or of one of his sons was to be found upon nearly every one of them.

We would like to regard the crowning event of his career as the creation of the Wills Hospital. Our perusal of the records of the period in which it was founded convinces us that it was through his influence that James Wills was led to consider the pitiable condition of those

afflicted with ocular diseases and infirmities and to provide for their amelioration. Certain it is that his judgment and advice were sought and accepted in the actual founding of the institution. He was not only its first president but remained at the head of its Board of Managers until his death in 1840. One son as a member of the first Staff, another a member of the Board.

In all his activities Joseph Parrish showed a profound conscientious appreciation of his responsibilities. In his fifteen years' service at the Pennsylvania Hospital as one of its surgeons, it is said that before operating he was wont to retire apart and invoke the Almighty for strength to perform the operation successfully.

He was a frequent contributor to the medical journals, and all through his life he disseminated valuable advice in the treatment of disease. He took an active part in the deliberations of the College of Physicians and all other societies of which he was a member.

On the occasion of his death in 1840 the Board of Managers of Wills Hospital passed the resolution contained in the accompanying extract from the minutes:

"The Secretary having announced to the Board that it had pleased Divine Providence, in its infinite wisdom to call from this scene of transitory existence, to that awful eternity to which corruptible things enter not, the spirit of our late estimable friend and associate, the members of this Board fully impressed with the merits of the deceased, whilst among us, both in the rich treasures of his intellect and the more sterling virtues of the heart, unanimously adopted the following:

Resolved—That being fully sensible of the worth of their deceased colleague, and of the valuable service he has rendered to this Institution since its first organization, during the whole of which period he has been called upon to preside over the deliberations of this Board, we do now direct to be recorded upon the minutes, this expression of the high esteem

in which his surviving associates have ever held the virtues, talents and public usefulness of the deceased, and the deep regret they experience for his loss, as a valuable member of this Board, an enlightened philanthropist, a distinguished physician and a sincere and consistent Christian."

ISAAC PARRISH

Attending Surgeon, 1834-1852

ISAAC PARRISH was born in Philadelphia in 1811, the second of the eleven children of Joseph Parrish. Like his father, he was educated in the Friends School of Philadelphia and was graduated from the Medical Department of the University of Pennsylvania in 1832. Upon graduation he became a resident physician in the Philadelphia Hospital. He married in 1834 and in the same year, when he was but twenty-three years of age, he was made one of the first surgeons of the Wills Hospital, serving in that capacity as long as he lived. In 1839, he began a course of lectures to the students attending the hospital, these lectures being, so far as is known, with the exception of those instituted by Frick, of Baltimore, the first in this country upon purely ophthalmic topics. They were very popular and well attended. Isaac Parrish was an excellent lecturer, his voice was pleasing, and his enunciation distinct and emphatic. He was well liked by his colleagues and was considered an ideal consultant, always manifesting the greatest respect for the opinion of others.

The value of potassium iodide in diseases of the eye was recognized by Isaac Parrish in 1842. In a dose of two to six grains three times daily, he recommended it to reduce inflammatory affections "involving the deep tunics of the eye."¹

He was an active Fellow of the College of Physicians, and took part frequently in its deliberations and discussions. He wrote several useful papers upon medical topics and contributed one of the Quarterly Reports of the Wills

¹ *Medical Examiner*, April 16, 1842.

Hospital. He also published five annual reports on the "Progress of Surgery." He was active in the County and State medical societies, being twice vice-president of the former organization.

He also took part in the establishment of the American Medical Association. At a meeting in 1848 he was one of the Committee on Public Hygiene, and at the Boston meeting in 1849 he read an able paper on the Sanitary Conditions of Philadelphia, in which better methods of draining and cleaning were advocated, and great stress laid upon the dangers from the neglect of ventilation both in private and public buildings, particularly school-houses. He continued his family traditions and was a great friend of the colored race and in consequence deeply interested in the Society for the Abolition of Slavery. Likewise, he took an active part in the Society for Alleviating the Miseries of the Prisons. Both of these philanthropies were essentially of Quaker origin.

Dr. Isaac Parrish was a man of slender frame and was always endowed with more vigor of mind than body. He died of dysentery in 1852 contracted from his eldest son, whom he had nursed for several weeks previous to his death from the same disease. Both father and son died at the same hour on the same day, a tragedy that deprived society of a distinguished benefactor, a skilful surgeon and an accomplished author.

SQUIER LITTELL

Attending Surgeon, 1834-1864

Emeritus Surgeon, 1864-1886

Squier Littell was born in Burlington, New Jersey, in 1803, the son of Stephen and Susan Gardiner Littell. The American branch of the Littell family was descended from George and Benjamin Littell, who came from London to

Newbury, Massachusetts, about 1630, and from thence the family became scattered throughout the East and Middle West.

Losing both parents very early in his childhood, Squier Littell was adopted by his uncle, Doctor Squier Littell, of Butler, Ohio. He received his early education in the lower schools near Lebanon, Ohio, and later studied one year at Miami College, Ohio. The association with his uncle, who enjoyed a large practice, inspired him to study medicine, and after a period of apprenticeship with him, he came to Philadelphia in 1821, and continued his studies under the guidance of Doctor Joseph Parrish. He matriculated at the medical school of the University of Pennsylvania, from which he was graduated in 1824 with the degree of M.D., his graduating thesis being on "Inflammation."

With that urge for adventure which comes to all youth, he was lured to the attractive field of South America by the prospect of an appointment which he subsequently failed to obtain, but on arriving in Buenos Aires, and being amazed at the degree of learning possessed by the medical men there, he decided to remain there and became a licentiate of the Academy of Medicine of Buenos Aires.

Four months' effort convinced him that this was not a suitable field for him and he embarked on a journey towards the United States, rounding the Horn and stopping at Valparaiso, Lima and other Pacific ports. Thinking that Guayaquil, Ecuador, offered some opportunity, he sojourned there for a while, but finally continued his trip to Philadelphia by way of the Isthmus of Panama and Cartegena.

Arriving in Philadelphia, he renewed his former acquaintances and contacts and embarked in general practice. He had long nourished an ambition to teach anatomy

but an impediment in his speech discouraged him. In Philadelphia, his success was progressive and soon he married Mary Emlen, daughter of Caleb Emlen, by whom he had one son and one daughter. His wife died shortly after the death of the second child.

His medical activities for a long while were of a general character, but with the development of special skill in ophthalmic surgery he came to be prominently identified with that specialty, becoming one of the first surgeons at the Wills Hospital. He served in this capacity until 1864 (a period of thirty years), when he resigned, thus aiding materially in creating the reputation that has made the Wills Hospital internationally famous.

Upon his resignation, Doctor Littell was made Emeritus, the first surgeon in the Hospital to receive this distinction.

Dr. A. D. Hall, his son-in-law and biographer, said of him, "He was a patient and cautious investigator, not over-anxious to operate, but bold in execution when surgical interference was required."²

It is interesting to note that he learned the use of the ophthalmoscope late in life with some difficulty but continued its routine use after having mastered it. He was elected a Fellow of the College of Physicians in 1836 and later became one of its Councillors.

The literary efforts of Squier Littell were many and varied. Those in the field of medicine embrace quite a variety of subjects. In 1828, he was editor of three volumes of the *Journal of Foreign Medicine*. In 1835, he contributed one of the five papers by members of the staff of the Wills Hospital covering the quarterly report of the Hospital's activities, which was published in the *American Journal of the Medical Sciences*.

One of the earliest fruits of his connection with the Wills Hospital was his text-book entitled "A Manual of

² *Transactions of College of Physicians*, third series, vol. 9, 1887.

Diseases of the Eye," which was published in 1837. This work was concise, clearly written and a safe guide for students in ophthalmology. In 1838, it was revised and enlarged by Hugh Houston, a member of the Royal College of Surgeons in London, and an English edition was brought out.

In 1846, a second American edition appeared. This manual, especially in the second edition, represented the experiences which Littell and his colleagues had gained from their services in the Wills Hospital. It was popular at home and met with the same favor abroad as did its predecessor. The *British and Foreign Medico-Chirurgical Review* said of it:

"It is no small triumph to Dr. Littell to be able to say that he had embraced almost all that is valuable and necessary to the student within a compass of 255 pages. It is replete with information, yet so terse in style and compressed in bulk as at once to entice and repay perusal."

Doctor Littell edited an American edition of "Walton's Ophthalmic Surgery" in 1854. In this book was written a chapter upon anesthesia in which were cited the advantages to patient and surgeon alike, to be obtained from its application. A memoir on Granular Ophthalmia appeared in the *Transactions of the Congrès d'Ophthalmologie de Bruxelles* in 1857. In 1855, he published in the *Medical Examiner* "Notes on the Secondary Variolous Ophthalmia." In addition to these special contributions upon ophthalmological topics, he wrote several concerning general medical and surgical conditions.

He was a very active member of all the organizations with which he was affiliated and wrote many memoirs of distinguished members of the College of Physicians of Philadelphia. Especially noteworthy is that of George B. Wood. Likewise was he active in matters concerning the Episcopal Church, of which he was a most energetic mem-

ber. In 1833, he was one of a committee appointed by the General Convention of the Protestant Episcopal Church in the United States to revise and correct a new edition of the Book of Common Prayer and from January, 1839, to May, 1841, he was editor of *The Banner of the Cross*, the most influential of the church papers of the period. He also wrote poetry and arranged no less than twelve metrical translations of the medieval hymn, "Dies Irae." Later in life he developed choroiditis and failing sight followed, and at eighty years of age he was quite incapacitated. He succumbed to what we now designate as cardio-renal disease in 1886, at the age of eighty-three years. His outstanding life service was in connection with Wills Hospital; much of that rich experience he transmitted to his son-in-law and assistant, Dr. A. D. Hall, who also was a member of the Wills Hospital Staff.

ISAAC HAYS

Attending Surgeon, 1834-1854

Isaac Hays was born in Philadelphia in 1796 of distinguished Hebrew lineage, his mother being of the well-known Gratz family. He was educated in the Academy and in the College Department of the University of Pennsylvania, from which he was graduated in 1812. His father, a merchant, had destined him for a business career, but after a short experience in the commercial world, young Hays found it uncongenial and discontinued his efforts in this field. He then entered the Medical Department of the University of Pennsylvania, from which he received the degree of M.D. in 1820.

Although engaged in general practice, Doctor Hays early began to devote himself to the study and treatment of disease of the eye, and with Doctor Littell—later to

become his colleague at Wills Hospital—may be regarded as one of the pioneers of American ophthalmology.

He had a facile pen, was studious and industrious, and early took the interest in medical literature which was to be of such significance in American medicine. His first papers appeared in the *American Journal of the Medical Sciences* in 1826; one upon "Purulent Ophthalmia" and another on "Inflammation of the Sclerotic." In 1827, he published in the same journal a paper upon "The Pathology and Treatment of Iritis."

The chapter upon "Diseases of the Eye" written by him in Dewees' "Practice of Medicine" appeared in 1843, and in the same year he edited the first edition of Sir William Lawrence's work, "A Treatise on Diseases of the Eye." Three editions of this work were issued with numerous new illustrations and additions to the text by Hays, all with the approval of Lawrence. Indeed, these additions so commended themselves to the author that he wrote Hays the following appreciative letter:

"I feel it is a particularly fortunate circumstance that one so thoroughly conversant with the whole subject, and so used to literary composition, should have undertaken the troublesome task of making these additions to my treatise published in 1840, and which are necessary to bring it up to the present state of knowledge, and that you should have conferred on it the new and interesting feature of so many beautifully executed pictorial illustrations."

In 1847, Doctor Hays edited "The Principles and Practice of Ophthalmic Medicine and Surgery," by T. Wharton Jones.

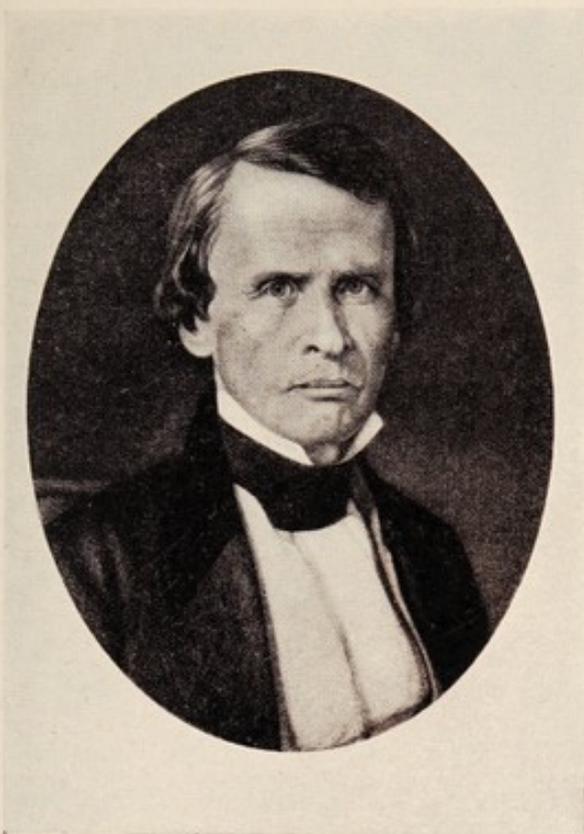
Doctor Hays is chiefly remembered, in all probability, in connection with the *American Journal of the Medical Sciences*. This journal, first called the *Philadelphia Journal of the Medical and Surgical Sciences*, was founded by Nathaniel Chapman in 1820. Doctor Hays became its

editor in 1826 and continued as its sole editor until 1869, when his son, Dr. Isaac Minis Hays, became associated with him. When his father died in 1879, the younger Hays assumed full editorship and acted in that capacity until 1901, when he resigned. The editorship of the *Journal* thus remained in the hands of the Hays, father and son, for an unbroken period of seventy-five years.

In order to stimulate American medical men to greater effort in the literary field, the title page of the *Journal* contained the famous quotation from Sydney Smith's article in the *Edinburgh Review*: "In the four quarters of the globe, who reads an American book; or goes to an American play; or looks at an American picture? What does the world yet owe to American physicians or surgeons?" Whether in response to this goad or to some other causes, the *Journal*, under Hays' able management, soon occupied a very important position in the medical, journalistic world, both at home and abroad.

It is said of Isaac Hays, that by reason of his position as editor of this journal, he was the arbiter of the disposal or destiny of medical manuscripts, and in consequence it was the desire and ambition of every practitioner to have his paper appear in this journal. Hays was a most courteous man and at all times greeted his associates in a pleasant but dignified manner. An ordinary salutation to one who had submitted a manuscript for publication a short time before, meant joy to the friend thus greeted, since it assured him that his paper had been accepted, whereas a sweeping obeisance indicated its rejection. Hays was simply lightening the blow.

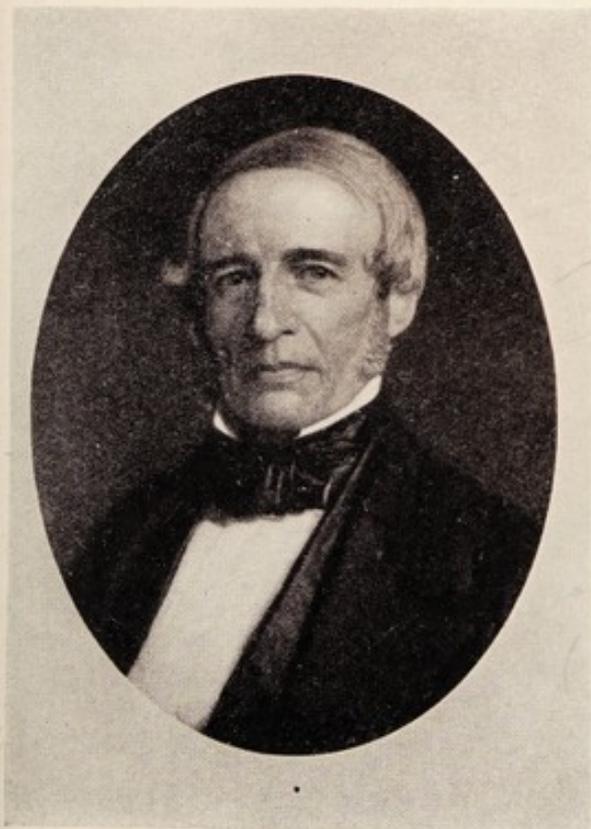
While other important papers, both medical and surgical, were published in its columns, Hays utilized it freely for the publication of his own important discoveries and observations upon ophthalmological subjects. Other



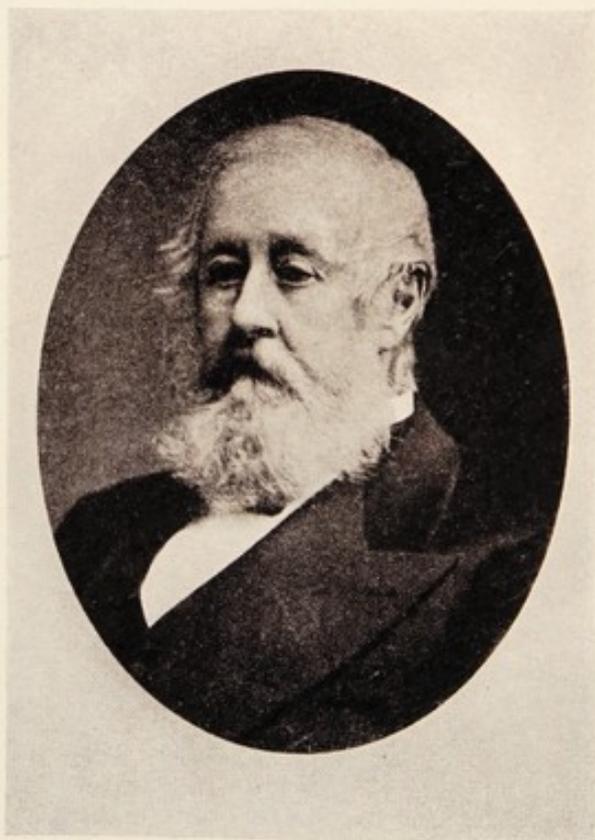
Isaac Parrish



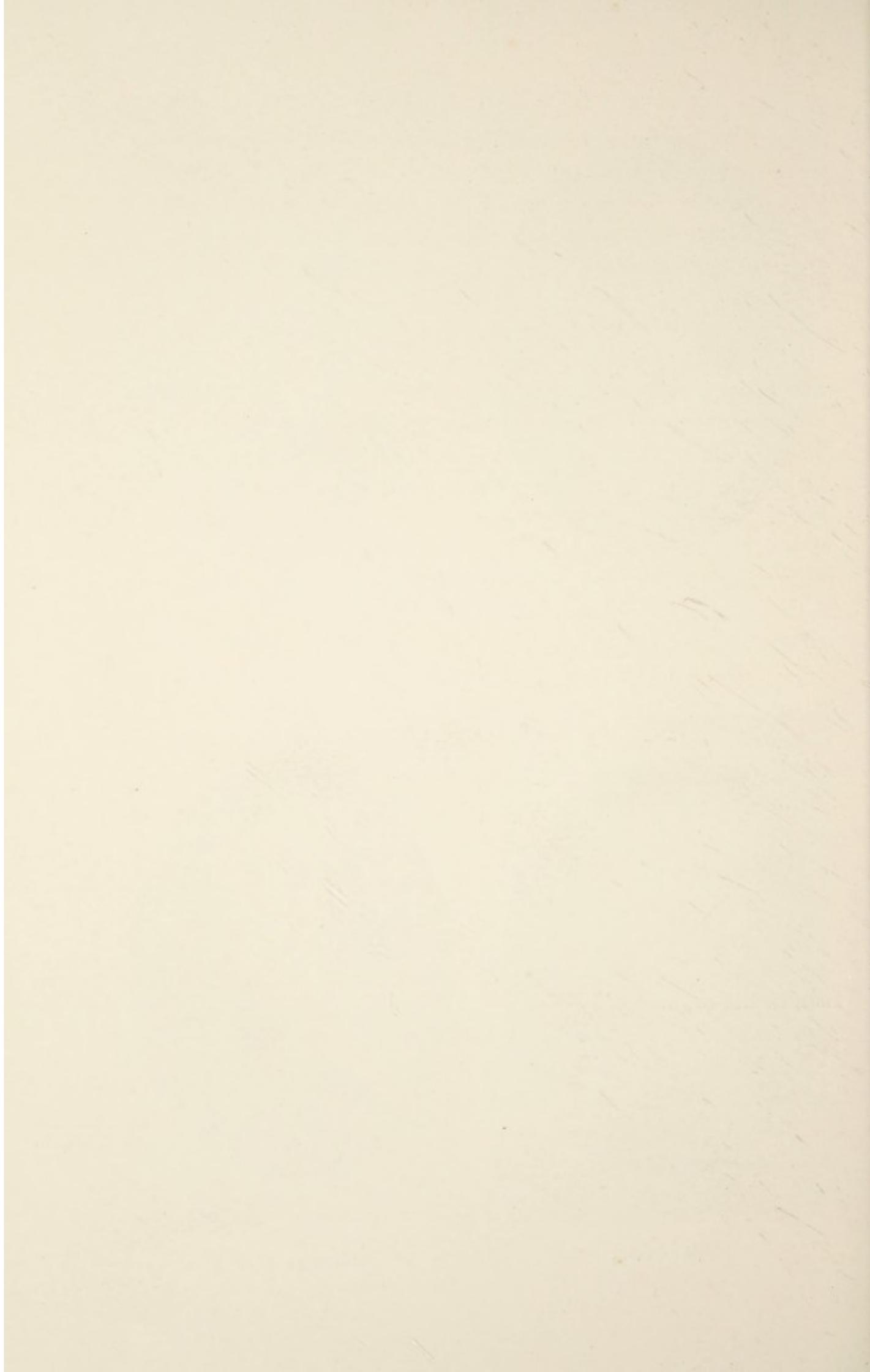
Squier Littell



Isaac Hays



George Fox



authors in this field were similarly encouraged. There appeared, in 1824, Horner's original "Description of a Small Muscle at the Internal Commissure of the Eyelids." This was a discovery of great importance, showing the relationship of this muscle, the tensor tarsi, to the lacrimal apparatus.

In this same journal,³ may be found the description by Horner of an ingenious operation for the correction of ectropion of the lower lid.

A review of the most important papers upon ophthalmology which had appeared in other journals, foreign and American, and contributed by Doctor Hays, was immensely valuable, and did much to acquaint American eye surgeons with the progress of ophthalmology throughout the world. It took the place of a special journal devoted to this subject and served the purpose of a year-book. The review was well written, up to date and accurate, and was exceedingly popular.

Doctor Hays was one of the surgeons of the Pennsylvania Infirmary for Diseases of the Eye and Ear, which, as we have seen, was founded in 1822, and served that institution as long as it was in operation. He became one of the first surgeons to the Wills Hospital in 1834. At the time of his election he was the oldest member of the Staff of this institution and by reason of his seniority, knowledge of ophthalmology, and position in the community, took a leading part, with his friend Joseph Parish, in the organization of the new hospital. He continued as surgeon until 1854, when pressure of literary work compelled his resignation. He contributed two quarterly reports of the work done in his service at Wills Hospital which were published in the *American Journal of the Medical Sciences*.

³ Vol. 21, p. 105, 1837.

Doctor Hays had an original mind and devised a number of instruments for operating upon the eye. The most popular of these was a knife-needle for operation upon cataract. As described by him:⁴

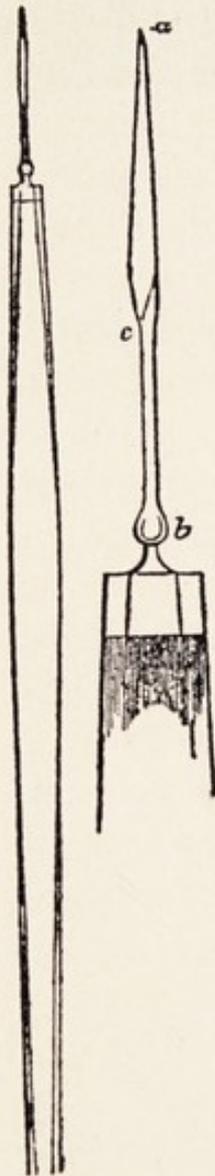


FIG. 4.—
Knife-
needle,
Hays.

“This instrument from its point to the head near the handle is $\frac{6}{10}$ of an inch, its cutting edge nearly $\frac{4}{10}$ of an inch. The back is straight to near the point where it is truncated so as to make the point stronger, but at the same time leaving it very acute. The edge of this truncated portion is made to cut. The remainder of the back is simply rounded off. The cutting edge is perfectly straight and is made to cut up to the part where the instrument becomes round. This portion requires to be carefully constructed, so that as the instrument enters the eye, it shall fill up the incision and thus prevent the escape of the aqueous humor,” (Fig. 4).

This knife-needle was very popular and was in constant use for many years at the Wills and other American hospitals.

In his first edition (1843) of Sir William Lawrence’s work, “Diseases of the Eye,” he relates that shortly after Sir George Airy, a distinguished British scientist, had discovered and corrected the myopic astigmatism of his own eyes, an American clergyman, a Reverend Mr. Goodrich, who was also near-sighted, had noted in addition that when he looked at lines or branches of a tree or the rigging of a ship that the parts of objects having a vertical direction were more distinct than those having a horizontal direction. He goes on to tell how the patient in 1828 consulted Messrs. McAllister, opticians in Philadelphia, and how they, after studying the

⁴ *American Journal of the Medical Sciences*, p. 82, July, 1855.

case and making tests, furnished him with a glass ground plane on one side and to a section of a cylinder on the other. These lenses materially improved his vision. Forty-four years later, these same lenses came into the possession of Dr. Henry D. Noyes, of New York, who ascertained from a notation which had been made by the Reverend Mr. Goodrich upon a sheet of paper which accompanied them, that the lenses were as follows: "Number 7 French number, cylinder concave, got of McAllister, May, 1828."⁵ In all probability these were the first plano-cylindrical lenses ground in this country to correct myopic astigmatism.

In his third edition of Lawrence's work, in 1854, Hays states that during the year he had seen two cases in which astigmatism was present, and that McAllister under Hays' guidance ground the lenses for both patients. Hays, therefore (1854), may be regarded as the first ophthalmologist in America to prescribe cylindrical lenses to correct astigmatism. In his classic work, Donders cites, in historical order, the first five cases of astigmatism reported in literature, and credits Hays with the fifth in the world and the first in America.

Hays was also the first to make observations upon non-congenital color-blindness under the title: "The Impossibility of Certain Individuals to Distinguish Colors." This appeared in the *American Journal of the Medical Sciences* in August, 1840. He also edited and made additions to the following works: Arnott's "Elements of Physiology," Ailson's "American Ornithology," and Hoblyn's "Dictionary of Medical Terms." With Dr. R. L. Griffiths he translated two volumes by Broussais: "The Principles of Physiological Medicine" and "Chronic Phlegmasia." In 1883, he published the "Description of the Inferior Maxillary Bones of Mastodons."

⁵ *American Journal of The Medical Sciences*, vol. 63, 1872.

He was much interested in natural history and made many contributions upon that subject. In consequence of this interest he was made president of the Academy of Natural Sciences in Philadelphia in 1865. He also projected "The American Cyclopaedia of Practical Medicine and Surgery," which was discontinued after two volumes had been published due to inadequate support. This was an admirable undertaking but much in advance of the times.

Doctor Hays was chosen first president of the Ophthalmological Society in Philadelphia upon its organization in 1870. He was also made an honorary member of the American Ophthalmological Society at its first meeting in 1864. Among other honors he was a corresponding member of the Medical Society of Hamburg, of the Société Universelle d'ophtalmologie, and of the Congrès Médical International de Paris.

Dr. Isaac Hays was a gentleman of the old school, punctilious in all things, and the leading spirit in all the learned and scientific bodies of the city in which he lived, particularly the College of Physicians, the American Philosophical Society and the Franklin Institute. A cultivated gentleman, he was on terms of intimacy and friendship with the leading citizens of Philadelphia. A Hebrew, it is significant that he was deemed worthy spiritually as well as medically to be associated with the two Friends and the ardent churchman who became the first surgeons in the Wills Hospital. He died in Philadelphia in 1879 at eighty-three years of age.

GEORGE FOX

Attending Surgeon, 1834-1849

Member of the Board of Managers, 1849-1854

George Fox was born in Philadelphia in 1806, the youngest of thirteen children. His father was Samuel

Mickle Fox, his mother the daughter of Samuel Pleasant. Both his paternal and maternal forbears were of distinguished Pennsylvania stock, his grandfather Joseph having been Speaker of the Colonial Assembly. Like the Parrish family they belonged to the Society of Friends. His father died two years after George Fox was born, and the care of the thirteen children devolved upon his mother.

George Fox was educated in private schools in Philadelphia and at the University of Pennsylvania, graduating from the College Department of the institution in 1825. The University likewise conferred his medical degree in 1828. In conformity with the prevailing custom of studying under a preceptor, he was a pupil of Dr. Joseph Parrish, who also acted in the same capacity for Isaac Parrish and Squier Littell. Immediately after his graduation from the Medical Department of the University, he was elected a resident physician to the Pennsylvania Hospital and while there showed his mechanical ingenuity by devising an apparatus for the treatment of fractures of the clavicle, which was continued in use for quite a long time.

He contributed but few papers to medical literature, although all were practical and interesting. He was instrumental in bringing the work of the Wills Hospital to the attention of the medical profession through the clinical report published in the *American Journal of the Medical Sciences*, November, 1839, under the title, "Reports of Cases of Diseases of the Eye Treated at Wills Hospital for April, May, June, 1839." These were evidently selected cases and comprised four cases of amaurosis; two cases of chronic conjunctivitis with opacity of the cornea, nebula, and granulated lids; one case of strumous ophthalmia; three cases of ulcer of the cornea and one case of ophthalmia tarsus. The treatment they received was quite novel.

His biographer, Dr. W. S. W. Ruschenberger, says of

him:⁶ "Though particularly interested in diseases of the eye, he protested being called an oculist, because he was unwilling to encourage public preference for specialties of any kind." This seemed to be the prevailing sentiment among the men of outstanding prominence in the city at that time.

His preparation and ability led to his election as one of the first attending surgeons at the Wills Hospital and he served in that capacity for a period of fifteen years, when he resigned to become one of its Board of Managers. He relinquished this position in 1854 upon his retirement from practice, when he left the city and took up his abode in the country close by.

Dr. George Fox very early displayed administrative and executive ability which was to redound to the credit and benefit of the medical profession in the city of Philadelphia. His principal contribution in this regard was in connection with the College of Physicians of Philadelphia, in which he took an active interest. That institution, founded in 1787, was without a home of its own, and had found its accommodations in the Hall of the University of Pennsylvania, in the buildings of the American Philosophical Society, and in the rooms of the Mercantile Library and in the Historical Society. Its membership was small and the dues very modest at the time of the building of Wills Hospital. However, it continued to progress and it was soon generally recognized that it was time a suitable building should be erected, which might conform to the dignity and purposes of the College in all respects.

The first step to this end was taken in 1840 when Doctor Fox was appointed chairman of a committee "to ascertain what amount would be sufficient to authorize the erection by the College of a building for its accommodation, and to solicit contributions from the Fellows." Nothing seems to have come of this gesture, but the project was

⁶ *Transactions of the College of Physicians of Philadelphia*, third series, vol. 7.

not abandoned, and Fox still headed the movement. Success finally crowned his efforts and those of his associates. The site at Thirteenth and Locust Streets, Philadelphia, was purchased and the building erected thereon so dear to many for years, the first meeting being held in the new home in 1864. To George Fox must be given the credit for the accomplishment of this result, since while others aided in this enterprise it was his determination, resourcefulness and popularity which made it possible.

Doctor Fox utilized his business sense to a good personal advantage as well as that of the philanthropic enterprises in which he was interested. He was a man of affairs and had a good knowledge of finances. His early retirement with a sufficient fortune bore testimony to this as well as did his election in 1876 as a director of the National Bank of Commerce, which position he filled until his death.

He likewise found time to interest himself in medical affairs outside of his native city. In 1847, as one of the delegates of the College of Physicians to the National Convention, he aided in the formation of the American Medical Association, and later performed a similar service in the organization of the Medical Society of the State of Pennsylvania, becoming its first treasurer.

After his retirement to the suburbs of Philadelphia, he continued to live the life of a country gentleman, and, while freed from the exactions of private practice, he frequently responded to charity calls or solicitation from those of his former patients in whom he was particularly interested.

He married in 1854 and died in 1882 at seventy-six years of age. His widow and six children survived him.

THE STAFF

The Wills Hospital was fortunate in its first Staff, all four surgeons being men of unusual attainments and

guided by the experience and genius of the first president, Joseph Parrish.

Of the four men, at the time the Staff was appointed in 1834, Hays was the senior in point of age, being thirty-eight years of age. Littell was thirty-one years of age, Fox twenty-eight years and Isaac Parrish was just entering his twenty-third year.

Not only was Hays the older, but he was also the most brilliant of the group, indeed, one of the leaders in American ophthalmology during the nineteenth century. His literary labors in medicine have never been excelled in Philadelphia; he had an inventive mind and devised instruments which were generally adopted by the profession and were long popular. His observations were original and precise and showed a profound knowledge of ophthalmology. He was also a skilled surgeon.

Like Hays, Littell was also a prodigious worker and in literary attainments was second to him alone. Of a poetical nature, his writings are somewhat elaborate and flowery, but his medical writings were accurate and full of merit. He served the Hospital thirty years, the longest of any of the group, Hays being second with twenty years of service, Isaac Parrish with eighteen years and Fox with fifteen years, to which must be added five years as manager.

Fox was primarily a man of affairs, though an able surgeon and excellent clinician. His determination and force are shown by his achievement of bringing the project of a new building for the College of Physicians to a successful completion.

Like his father, Isaac Parrish ranked as one of the leading surgeons of the city and probably surpassed the other three members of the Staff as lecturer. He was the first of the Wills Hospital Staff to give lectures upon ophthalmology.

When he accepted the presidency of the Board of Man-

agers of the hospital, Joseph Parrish was fifty years old, in the full vigor of his professional life. His counsel must have been invaluable to the Staff and he maintained his interest in the Hospital until he died, at seventy years of age. It was doubtless largely due to his judgment that Wills's wish as regards the future of the Hospital was carried out, and the interpretation rendered that it should be an active institution for the treatment of acute and remediable diseases rather than a home and asylum for those hopelessly incurable.

We think of the Hospital as having been founded in the remote past, a hundred years ago. As a matter of fact, however, the period of its foundation in 1834 is linked closely to our own time. Though retired from practice some years before their death, Littell lived until 1886, Fox until 1882 and Hays until 1879, years in which all the present Consulting Staff of the Hospital were alive and about to engage in the study or practice of their profession. Dr. Edward Jackson tells the authors he saw both Doctors Hays and Littell, and Doctor Chance of the present Staff, as a boy knew Doctor Littell and has quoted a conversation he had with him.⁷

ATTENDING PHYSICIANS

At the same time that the first four surgeons were appointed at the Hospital, a medical Staff was also chosen to care for those who needed medical as well as surgical care. There were but few patients in the early years who demanded such treatment and doubtless the medical Staff was but rarely called upon, the surgeons in attendance being quite able to care for any minor ailments which might arise.

In 1837, one of the physicians, Frederick Turnpenny, in requesting to be relieved of further attendance at the Hos-

⁷ *Section on Ophthalmology*, College of Physicians, Philadelphia, Feb. 16, 1928.

pital did it on the ground that there were "No medical cases for treatment." Nor do the Reports of the Management indicate that there was such a need, and in October, 1866, the office of Attending Physician was abolished.

The following list indicates the changes made in the personnel of the medical staff from 1834 to 1866:

- 1834 George Spackman, Frederick Turnpenny, B. P. Howell, R. Stewart.
- 1836 Joseph Peace elected in place of B. P. Howell, resigned.
- 1839 William Pepper and Joseph Carson elected in place of George Spackman and R. Stewart, resigned.
- 1840 Carter N. Berkley elected in place of Frederick Turnpenny, resigned.
- 1842 John Neill elected in place of C. R. Berkley, deceased.
- 1843 S. L. Hollingsworth elected in place of J. Peace, resigned.
- 1849 F. W. Sargent elected in place of John Neill, who was elected Surgeon.
- 1849 William B. Wilson elected in place of J. Carson, resigned.
- 1851 J. J. Reese elected in place of Wm. B. Wilson, deceased.
- 1852 James L. Tyson elected in place of F. W. Sargent, who was elected Surgeon.
- 1853 J. J. Levick elected in place of W. Pepper, resigned.
- 1861 William S. Forbes elected in place of James L. Tyson.

QUARTERLY REPORTS

One of the greatest achievements of the first Staff was the quarterly reports made of the work of the Hospital during its term of service. Although designated as a quarterly report under the title of "A Quarterly Report of Diseases Treated at the Wills Hospital for the Blind and Lame with Some Account of the Hospital," and doubtless intended to appear every three months, they were actually issued at longer intervals. All were published in the *American Journal of the Medical Sciences*, of which Doctor Hays was the editor.

The first report was from the pen of Doctor Littell and

was followed at irregular intervals by four others of a similar nature, two written by Doctor Hays and one each by Doctor Fox and by Dr. Isaac Parrish. The order of their publication is as follows:

American Journal of the Medical Sciences, vol. 17, 1835:
Doctor Littell.

American Journal of the Medical Sciences, vol. 24, 1839:
Doctor Hays.

American Journal of the Medical Sciences, vol. 25, 1839:
Doctor Fox.

American Journal of the Medical Sciences, vol. 26, 1840:
Doctor Hays.

American Journal of the Medical Sciences, vol. 26, 1841:
Dr. Isaac Parrish.

Doctor Littell's paper gives an accurate account of the Hospital. As the *Journal* had a wide circulation he made use of his article as a means of acquainting the profession with the scope and aims of the institution, and included a short account of its clinical work. His account is so representative of the times, both as to wording, and sentiment as well as giving such an excellent idea of the knowledge and practice of ophthalmology of his day, that the following excerpt is copied verbatim:

“In the treatment of no class of diseases is there so much empiricism as in affections of the eye; they appear to have been generally considered as without the laws which govern the lesions of other organs, and the greater number of physicians, unmindful of the principles which influence them in other cases, have been ever ready to wander from the path of patient observation, in the idle search after some remedy which should be of universal application. Our practice has thus become tentative and unsatisfactory, and though perhaps less so than formerly, is still far from reposing on a sound and permanent foundation. We shall find in these diseases, as in all others, that in proportion to the increase of our knowledge will be the simplicity of our theories—the farrago of articles now employed will give place to a few well-appreciated remedies—success will be expected from the judicious and dis-

criminating use of the means which we already possess, rather than from the invention of novel modes of treatment, and our practice will be at once attended with more satisfaction to ourselves, and advantage to our patients.

“It is the design of the present writer briefly to describe what has fallen under his actual observation in the institution with which he is connected, and to relate his own practice as succinctly as possible, without unnecessary allusion to the opinions or practice of others. Should his example be followed by his colleagues, it is hoped that their united exertions may tend to divest the subject of some of the difficulties in which it has been involved, though they may not be so fortunate as to make any positive additions to the stock of information.

“The greater number of cases admitted into the Hospital during the quarter ending September, 1835, were inflammations of the conjunctiva, common, catarrhal, and strumous, the two former presenting in their history or treatment few points requiring particular notice. For the most part, a light diet, occasional laxatives, a collyrium of acetic acid freely diluted, and applied by an eye glass frequently through the day, a solution of the nitrate of silver, two grains to the ounce, dropped into the eye morning and evening, and in some cases the local abstraction of blood cupping, were generally sufficient to effect a speedy cure. In mild catarrhal inflammation of recent occurrence, warm applications to the eye, with pediluvia and Dover’s powder, at night, were frequently followed by very beneficial results.

“In strumous ophthalmia we cannot expect much benefit from topical applications, while the constitutional treatment is neglected, and the latter will frequently be found the more important of the two. Several of the patients with this affection were children of delicate frames, and pallid appearance; in such cases, the leading indication appeared to be, to invigorate the system, and in proportion as this was effected, the eye participated in the general improvement. The means employed with this view were a light nutritious diet, the tepid bath, gentle aperients, and the blue mass, variously compounded with myrrh, and the sulphates of quinine and iron. In some cases, a treatment more decidedly tonic was demanded, and the sulphate of quinine, with the carbonate of iron, and the cinchona or colombo, was prescribed. The

local treatment consisted of cupping, where the symptoms required it, the collyrium of acetic acid and solution of the nitrate of silver, and the sulphate of copper.

"I have witnessed the advantage of a tonic course in several instances of conjunctival inflammation, not of strumous character, where the antiphlogistic plan had been carried too far. It is also apparent in the affection, occasionally met with in hysteric females, which is principally characterized by pain or intolerance of light, without any appearance of inflammation. In such cases a rigid antiphlogistic treatment, confinement to a dark room, counter-irritation by blisters, tartarized antimony, and setons, *etc.*, have been steadily pursued for several months, without any other result than that of enfeebling the general health. The appropriate remedies are the preparation of iron and bark, valerian, gentle aloetic aperients, out-of-door exercise, *etc.*"

Doctor Hays' report of the Hospital's activities began with the account of the status of ophthalmology in our country already quoted (p. 7) and he then continues:

"With the hope of drawing attention to this neglected department of our science we propose to report some of the more interesting cases which offer in the Wills Hospital. This Hospital is restricted to the reception of patients affected with diseases of the eyes or lameness, but the former class comprises by far the greater number.

"It is unquestionably in such institutions that these diseases can be studied with most advantage, and we hope in these reports, especially should our colleagues unite in the plan, that most of the forms of disease to which the eye is subject will eventually be illustrated. These are, of course, numerous, since this organ embraces in its structure nearly all the tissues found in the other parts of the frame, and at least two which exist nowhere else.

"During the last quarter of the year 1838, the cases treated in the Hospital were of a less varied character than usual, but some of them were exceedingly interesting. These last we will now briefly notice, without giving a diary of each case which might be considered tedious."

Then follows a description of a number of his patients.

The last three reports by Doctors Fox, Hays and Isaac

Parrish respectively, contain accounts of the cases which they had observed in their practice in the Hospital with some observations regarding them.

In the same *Journal*, p. 273, in 1851, Dr. A. F. MacIntyre, a resident physician to the Hospital, reports a number of cases which occurred in the service of Dr. Isaac Parrish, and in the same *Journal* and in the winter of the same year, p. 549, he reports cases from the service of Doctor Littell—a diligent interne.

“The Report of Four Cases in Which Amaurosis Was Associated with Granular Degeneration of the Kidneys” was made in his *Journal* in 1851 (p. 274) by Doctor Hays, but no account is made of the use of the ophthalmoscope, although, it is true, that would have been a little early for the employment of that instrument but so recently discovered.

Another resident physician, in the same *Journal* (1853, p. 533), Dr. Theophilus Parvin, who was later to become professor of obstetrics in the Jefferson Medical College, reported cases from Doctor Hays’ clinic.

It is quite likely that Doctor Hays was the instigator, not only of his colleagues, but also of the resident physicians as well, in writing these papers for his *Journal*.

Following the quarterly reports and the isolated observations published in the *American Journal of the Medical Sciences*, there is a distinct hiatus in the recorded surgical work of the Hospital for several years. In 1854, however, the report of the Hospital shows the following list of operations performed:

Cataract	70
Entropium	17
Lachrymal fistule	6
Adherent eyelids	6
Hordeolum or sty	2
Strabismus or squint	4
Pterygium	1
Wounded eyelid	1

Prothesis	1
Removal of steel from cornea	67
Removal of steel from iris	1
Removal of lymph from the pupil	1
Removal of palpebral tumors	10
Artificial pupil	5
Abscess of eyelids	5
Removal of conjunctival cicatria	2
Removal of adhesion of eyelids	5
Division of external commissure	4

CLINICAL LECTURES

It will be remembered (page 41) that in the winter of 1839-1840, Dr. Isaac Parrish began to give a regular course of lectures in ophthalmology in the Hospital which were continued until his death in 1852. Dr. George Fox also delivered clinical lectures there until his retirement in 1854. It is probable that the members of the Staff who succeeded the first surgeons did not continue the practice, and that the Board of Managers disapproved of this, and determining that teaching at the Hospital should be continued, passed in 1867, the following by-law:

"The Attending Surgeon on duty shall also hold, once every week during his term of service, a public clinic, for the demonstration of Ophthalmic Medicine and Surgery, to which students and graduates of medicine shall be admitted gratuitously; with no restriction, except that they may, at the option of the Surgeon on duty, be required to produce evidence of their connection with some regular and respectable school of medicine."

It has ever been a difficult problem to dissociate the clinical lecture or instruction hour from the clinic proper, so that rules intended for the conduct of any clinic may be interpreted as guides for the orderly functioning of clinical demonstrations. Thus the rule of the Board of Managers as to time of clinics in 1867 reads:

"The days and hours for holding the semi-weekly clinic (Monday and Friday at 11 o'clock A.M.) and the weekly lec-

ture which are established at the time of the adoption of these By-Laws, shall not be changed by the Board of Surgeons, not by any of them, without the consent of three-fourths of the Board of Managers present at a stated meeting."

The Attending Surgeon was a matter of no little concern to the conscientious Board and the regulations adopted in 1867 distinctly detail his responsibilities thus:

"The Attending Surgeon on duty shall visit the Hospital once every day, and as much more frequently as may be required; and no important surgical operation shall be performed without a call for a consultation of the Surgeons of the Hospital, who shall be notified in writing by the Resident Surgeon, upon the preceding day, of the nature of the cases requiring operation."

As regards the admission and discharge of patients, the Board further specified that:

"The Attending Surgeon shall meet the Visiting Managers at their semi-weekly meeting, as prescribed in Art. X, Sect. 2, and, having examined all applicants for admission into the Hospital, when such persons are found to be proper objects for the medical treatment of the house, he shall give a certificate describing the case with his recommendation for their admission, which shall be presented to the Visiting Managers for their further action; and he shall, as far as possible, have all business requiring the attention of the Committee fully prepared at the appointed hour of meeting."

A CAREFUL study of the reports of the conduct and progress of the Hospital which have been issued annually by the Managers since it was founded reveals a number of interesting facts, but none more striking than the friendly relationship which existed between the Managers and the Surgical Staff.

The Staff being required to visit the Hospital twice a week, and at such other times as might be required, and being familiar with the Hospital's needs from the medical standpoint, in their annual messages to the Managers they pointed out what they considered lacking in the equipment and facilities for carrying on the work. The Management upon its part took heed to these requests and in their reports either petitioned for further donations to the Hospital, or explained to the Staff why their requests for improvements could not, at the time at least, be made. In referring to the Staff, the Managers in 1838 indicated their attitude towards them as follows, "The Hospital is under the direction of skillful and attentive gentlemen who visit it twice every week during their respective terms of service and oftener if required." A later minute passed in 1843 states that "These gentlemen are entitled to our thanks for the skill and attention they so cheerfully bestow upon the unfortunate objects of our care." It should be recorded also that in the early days of the Hospital a committee of the Managers was in attendance at the same time as the Staff and in addition to transacting other business personally admitted and discharged patients. After a few years the increase in the number of those who desired admission or treatment compelled the Managers to delegate this duty to the steward.

RESIDENT PHYSICIANS

In the annual report for the year 1843 may be read the following: "The arrangement made by the Board some years since, to have the services of a young man in pursuit of a medical education, who should reside in the family, have charge in the interim of the patients, and carry into effect the directions of the Attending Physicians and Surgeons, has been found, under the fortunate selections they have been enabled to make, to be productive of much advantage."

The first Resident Physician was appointed March 4, 1839, and was known as "Medical Resident." The first appointee was Dr. John Neill.

EARLY IMPROVEMENTS AND ADDITIONS TO THE HOSPITAL

The ground upon which the Hospital was built being far from level, the Management in 1838 reported that "The southwest part has been filled up to a sufficient level with fertile soil from the neighborhood, and though it has been attended with some expense, an ample remuneration is expected from a greater production of vegetables for the use of the family." Some years later it was noted, "A good and substantial board fence has been put around the whole square, (Hospital grounds) excepting about one hundred and twenty feet directly in front of the building; this is secured by a strong iron railing, placed upon a wall two feet high, composed of cut stone, forming a quadrant from each corner of the front steps, extending to the line of the street. The building receded fifty feet from said line."

The resources of the Hospital were at first very modest. In 1837, the visiting committee reported that "with twenty patients, twelve males and eight females, the house is now full."

CHARACTER OF PATIENTS

About this time the Board of Managers was gratified to be able to state that they had noticed a change for the better in the class of patients who applied for admission. This they attributed to improved conditions within the hospital and to an increased reputation abroad.

A note of kindly consideration for the patients appears all through the early reports, so that the reader is not at all surprised when the Managers feel called upon to deplore the fact "that no provision had been made in the hospital for people of color."

THE LAME

The Hospital being dedicated to the lame as well as blind it is of interest to note that in the early years of its existence there was at all times provision made for the admission of this class of cases. There was no difficulty about the treatment of such patients, the surgeons of the Hospital being equally skilful in the treatment of orthopedic cases as well as those of the eye. The early reports indicate that there were not many lame who sought treatment, not more than five or six yearly. The records show, however, that some notable operations were performed upon orthopedic cases. For instance, in 1841 it is recorded¹ that Isaac Parrish operated upon a case of club-foot in the presence of the entire Staff. That there was so much ado about it makes it reasonable to suppose that it was a most unusual event in the Hospital. In the Hospital reports for 1857 is listed "A Case of Excision of the Thigh Bone." The last case of lameness to be treated by the Staff is thought to have been in the service of Doctor Goodman in the early 'seventies.

¹ *American Journal of the Medical Sciences*, October, 1841.

PAY PATIENTS

In the early years of the Hospital patients applying for admission were expected to bring satisfactory evidence of reputable character and indigent circumstances. Some who were in a position to do so paid a small sum for their accommodations and treatment. While the number of pay patients was limited the Management was thus enabled to relieve many persons gratuitously that it would not otherwise have been able to do with the funds in hand. In 1834, it was calculated that the expense of supplying a pay patient with food and medicine was about \$2.50 per week. In 1839 the rate was fixed at not less than \$3.00 per week. The annual reports until 1886 show that a very small sum was received annually from pay patients. Since that date no charge for board has been made.

THE ORIGIN OF THE DISPENSARY SYSTEM AT THE HOSPITAL

For the first few years all patients applying at the Hospital were house patients, but in 1839 the Managers, with a view to enlarge the charities of the institution, "Deemed it proper to admit for transient consultation and advice, persons not resident in the house, whose infirmities will allow them to attend there on stated days, and receive aid from our physicians during their ordinary visits."

This was the origin of the enormous Dispensary Service of the Hospital. The report goes on to say, "Although but a short time has elapsed since this rule was adopted, many persons have already availed themselves of its provisions," and in 1844 we read, "The number of outdoor patients who receive gratuitous medical service and are furnished with medicine is large; in some months of the year being nearly equal to those admitted as patients of the Hospital."

APPEAL FOR FUNDS

The Managers were constant in their efforts to increase the Hospital's capacity, and as early as 1843 voiced an appeal to the public for funds, "To those of our fellow citizens who, possessed of abundant wealth, may desire to promote the interest and means of usefulness of the Institution." There was some slight response to the appeal, and with the funds so donated, in 1846, the upper floor of the Hospital was rearranged so that six additional rooms were obtained. One hundred sixty-three house patients were treated this year. The out-patients increased in number also, and the record shows that ninety-two such were cared for in the clinic.

SALE OF LAND ON EIGHTEENTH AND NINETEENTH STREETS

The financial situation still continuing embarrassing, the Managers made an appeal to Councils as follows: "When we remember that the population of the City is rapidly extending in the neighborhood of our valuable and spacious lot, and that the means of increased usefulness can be realized without materially encroaching on it, we would again earnestly press upon Councils the sale of a portion of the lot, and the enlargement of the present Hospital buildings or the adoption of some other course by which the benevolent intentions of the late James Wills may be more fully carried out."

Valuable as these suggestions were, it was not until 1866 that they were acted upon, when Councils took action and passed an ordinance permitting the Managers to sell strips of land bordering on both Eighteenth and Nineteenth Streets and extending from Race to Cherry Streets. This they promptly did, realizing the sum of \$134,133.34 from the venture which provided the increased accommodations so long needed.

After the sale of the lots bordering upon Eighteenth and Nineteenth Streets, residences were erected upon them, and as the city developed in that direction other buildings appeared in the neighborhood which were for the most part substantial, and many of those facing the Square were very handsome. This gave an air of delightful stability and refinement to the locality, which lasted for many years, and even the manufacturing plants that sprang up not far away were sufficiently remote not to disturb the peace and character of the Square.

It was quite fortunate for the manufacturing plants that they had the Hospital near at hand, since the numerous works of the Baldwin Locomotive Company, Niles, Bement and Company, Alexander Sellers and Company, *etc.*, were all engaged in industries which caused many eye injuries. Fortunate indeed, it was for them that their works were but a few minutes away, since it was owing to that fact that many eyes were saved which might otherwise have been partially or even totally lost. Although the Baldwin Shops have since been moved away from the city, the close proximity of the Hospital to the stations of the Pennsylvania Railroad and the Reading Railroad has enabled the injured coming from a distance to reach the Hospital readily. For the city dwellers seeking treatment, numerous street cars, and later trolley lines made it easy of access.

The Staff also found the accessibility of the Hospital of convenience to them. The Hospital offering no accommodation to their private patients, positions upon the staffs of other hospitals with such facilities were necessitated, thereby making great demands upon the time and strength of the surgeon.

SUCCEEDING the first Staff came a group of general surgeons, nearly all of whom were on the staff of the Pennsylvania Hospital and served the Wills Hospital for the opportunity it afforded them to perfect themselves in eye surgery. With but few exceptions their services upon the Wills Staff was a short one, averaging but little more than six years each. They were superior men, of sterling worth. Members of old Pennsylvania families, they were cultured gentlemen, and, as we shall presently see, able surgeons. No doubt the members of the first Staff, Hays and Littell especially, still continued to exert great influence upon the conduct of affairs in the Hospital management.

The biographies of the surgeons comprising this group follow:

JOHN NEILL

Resident Physician, 1839

Attending Surgeon, 1849-1852

Board of Managers, 1859-1862

John Neill was born in Philadelphia in 1819 and was graduated in Arts (1837) and also in Medicine from the University of Pennsylvania. He received his medical degree in 1840 when he was but twenty-one years of age. His early interest in ophthalmology was shown in his choice of a subject for his graduating thesis—"Diseases of the Eye." It will be noted that he served as Resident Physician at the Wills Hospital in 1839, one year previous to his obtaining his medical degree, and it may further be remarked that he was the first to act in this capacity. In the subsequent year he was appointed to the Philadelphia Hospital as a Resident Physician. He then sailed to the

West Indies upon a professional trip and upon his return to Philadelphia began the practice of medicine in that city in 1842.

In the early part of his career, like some other ophthalmologists and general surgeons, he taught anatomy and for a time was demonstrator of anatomy at the University of Pennsylvania. This was, as we have already shown, an ambition of Squier Littell which was never attained. Doctor Neill, was elected Attending Surgeon at the Wills Hospital in 1849 and served in that capacity until 1852 when he was elected as one of the surgeons to the Pennsylvania Hospital, a service of a more comprehensive character and better suited to his accomplishments. He served as one of the Managers of the Wills Hospital from 1859 to 1862.

Upon the fall of Fort Sumter in 1861, Doctor Neill, sensing the possibilities of the approaching conflict, broached the idea of the need of providing military hospital accommodations in advance of their immediate requirements, and through his efforts and enterprise, Moyamensing Hall at Ninth and Christian Streets, Philadelphia, was converted into such a hospital, and established by the U. S. Government as a branch of the army service about the same time as the military hospital was opened in Washington. It is interesting to recall in this connection that the enormous Satterlee Hospital was subsequently planned and managed by another Wills Hospital surgeon, Dr. Isaac Hays. Doctor Neill was made a contract surgeon, and in 1862 a Surgeon of Volunteers when he was placed in charge of the Broad Street Central Hospital, also in Philadelphia. After the battle of Gettysburg, in 1863, he was made Medical Director of the Pennsylvania State Forces and breveted Lieutenant-Colonel.

He was one of the founders of the Presbyterian Hospital

in Philadelphia (1871) and one of the first surgeons to the Institution. In 1874, he was called to the University of Pennsylvania to the new chair of clinical surgery, filling this position but one year, being compelled to resign by reason of failing health. He died in 1880 at the age of sixty years.

Doctor Neill contributed a number of papers to medical literature but all upon surgery or anatomical subjects. In collaboration with Francis Gurney Smith he compiled an "Analytical Compendium of the Various Branches of the Medical Sciences" which had a large sale and was very popular. Later on he regretted having done this, and that "he had ever been connected with a publication, however successful, which contributed so largely to make the study of medicine superficial."

EDWARD HARTSHORNE

Attending Surgeon, 1852-1859

Edward Hartshorne, son of Dr. Joseph Hartshorne, a distinguished surgeon of the Pennsylvania Hospital, was born in Philadelphia in 1818. He took his A.B. degree at Princeton, being prepared for that college in the private schools of his native city. He was graduated in medicine from the University of Pennsylvania in 1840 and then served as Resident Physician in the Pennsylvania Hospital. After studying in Europe for two years he took up the practice of medicine in Philadelphia, becoming surgeon at the Wills Hospital in 1852, resigning in 1859. He was also elected surgeon to the Pennsylvania Hospital.

During the Civil War he was a surgeon to the U. S. Army Hospital in Philadelphia and was also actively engaged in the Philadelphia branch of the U. S. Sanitary Commission, an enterprise that took upon itself during the War the responsibilities which in later years have come within the province of the Red Cross.

A surgeon of no mean ability, he took a prominent part in the development of ophthalmology in Philadelphia, serving as vice-president and later as president of the Philadelphia Ophthalmological Society. He was also president at one time of the Pathological Society.

While he wrote no books, he contributed many reviews and bibliographic notes, and a number of papers on various medical topics to the medical journals of his period.

Doctor Hartshorne was a man of gentle nature yet of strong character. While it was assumed he had inherited from his father a robust constitution, yet several early illnesses contributed towards the undermining of his health and he died in 1885 at the age of sixty-seven years.

FITZWILLIAM SARGENT

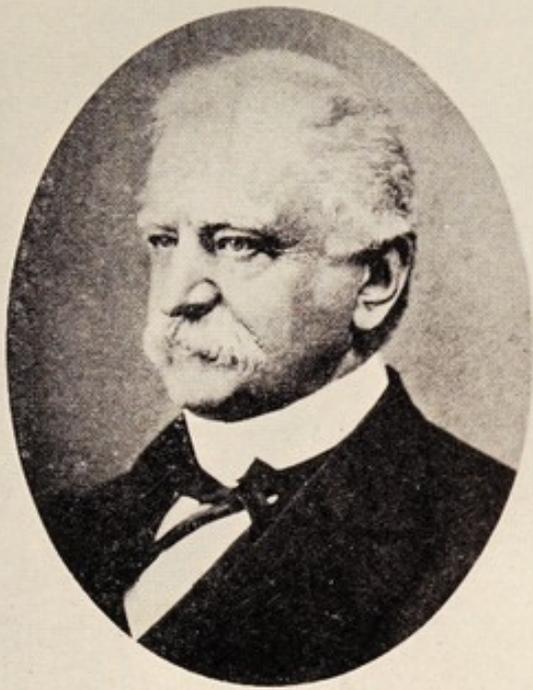
Resident Physician, 1842

Attending Physician, 1849-1852

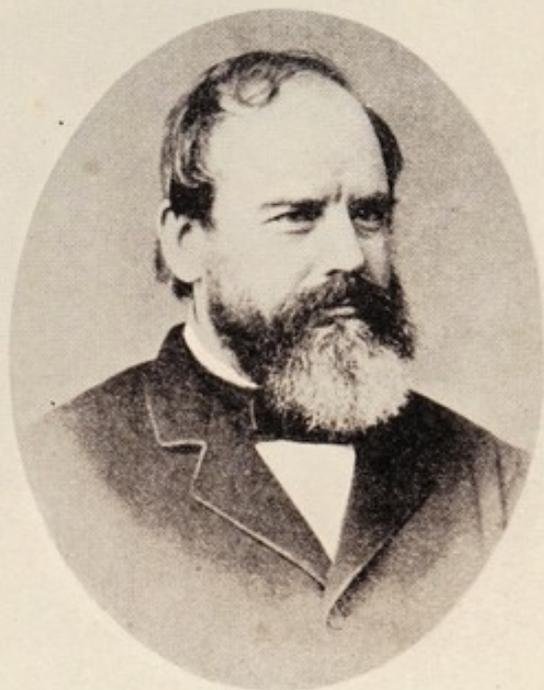
Attending Surgeon, 1852-1857

Fitzwilliam Sargent was of Puritan stock, his ancestor William Sargent having settled in Gloucester, Massachusetts, in the latter part of the seventeenth century. He was born in Gloucester in 1820. He received his B.A. degree from Jefferson College, Cannonsburg, Pennsylvania, and his M.D. from the University of Pennsylvania in the class of 1843. In 1850, he married Mary Newbold Singer, by whom he had six children, the second being John Singer Sargent, later to become the great artist, who was born in Italy in 1856. This celebrated son derived his artistic talents from both his paternal and maternal ancestry. The Sargents were all more or less artistic, all fond of sketching and painting, and of wood carving, and his mother likewise displayed no mean talent with the brush.

He served as Resident Physician at the Wills Hospital in 1842 before receiving his medical degree, a not uncommon occurrence at this time. After graduation he engaged



John Neill



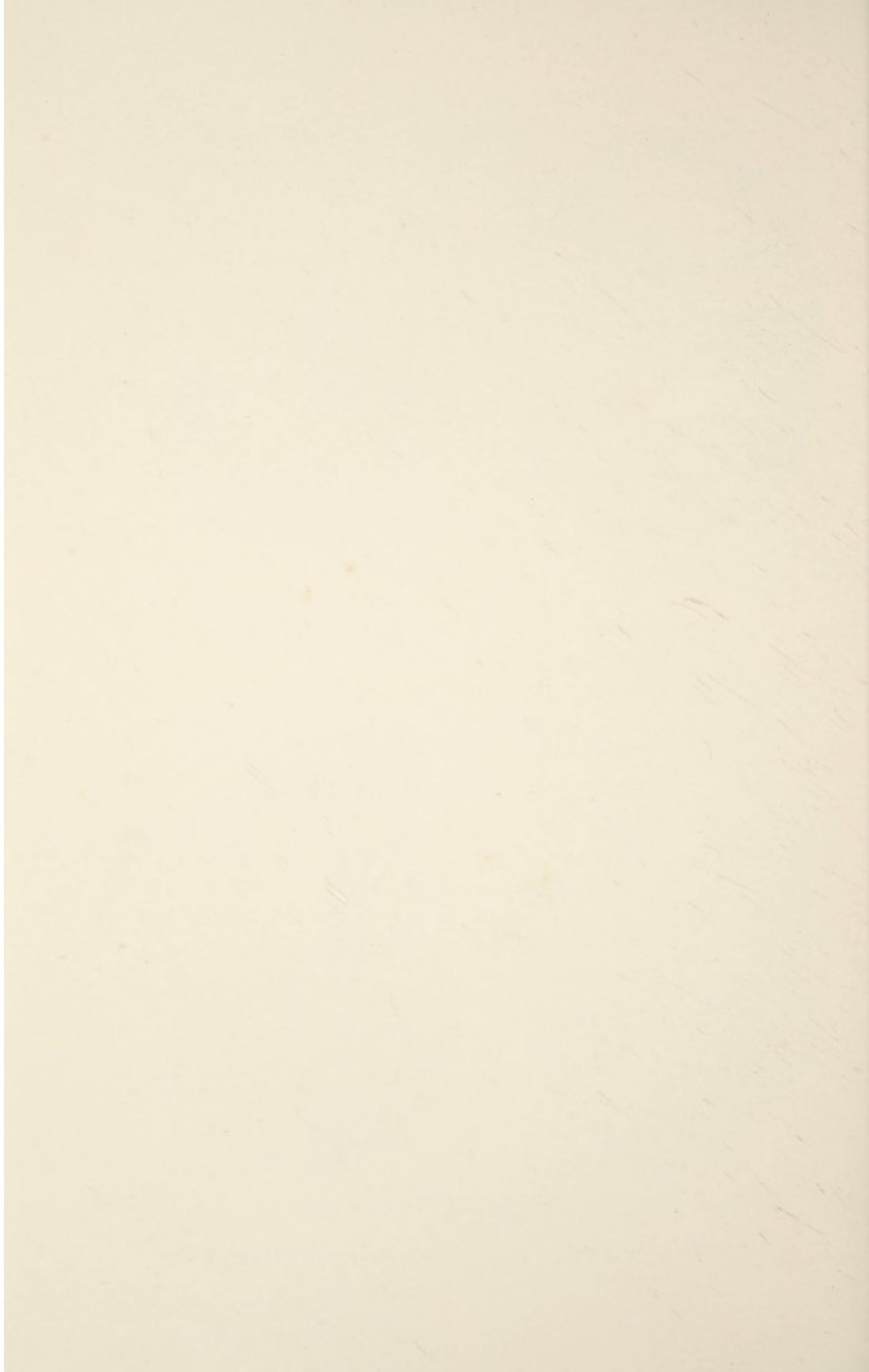
Edward Hartshorne



Fitzwilliam Sargent



Addinell Hewson



in general practice, paying particular attention to ophthalmology. He was elected one of the Attending Physicians to Wills Hospital in 1849 and served in this capacity until 1852, when he was made one of the Attending Surgeons and continued in that capacity until his resignation in 1857.

Doctor Sargent was a Fellow of the College of Physicians of Philadelphia, and had considerable literary talent, publishing a number of books. In 1848, he edited "The Principles and Practice of Modern Surgery," by Robert Cruitt. In the same year he wrote a manual on "Bandaging and Other Operations of Minor Surgery." This was illustrated by drawings made by his own hand and ran through six editions. In 1853, he edited with additions the third American from the second Edinburgh edition of "The Practice of Surgery," by James Miller. A number of articles upon general medical subjects, all of which appeared in the *American Journal of the Medical Sciences*, came from his pen.

Having obtained sufficient competency from his practice upon which to retire, and both he and his wife being in poor health, he resigned from the Wills Hospital in 1857 and retired from practice, taking up his residence in the southern part of Europe. This move was of great importance as it doubtless had much to do with shaping the career of his son John Singer Sargent. While neither Doctor Sargent nor his wife was in robust health, the determination to live abroad was doubtless instigated by Mrs. Sargent, who had resided in Italy as a girl, and being of an artistic nature and an excellent musician longed for the European surroundings of her youth to cultivate these accomplishments.

This decision brought to a close the medical career of her husband but gave to their son the opportunity to become one of the world's greatest artists. Without his early

environment, it is doubtful whether John Singer Sargent would have attained such eminence.

Although his profession was given up, Doctor Sargent never relinquished his nationality and remained to the last a steadfast American. During the Civil War and while living in London and Paris, doubtless provoked by the unfavorable criticism of those about him, he wrote several pamphlets in vigorous defense of the Union Cause, which appeared in those cities. Some of his letters home, which have been reproduced in a recent biography of his son's¹ show him to have been a man of the highest intelligence and ability. He was deeply religious as well as patriotic. The last years of his life were passed along the Riviera and in Paris. He died in London in 1899.

ADDINELL HEWSON

Attending Surgeon, 1854-1861

The grandson of a celebrated London anatomist, William Hewson, whose widow came to America through the friendship of Benjamin Franklin in 1786, and the son of a distinguished Philadelphia surgeon, Addinell Hewson possessed a noteworthy genealogical line of descent. He was born in Philadelphia in 1828 and graduated in Arts from the University of Pennsylvania in 1848, his medical degree being obtained from Jefferson Medical College two years later. He served as resident physician in the Pennsylvania Hospital, an institution which elected him surgeon in 1861, a position he held until 1877. His connection with the Wills Hospital began in 1854 when he was elected one of the attending surgeons, and terminated with his resignation from this post in 1864.

He had a large private practice, chiefly of a general character, and was an ardent advocate of the "Earth Treatment," so-called, for wounds and all forms of acute and

¹ "John Sargent," by Hon. Evan Charteris, K.C.

chronic inflammatory conditions. Later on he supplemented it by the use of sulphuretted hydrogen gas.

His associations in the British Isles were many, and it is said that Sir William Lawrence offered him a partnership if he would remain in London. At the request of the author, he edited Sir William Wilde's "Aural Surgery" in 1853, and two years later he brought out an American edition of Mackenzie's "Diseases of the Eye" in which he added a chapter on the ophthalmoscope, but scant reference to this instrument being given in the English edition. In consequence of this record he is accredited by some with having first introduced the use of the ophthalmoscope at the Wills Hospital.

Among the numerous papers published by Hewson are "On the Prominence of the Eye Ball with Sinking of the Caruncle and Semilunar Folds following the Operation for Strabismus, *etc.*";² also "On Localized Galvanism as a Remedy for Photophobia of Strumous Ophthalmia."³ He also wrote a great many other articles but chiefly of a surgical nature.

Addinell Hewson was a cultured gentleman, painstaking and serious, and so desirous was he of doing well in his public addresses, that it is said he rehearsed them first with an actor. He died in Philadelphia in 1889.

WILLIAM HUNT

Attending Surgeon, 1857-1864

Another general surgeon, descended from a long line of Quaker ancestors, was William Hunt, born in 1825. He belonged to the Orthodox Friends but was "put out of meeting" as the expression goes, because he had acted as groomsmen at his sister's wedding, when the latter mar-

² *North American Medico-Chirurgical Review*, vol. 2, Philadelphia, 1858.

³ *American Journal of the Medical Sciences*, vol. 39, 1860.

ried a member of the Hicksite branch of the sect. His general education was received in the Friends Schools in Philadelphia. He engaged in a mercantile pursuit in his early days but the urge to study medicine was so great that he discontinued it and entered the medical department of the University of Pennsylvania, being graduated in 1849. Upon his graduation he became a Resident Physician in the Pennsylvania Hospital. He served his Alma Mater as demonstrator of anatomy under Professor Joseph Leidy and from this association there began a friendship between these two men which was terminated only by Doctor Leidy's death.

Doctor Hunt was elected an Attending Surgeon to the Wills Hospital in 1857, and also to the Episcopal Hospital in the same year. He resigned from both positions in 1864 when he became a member of the surgical staff of the Pennsylvania Hospital, a position which he filled for thirty years.

He was a Fellow of the College of Physicians of Philadelphia, a member of the Academy of Natural Sciences, and was president of the Philadelphia Academy of Surgery, from 1891 to 1895.

During the Civil War he was appointed a Special Inspector of the General Hospitals of the United States Army. After the War he treated many officers of the army who remained for a time in Philadelphia convalescing, among them Captain Oliver Wendell Holmes, Jr., later one of the Justices of the Supreme Court of the United States. This act evoked a cordial letter of thanks from the captain's father, the celebrated Dr. Oliver Wendell Holmes, of Boston, in which, in a characteristic punning way, the author of "The Autocrat of the Breakfast Table" wrote, "Good-bye my friend and my son's friend whom I have delicately commemorated in my 'Hunt after the

Captain.' " A gift of author's copies of all his books was later received by Doctor Hunt from their writer.

Dr. Edward Jackson furnishes us the following anecdotes:

Two incidents witnessed in surgical lectures at the Pennsylvania Hospital, illustrate Doctor Hunt's character. Professor D. Hayes Agnew enucleated an eye, supposed to contain a foreign body. He opened the eye and searched for it some minutes; and then reported to the class that he could not find any foreign body. The plate with the eye on it was placed on a table, and Agnew resumed his lecture. Doctor Hunt went over to the table, picked up the knife and took up the search. After some time Hunt went to Agnew and pointed to something in the eye; and Doctor Agnew announced to the class that Doctor Hunt had found the foreign body.

At another time Dr. Thomas G. Morton lectured on a case of severe neuralgia, that had developed after extensive injury and scarring of the leg. He undertook to excise part of the peroneal nerve, supposed to be caught in the scar tissue. After prolonged dissection with much bleeding, he explained that in the distorted tissues he could not find the nerve; and turned to Doctor Hunt, who sat in the "ring," and asked if he would care to search for it. Doctor Hunt took scalpel and forceps in hand; and after a few minutes called attention to a strand of tissue, which proved to be the nerve. When in difficulty, many of his colleagues had the habit of calling on "old Doctor Hunt."

Doctor Hunt's contributions to ophthalmic literature are covered by one paper upon "Ossification of the Crystalline Lens," although he wrote freely upon other medical and surgical subjects, always in a practical and terse manner. He was an able surgeon and wise counsellor, extremely witty, blunt and forceful, and a very popular

man among his colleagues. He died in 1896, the result of an accident.

THOMAS GEORGE MORTON

Resident Physician, 1856
Attending Surgeon, 1859-1874
Emeritus Surgeon, 1874-1903

Although Doctor Morton will always be associated chiefly with the surgical wards of the Pennsylvania Hospital, yet he had a great interest in ophthalmology and served as Resident Physician at the Wills Hospital for a time and as an Attending Surgeon for a period of fifteen years, from 1859 to 1874, when he was made Emeritus. An excellent operator and keen clinician, he was an active figure during his term of service at this institution. He was born in 1835, a member of an old Philadelphia family, and received his education in the private schools of that city and in the University of Pennsylvania. From the latter he received his B.A. and M.D. degrees, graduating from the medical department in 1856, the subject of his thesis being "Cataract."

His long affiliation with the Pennsylvania Hospital began at once, as he was elected a Resident Physician immediately upon graduation, and served as pathologist and curator of its museum from 1860 to 1864. In the latter year he became one of the Attending Surgeons and was active in that capacity for many years, his connection with that institution covering more than forty years. He was a founder and first surgeon to the Orthopedic Hospital, also professor of clinical surgery in the Philadelphia Polyclinic and School for Graduates in Medicine (now the Graduate School of Medicine, University of Pennsylvania).

When the Civil War broke out he served almost continuously in the Medical Corps of the United States Army (as did almost all of those connected with the Wills Hospital) and was a colleague of Dr. Hayes Agnew at the

Mower Hospital, Chestnut Hill, Philadelphia, the largest Army Hospital in the United States, having four thousand beds.

In addition to his qualifications as a surgeon, Doctor Morton was very public-spirited and charitable, and acted as Commissioner of Public Health and Charities of Pennsylvania for eleven years, and as Chairman of its Lunacy Commission for the same period.

He was a familiar figure upon all public occasions and carried great weight as a speaker. His personality was striking; full of energy, able and industrious, he soon acquired a large practice and a great reputation. He was an excellent writer and contributed a number of papers of value upon surgical subjects.

His interest in the Pennsylvania Hospital is manifested by two volumes, one written in 1893 with Dr. Frank Woodbury, entitled "The History of the Pennsylvania Hospital," and another in collaboration with his colleague, Dr. William Hunt, entitled "A History of Surgery of the Pennsylvania Hospital."

His one contribution to ophthalmic literature was the report of a case of tumor of the eyeball to the American Ophthalmological Society, of which he was a member from 1868 to 1883. He died in 1903.

RICHARD J. LEVIS

Attending Surgeon, 1864-1872

Emeritus Surgeon, 1872-1890

Born in Philadelphia in 1827, the son of a physician, and educated in the public schools of his native city, Richard J. Levis was graduated from the Jefferson Medical College in 1848. He was a ship's surgeon for a time but soon settled in Philadelphia and began the practice of ophthalmology and general surgery. Appointed surgeon in the Philadelphia Hospital in 1859, he resigned in 1871

when he was made surgeon to the Pennsylvania Hospital where he had ample opportunity for exercising his great talent as a surgeon, both in an operative way and in the invention of surgical devices. An outstanding feature of Doctor Levis was his personal neatness. As was the custom, he entered the operating room without a change of garments for the work to be performed. He was a dressy man, fastidious in his attire and always given to a pronounced show of cuffs. These he managed in some way to retain unblemished, even during the most sanguinary operations, and with the operation completed, Doctor Levis had but to wash his hands, make his bow, and hasten to his private patients spotless.



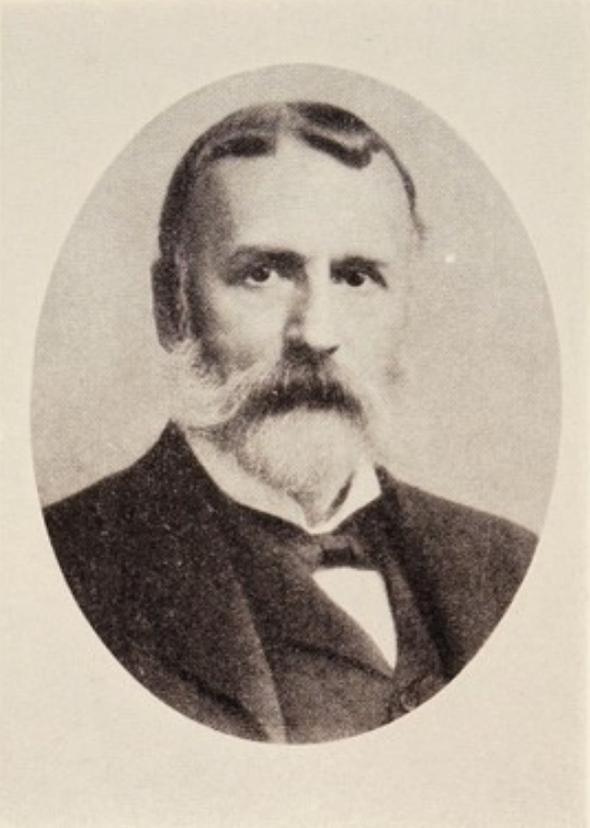
FIG. 5.—*Levis loop for removal of lens.*

He was an Attending Surgeon at the Wills Hospital from 1864 to 1872, becoming Emeritus upon his resignation in the latter year. Conceded by his contemporaries as one of the most brilliant general surgeons of his day, he brought to the service at the Wills Hospital an operative dexterity which increased the prestige of the institution considerably. While at this hospital, he devised a wire loop (Fig. 5) for the removal of the lens from the eye and also a probe graduated in caliber from the tip to the handle to dilate strictures in the lacrimal canal; both useful instruments and still to be found in the armamentarium of ophthalmic surgeons in this country.

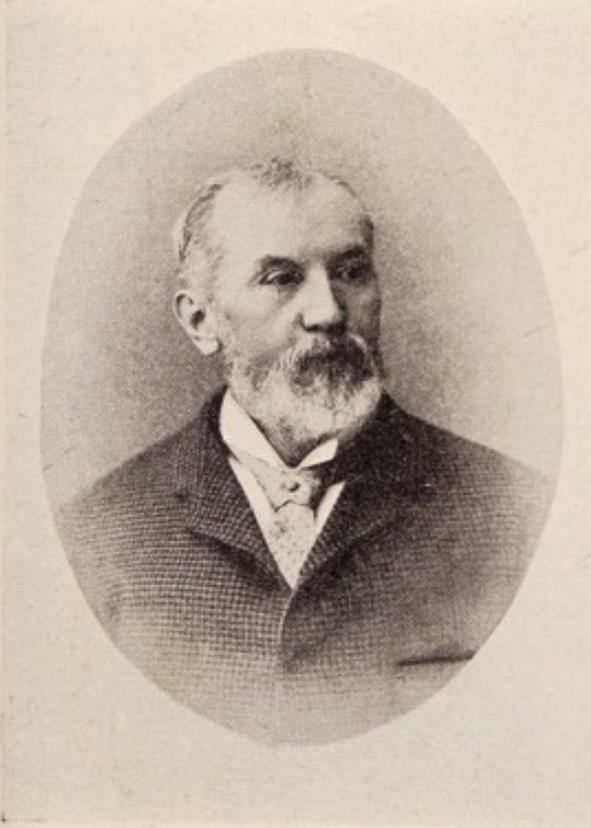
During the Civil War he was assistant surgeon to two of the U. S. Army Hospitals. He was a forceful speaker and as clinical lecturer on ophthalmology and aural surgery he served the Jefferson Medical College for many years. With his nephew, Dr. John B. Roberts, he was instrumental in founding the Philadelphia Polyclinic Hospital and School for Graduates in Medicine (subsequently the



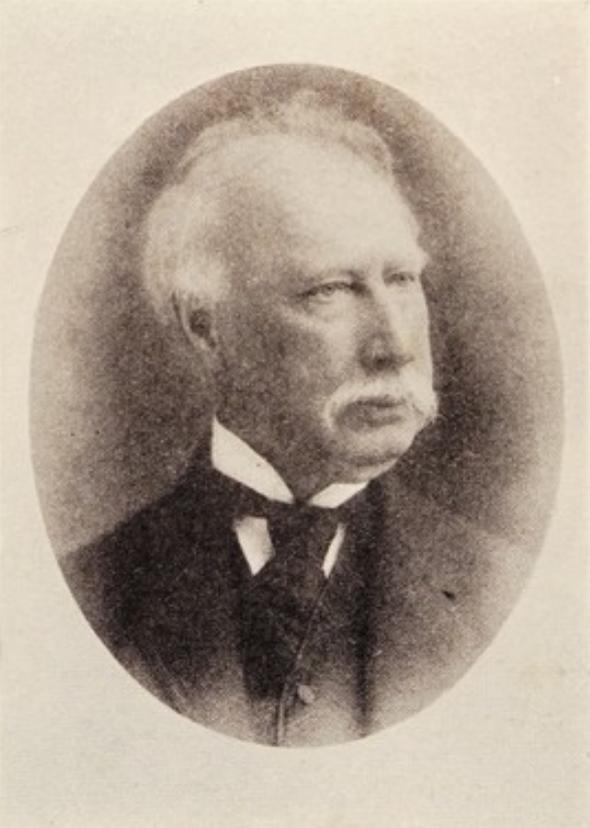
William Hunt



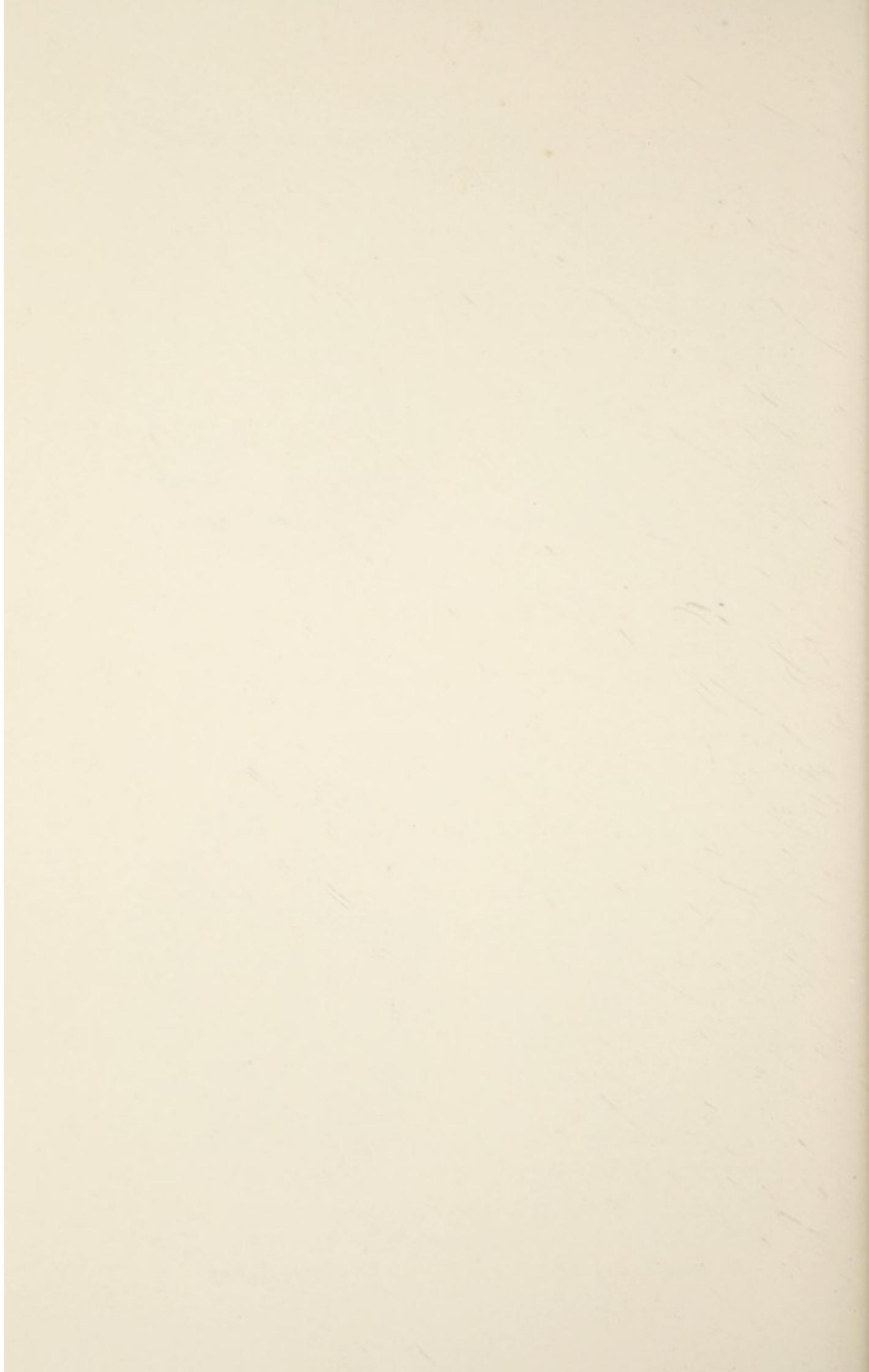
Thomas G. Morton



Richard J. Levis



D. Hayes Agnew



Graduate School of Medicine of the University of Pennsylvania) and became the first president of its Board of Trustees.

He wrote very little but the reports of many of his lectures written by his students in prize competition are preserved in the Pennsylvania Hospital. As might be expected of one of such ability, he was rewarded by being made president of his County and State medical societies. His practice was enormous and quite lucrative, his consulting room being crowded with general, surgical and many ophthalmic patients.

His mechanical genius has already been noted, but to this may be added that he maintained a well-equipped carpenter shop on the top floor of his house where he devised the various appliances which made him famous.

Dr. Edward Jackson states that after Doctor Levis's retirement from practice, he traveled in Egypt, and there performed some cataract extractions. Rising early one day, to see the sun rise, he met an Arab he had operated on the day before, who was walking around with the head thrown back, peeping through the crevice between his lids, also to see the sun rise, after his period of blindness.

Doctor Levis was a good horseman and might have been seen almost daily on the bridle paths of Fairmount Park, riding in company with his daughter.

He retired from practice some years before his death and went to live in the country at Kennett Square, occupying the house called Cedar Croft, once owned by Bayard Taylor. He died November 12, 1890.

D. HAYES AGNEW

Attending Surgeon, 1864-1868

Emeritus Surgeon, 1868-1892

Another general surgeon, perhaps Philadelphia's greatest, served the Wills Hospital as Attending Surgeon, and while he remained on the Staff for a short time only, the

Hospital must have felt the impress of his great personality and derived great benefit from his skill. He was elected Attending Surgeon to the hospital in 1864 and resigned in 1868 when he was made Emeritus. It would appear, upon consulting the records of the Hospital that during these four years of service, in addition to caring for a large number of out-patients, he operated for cataract sixty-nine times, did fifteen iridectomies, twenty-four tenotomies, five divisions of the ciliary muscle, and one enucleation.

Doctor Agnew was born in Lancaster County, Pennsylvania, in 1818 and received his early education in private country schools. He was a pupil for a time in Jefferson College, Cannonsburg, Pennsylvania, and also in Newark College, Delaware, but desirous of realizing his boyhood ambition to become a physician, he did not complete the course in Arts but entered the Medical Department of the University of Pennsylvania at an early age and was graduated in 1838. The medical school of the University had just been reorganized and all the chairs were filled by brilliant teachers. Chapman and Jackson were professors of medicine, Hare of chemistry, Gibson of surgery, Horner of anatomy, George B. Wood of materia medica and Hodge of obstetrics. Agnew's subsequent career was no doubt greatly influenced by this brilliant coterie of teachers.

Upon graduation, Doctor Agnew assisted his father, a general practitioner in a country practice, but shortly afterwards, his father's health demanding a change of locality, the younger Agnew assumed entire charge of the work. His practice being none too lucrative, and having married, Doctor Agnew gave up medicine for a time and joined with members of his wife's family in conducting their extensive iron works in Chester County, Pennsyl-

vania. In 1845, the iron firm failed and he resumed his practice in Chester and Lancaster Counties, Pennsylvania.

In 1848, he removed to Philadelphia and began the work that led to his distinguished career. With a great fondness for anatomy, he realized that to be a successful surgeon he must be a thorough anatomist and he applied himself to dissection with great zeal. Accordingly, he bought the Philadelphia School of Anatomy, which had been established in 1820 as a private Anatomical School and conducted it for a period of ten years, establishing a course in operative surgery in connection with it. In the beginning the classes numbered but nine or ten but rose later to two hundred and fifty showing the popularity of Doctor Agnew as a teacher, even at this early period. He sold out his interest in this school in 1863. During the years he was teaching in the school of anatomy he also found time to serve upon the surgical staff of the Philadelphia Hospital from 1864 until 1868, also to be active in the Medical Corps of the United States during the Civil War. He was surgeon to the Pennsylvania Hospital for nearly twenty years.

He was made demonstrator of anatomy and lecturer on clinical surgery in the University of Pennsylvania in 1863, professor of clinical surgery in 1870, and professor of the principles and practice of surgery in 1871. He was active in the Civil War in the several army hospitals established in Philadelphia during this period.

In addition to his service as surgeon to several Philadelphia hospitals he was president of the College of Physicians of Philadelphia and president of the Philadelphia County Medical Society.

His connection with the chair of surgery in the University lasted until his resignation in 1889. He was unexcelled as a teacher and gave great care to the preparation of his lectures, there being no repetition, no striving for

oratorical effect. His magnificent presence, tall and dignified, and his measured words were sufficient to hold his audience. Never was there a teacher in Philadelphia so popular and so well beloved. Doctor Agnew had an extensive knowledge of general literature, particularly of the English classics, and his public addresses were filled with references to them. He was a devout Presbyterian and was active in his attendance upon the services of his church.

While scarcely a medical institution in Philadelphia existed in his day that did not come within the scope of his influence as a practical surgeon, his activities were equally applied in the field of medical literature. Early in his career he published a work on "Practical Anatomy," and subsequently contributed many important papers upon surgical subjects often describing new methods of treatment as well as recording observations of value to all students of medicine.

His great work, entitled "The Principles and Practice of Surgery," appeared in three volumes, the first in 1878, the second in 1881 and the third in 1883. The part devoted to ophthalmology utilized one hundred and forty-five pages of the book and formed a complete treatise upon the subject. Well-illustrated and carefully written, it was well up-to-date for that time (1883). Concerning the eye operations, he said of Critchett's iridotaxis that it was rarely performed by American ophthalmologists as it was likely to be followed by inflammation which might prove disastrous to the eye. He thought more favorably of ciliary myotomy in glaucoma as he had found it often a benefit in the early stages of the disease, and in cases where it had failed to do good, he had never seen any harm come from it. While Doctor Agnew is best known for his brilliant work in general surgery, his individual accomplishments in ophthalmic practice and ophthalmic literature

place him in a position of prominence among the early American ophthalmologists.

The task imposed upon him in the composition of his work on surgery was enormous; all written in his own hand in his spare moments and in many hours snatched from sleep. His biographer, Dr. J. Howe Adams, has estimated that working eight hours daily, 417 days would have been required for this undertaking, and yet during the years of its preparation, Doctor Agnew was by far the busiest medical man in the city, teaching, caring for his practice, and operating. It was during this peak period of his activities that he was called to assume the care of President Garfield, who had been ruthlessly shot down by a deranged individual. The case attracted widespread attention, but, despite the tragic outcome, Doctor Agnew's conduct of it met with general approval.

Doctor Agnew died in 1892. He had exerted a greater influence upon surgery than any other American who had lived up to that time, a statement readily substantiated by his years of teaching, his large number of pupils, his skill as an operator and his incomparable text-book upon surgery. But, even in the face of his preëminence in general surgery, must we pause and do homage to his unusual skill and dexterity in the now highly specialized field of ophthalmic surgery.

HENRY ERNEST GOODMAN

Resident Physician, 1860

Assistant Surgeon, 1869-1872

Attending Surgeon, 1872-1895

Of German descent and a grandson of an officer in the Continental Army during the Revolution, Henry Ernest Goodman was born in Philadelphia in 1836 and received his early education in the schools of the city. He studied medicine at the University of Pennsylvania and was gradu-

ated with the class of 1859. He then served a term as Resident Physician in the Philadelphia Hospital and in 1860 was appointed to a similar position at the Wills Hospital.

At the conclusion of his house service in the Wills Hospital he entered the military service of the United States Army and remained with the troops in one capacity or another during the entire duration of the Civil War. His army service was a highly creditable one. In July, 1861, he was made major and surgeon of the Twenty-eighth Pennsylvania Infantry and after a varied and thrilling experience was honorably discharged in November, 1865, having attained the rank of Colonel and Medical Director, and after having been previously brevetted Lieutenant-Colonel and Colonel of the United States Volunteers. In the course of this service one of his brothers (he and three brothers saw active service in the War, another was enrolled) was severely wounded and it became Doctor Goodman's responsibility to advise and to perform an amputation of the leg, which was successfully done, and the patient recovered and lived a great many years afterwards. The war service of Doctor Goodman led to his subsequent close affiliation with the Grand Army of the Republic and similar patriotic organizations.

At the close of the War, he spent a year abroad studying ophthalmology, toward which he had shown an inclination at an early age. He also gave some consideration to general medicine during his stay in Europe. Upon his return to Philadelphia he engaged in the practice of general medicine with particular attention to ophthalmology and orthopedic surgery. Exclusive specialism, as has been shown, did not exist at this time, and any practitioner with a knowledge of surgery felt free to apply that knowledge to all divisions of that field. In 1867, Doctor Goodman,

together with Drs. T. G. Morton, D. Hayes Agnew, and others of prominence in that period founded the Orthopedic Hospital in Philadelphia. In 1869, he became Assistant Surgeon and in 1872, Attending Surgeon to the Wills Hospital.

Doctor Goodman's activities in connection with the Medico-Chirurgical College (now merged with the Graduate School of the University of Pennsylvania) are worthy of mention. He was made professor of surgery at this college in 1881 at the reorganization in April, and dean when the college opened in the Fall. In 1884, he was elected to the chair of surgery to succeed Doctor Oliver (the father of Dr. C. A. Oliver of the Wills Hospital Staff). This connection lasted six years.

During the period of his affiliation with the Wills Hospital he took a great interest in the Institution and was a favorite with the house Staff, to which he endeared himself by many acts of kindness. His ability as an operator was of a superior quality and his proficiency as a teacher to the group of young men who surrounded him is attested by the success these men attained in later life. He resigned from the Wills Hospital in 1895. He succumbed to heart disease in 1896, as the result of over-exertion and exposure from fighting a fire in the Union League Club House.

THE PASSING OF THE GENERAL SURGEON FROM THE PRACTICE OF OPHTHALMOLOGY

With these men passed the day of the general surgeon at the Wills Hospital. They were able men indeed, and while the advantages of confining one's practice to ophthalmology are now universally acknowledged, a word must be said for the skill of many of the general surgeons who operated upon the eye in years past. Operating upon

all kinds of cases, they were often very dextrous, and in ordinary cataract extractions were especially skilful. In their plastic work about the eye they no doubt often excelled, but in the finer work upon the eyeball the majority were far less proficient than present-day ophthalmologists. This was particularly true of muscle work, which was still very crude. Advancement operations and recessions were unknown and complete tenotomies of an internus or externus muscle too often brought a permanent result of a squint in the other direction. Fortunately, no tenotomies were essayed upon the depressors or elevators of the eyeball. Styles were much in vogue to correct disorders of the lacrimal apparatus. Until iridectomy was introduced for the cure of glaucoma by Von Graefe in 1856, nothing was done to correct that disease, and even after Von Graefe had made his wonderful discovery the technique of iridectomy was not as well understood as is the case today, while with trephining and other modern methods these surgeons were, of course, unacquainted.

The operative end-results of the general surgeon could not naturally compare with present-day methods, as anesthetics, either general or local, were unknown and antisepsis had not yet been discovered, but so far as manual dexterity was concerned many of the early ophthalmologists equalled, if not surpassed, those of to-day. Naturally, no definite time can be fixed when surgeons confined themselves solely to the practice of ophthalmology and abandoned general surgery. The transition was gradual and took some years to accomplish.

Able men taught surgery, which included that of the eye and its diseases, in Philadelphia at that time. Agnew had succeeded Gibson as professor of surgery at the University of Pennsylvania, and Samuel D. Gross followed McClellan in the same chair, two very great surgeons and

teachers, perhaps the greatest that Philadelphia has ever seen. In addition to their skill as general surgeons, both were admirable operators upon the eye and both had particular interest in ophthalmology.

Hewson, who was graduated in 1850, was the first member of the Wills Hospital Staff from the Jefferson Medical College, as prior to that time all had been students of the University of Pennsylvania.

CHAPTER VI

THE DEVELOPMENT OF OPHTHALMOLOGY AS A SPECIALTY. THE BIRTH OF MODERN OPHTHALMOLOGY. VON HELMHOLTZ, VON GRAEFE AND DONNERS. GENERAL ANESTHESIA

BY 1860, the practice of general surgeons devoting some of their time to ophthalmology was now rapidly passing, and ophthalmology as a specialty was developing. It is true that some general surgeons were yet to be found who did eye work, but the science was now upon a firm basis of its own in Philadelphia. The ophthalmoscope had been discovered, refraction elucidated and its errors corrected by scientific methods. Von Graefe had lived and had shed upon the new specialty the penetrating light of his glorious genius. The Golden Age of Ophthalmology (as Treacher Collins has happily termed it) was shedding its luster, and, in common with the rest of the world, the staff of the Wills Hospital and its patients were sharing its benefits.

Ophthalmic literature was increasing rapidly. A journal devoted solely to ophthalmology, "Annales d'Oculistique," founded in 1838, had a good circulation, and text-books on ophthalmology were multiplying. Review columns of ophthalmology were appearing in many journals devoted to general medicine and surgery, such as Hays wrote in the *American Journal of the Medical Sciences*, and were eagerly read and appreciated. Vast strides had also been made in the general practice of medicine and surgery in which ophthalmology shared.

Prior to this time, as we have seen, the dominant influence upon ophthalmology in Philadelphia was British. Since the days of John Morgan, like him, all those who

had occupied the chair of surgery in the University of Pennsylvania had been trained in London and Edinburgh, none on the Continent. But now there came a change, and a group of remarkable men, veritable geniuses, was about to appear on the Continent who would draw students of ophthalmology from all lands to them. After Von Graefe, Von Helmholtz and Donders had given their discoveries to the world, there was not one of the Wills Staff who did not come directly or indirectly under their influence. Students from this city visited them at their homes and sat at their feet, and even after these great masters had died, they continued to journey to Germany, Austria and Holland to study with their successors. Not that London was neglected, for the Staff at Moorfields still attracted Americans, and the majority of those who went abroad to study the eye spent variable lengths of time in that clinic.

While the birth of ophthalmology as a special science may be said to be due to Von Graefe, Von Helmholtz and Donders, the world for some time had been preparing for this event. For many years able men of all lands had been devoting more and more time to the study of the eye, carefully observing, recording and treating diseases of that organ, and the results of operations upon the eye were steadily improving. As we have seen, the literature upon the subject was rapidly increasing, and hospitals devoted solely to the treatment of ophthalmic cases were being established. The time was ripe for development when Von Graefe, Von Helmholtz and Donders appeared, the three being properly and universally acclaimed as the founders of modern ophthalmology.

THE BIRTH OF MODERN OPHTHALMOLOGY

The discovery of the ophthalmoscope in 1851 came first. Although it would appear that Charles Babbage, an

English scientist, actually devised an ophthalmoscope in 1847, he published no description of it, so that the honor and credit of its invention must be given to Herman von Helmholtz, who was professor of physiology and pathology at Königsburg at the time. Helmholtz was of mixed German, English and French extraction, and one of the great scientists of the century. After his professorship at Königsburg he occupied the chair of anatomy and physiology at Bonn, that of physiology at Heidelberg and physics at Berlin. Like Harvey's discovery of the circulation of the blood, that of the ophthalmoscope was epochal for with this instrument it now became possible to explore the interior of an organ hitherto inaccessible and to study tissues and structures never before visible.

The Wills Staff early appreciated the significance of the discovery. Though well advanced in years both Hays and Littell learned to use the instrument, and so impressed was Hewson by it that when he edited an American edition of Mackenzie's book in 1855, he introduced a chapter upon the ophthalmoscope, although the English edition of the same work, appearing almost simultaneously, contained but scant reference to it. Dr. W. F. Norris, writing to his father Dr. G. W. Norris, from Vienna a few years later said, "Anyone who to-day neglects the ophthalmoscope and laryngoscope is quite as culpable as he who a few years ago turned a deaf ear to Laennec and the stethoscope."

Great as was the discovery of the ophthalmoscope, the contribution to ophthalmology by Albrecht von Graefe was even more significant. This genius, the greatest of all eye surgeons, and who may justly be considered the creator of modern ophthalmic surgery, was born in Berlin in 1828. His father, Carl Ferdinand von Graefe, was generally acknowledged to have been the founder of modern plastic surgery. Albrecht von Graefe was educated in his

native city, and graduated from its university in 1847. Before establishing himself, and making up his mind definitely as to his future, he determined upon journeying to various medical centers. By good fortune he first visited Prague. Here he met Arlt, professor of ophthalmology in the university in that city. There soon sprang up a mutual recognition of the superior qualities in each, which resulted in a life-long friendship upon the part of the younger man for his teacher, and the winning of Von Graefe for ophthalmology by Arlt, as Von Graefe took the advice of his teacher and decided to make ophthalmology his specialty. All reverence then to Arlt, the simple-minded, lowly born but highly gifted Austrian, for directing Von Graefe's attention to ophthalmology!

After Prague, Paris was Von Graefe's goal, and its two chief ophthalmic clinics visited. Here he made the acquaintance of Sichel, and of Desmarres, the father of the French school of ophthalmology. Interesting accounts are given of the studious life of the young Berliner in Paris, for, though at an impressionable age and with plenty of means to indulge in frivolities, he seems to have preferred its clinics to the fascinations of that beautiful city. From Paris he went to Vienna to study general medicine and to perfect himself in ophthalmology under the guidance of the two Jaegers, Frederick and Edward, father and son. Here he remained for a semester, when he returned to Prague to his old master Arlt. Before journeying farther, Berlin was revisited for a short time to see his mother, his father having died in 1840 when Albrecht was but twelve years of age.

He then went to London and saw Bowman and George Critchett, who were at that time at the height of their fame at Moorfields. After London, Von Graefe traveled to Glasgow to make the acquaintance of Mackenzie, whose

text-book had appealed to him. Von Helmholtz and Donders were also visited.

His student journeys over, he returned to Berlin and began his life work, which was soon to startle the entire ophthalmic world and revolutionize ophthalmology. He had made the acquaintance and visited some of the greatest men in ophthalmology in Austria, France, Holland and England, had seen their work and had doubtless conferred with them on many a problem, and prepared the ground for the great discoveries he was about to make. He founded the *Archives für Ophthalmologie*, better known as *Graefe's Archives*, in 1854. Most of his discoveries are described therein. He was made professor of ophthalmology in Berlin in 1857. His first paper, upon "The Curative Effects of Iridectomy in Glaucoma," was published in 1862, and "The Linear Extraction of Cataract" in 1868. Space does not permit an even incomplete list of his discoveries, though it would seem that there was no subject in ophthalmology with which he was not familiar, none concerning which he failed to record his written opinion. He died, all too young, in 1870.

In his interesting book on the "History and Traditions of the Moorfields Eye Hospital," E. Treacher Collins has described the visit of Von Graefe to London. Donders, the great Dutch ophthalmologist, was with him at the time and an account of the meeting of the two great continental surgeons with Bowman follows:

"1851 was the year of the first Great Exhibition in London, held in the Crystal Palace in Hyde Park. Visitors from all parts of the world flocked to see it, and amongst them came Albrecht von Graefe, then twenty-three years of age, full of enthusiastic ardor and fresh from his studies in the clinics of Germany, Vienna, Paris; also Frans Cornelius Donders, thirty-three years of age, whom his friend Moleschott described with fervid admiration as 'a swelling rosebud, whose calix leaves signified nothing but pure science; the flower leaves hidden

glory. In one word, he was a man complete—perfect for his time of life.’ ”

He was at that time Professor Extraordinary at the University of Utrecht, and lectured on no less than four subjects—*viz.*, forensic medicine, anthropology, general biology and ophthalmology.

These two men and Sir William Bowman, destined to revolutionize the practice of ophthalmology, met for the first time in London in that eventful year, and remained on terms of the most intimate friendship for the rest of their lives. Donders and Bowman have left on record the following interesting descriptions of their first meeting. The first wrote:

“In August, 1851, at the International Exhibition, chance threw Von Graefe and myself together in London. I had already enjoyed the companionship of Friedrich von Jaeger, when one morning a young man in Alpine costume rushed into Guthrie’s eye hospital—he had reached London but two hours before—and threw himself into Jaeger’s arms. With the words, ‘You are made for each other,’ the latter literally threw him into mine. And he was not mistaken. From early morning, when on our way to Moorfields Hospital, we took our modest breakfast in Oxford Street amongst the workmen going to their work, till late evening, when we gratefully quitted the hospitable home of our friend William Bowman, we remained inseparably united in common object of pursuit. Von Graefe was my guide in practical work, of which I had as yet but little experience, and I again could impart to him much from the physiological side. This mutual instruction constituted for us a great attraction. These days in which Von Graefe unfolded the whole charm of his nature belong to the happiest recollections of my life.”

Bowman, in describing Donders’ visit to London that year says:

“It was his first travel, and it brought him, at least, one thing for which he had great reason to be thankful—the personal friendship of Albrecht von Graefe, an association

soon to be fraught with splendid results for the expanding science of ophthalmology; for these two men, both of the first capacity, labored ever afterwards to advance it as brothers in council, and alike fruitfully; freely communicating their ideas to each other, always in perfect harmony of aim. While Von Graefe, a stranger in London, was able to tell Donders of the European hospitals he had been visiting, and of the new clinical ideas he was maturing, as well as of the construction in that year, by Helmholtz at Königsburg, of a dioptric apparatus for rendering visible the fundus of the eye, Donders, a stranger there too, could on his side explain many discoveries of his own in the physiological field, and, amongst other things, declare the true nature of the act of accommodation, quite recently disclosed with certainty by his countryman Cramer, under, it may be added, his own inspiration and in his own laboratory."

Sir William Bowman at the time of this memorable meeting was older than his two friends, being thirty-five years of age.

In 1857 to 1859, F. C. Donders, professor of physiology and ophthalmology at Utrecht, recorded in Von Graefe's *Archives* his remarkable studies in refraction. In 1860, in the preface of his work, "Ametropia and Its Results," Donders announced his intention of producing "A Complete System of the Anomalies of Refraction and Accommodation." The anomalies of refraction, including the subject of astigmatism, were "to be treated from an anatomical and practical point of view, and the anomalies of accommodation were to be developed in their connection with the anomalies of refraction."

Being invited some time later by the new Sydenham Society to prepare his essay for an English edition, he did this, his work being translated into English by Professor W. D. Moore and published by the Society in 1864. The admirably made translation of this treatise was the means of rapidly promulgating knowledge of Donders' work, not only in Great Britain but also throughout the United

States. The text was admirably arranged and was comprehensible by those ignorant of higher mathematics, so that it made ready appeal to the practicing physician.

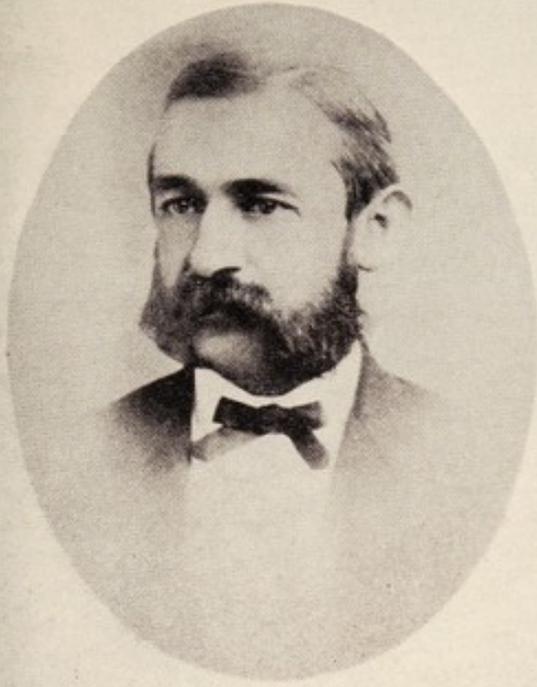
The knowledge of the discoveries of these three founders of modern ophthalmology spread rapidly, and many came from all lands to study with them and to observe their methods. Fortunate it was, that contemporaneous with these three men there lived in other countries other great men who embraced their teachings and eagerly conferred with them. There was a mutual regard for one another between these fellow ophthalmologists to the great advantage of ophthalmology.

GENERAL ANESTHESIA

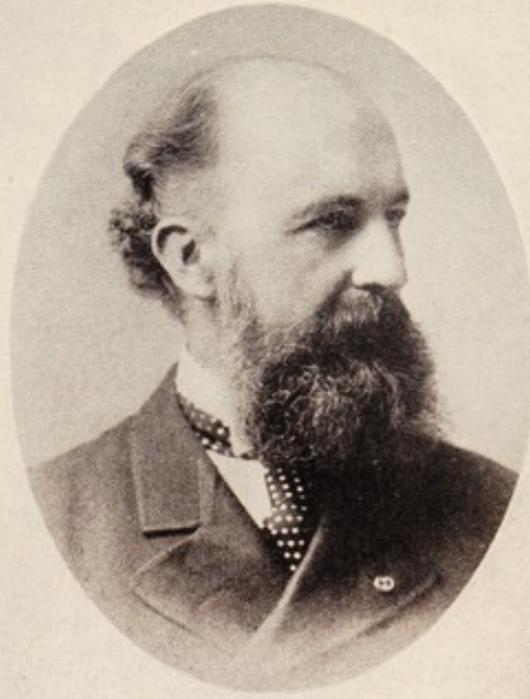
About this time the beneficent mercies of general anesthesia appeared.

In 1853, Littell had edited "A Treatise on Operative Ophthalmic Surgery," by H. Hays Walton, of London, the first American from the first English edition. This work was limited to operative surgery upon the eye, and was the first work upon the eye to contain a chapter on general anesthesia. In it, chloroform was preferred to ether and was applicable to all ages, "tranquilizing the mind, deadening sensibility, *etc.*, while to the operator it assured complete command of the patient." General anesthesia was not, however, the great boon to the ophthalmic surgeon that it was to the general surgeon; vomiting and retching too often impeded or complicated the recovery. But in a few years after their discovery, general anesthetics were more widely used in all forms of eye surgery, vomiting being largely overcome by more careful preparation of the patient before the administration of the anesthetic, and by its more skilful administration. Anesthetics, by facilitating so greatly the work of the surgeon and lessening so mercifully the suffering of the patient, have enabled

new operative measures to be introduced, and old procedures to be improved, particularly that of cataract extraction. The blessing of antisepsis had not yet been given to the world, but the day when this would happen was not far distant.



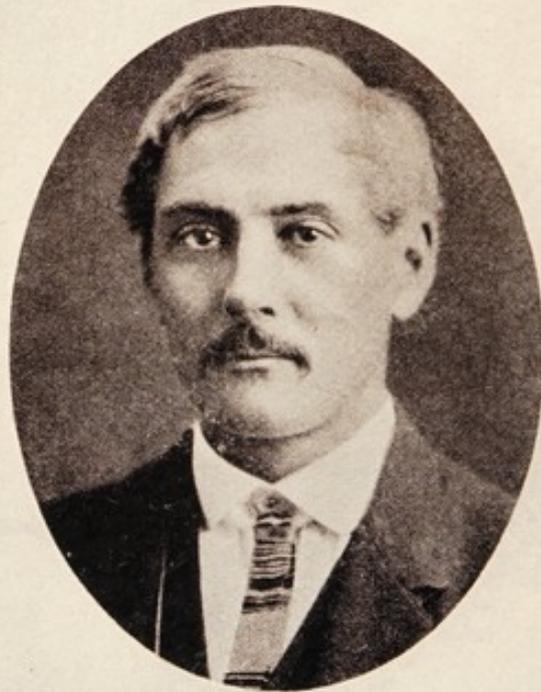
Ezra Dyer



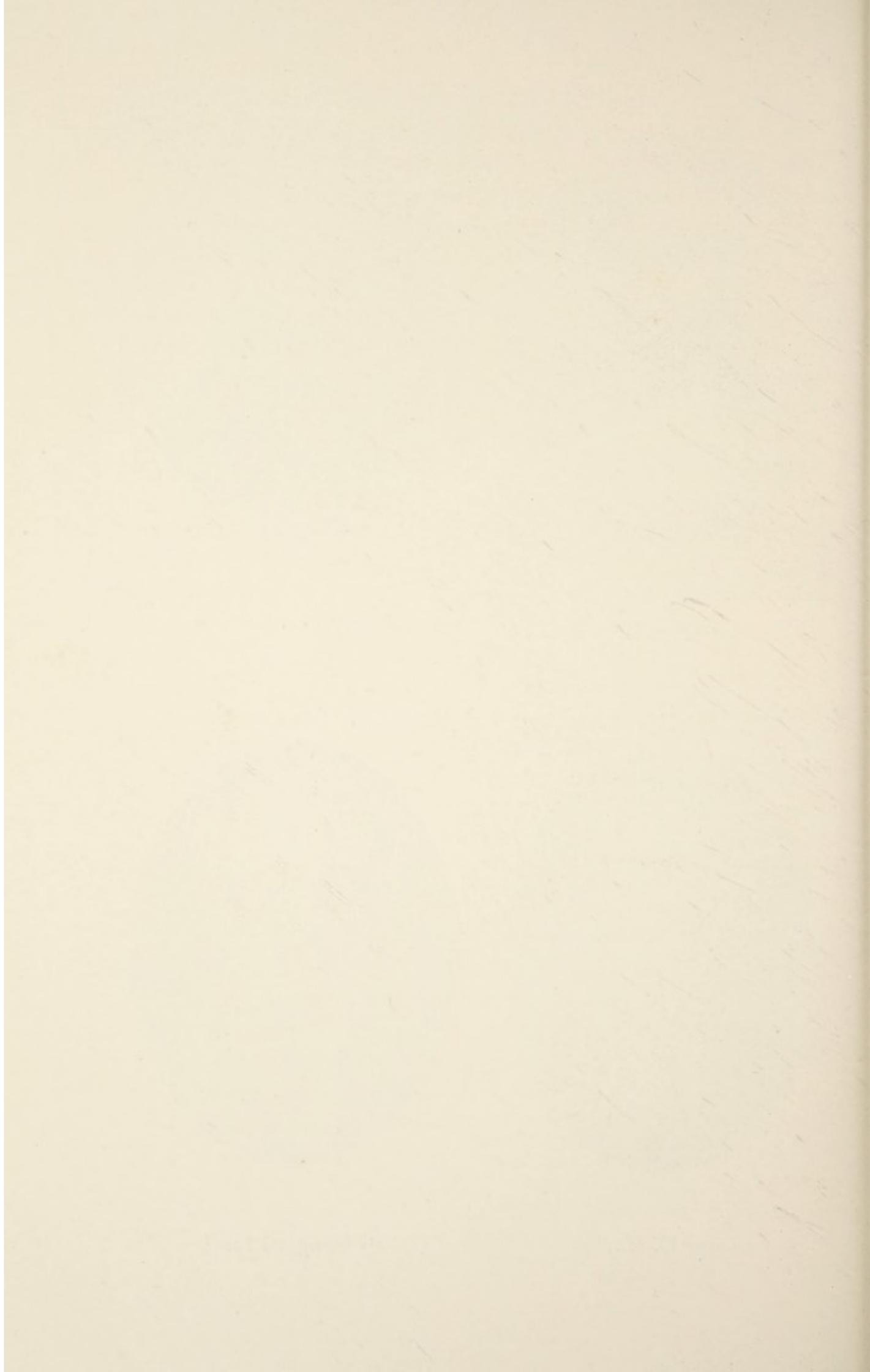
H. Ernest Goodman



George C. Harlan



A. Douglass Hall



CHAPTER VII

FIRST TRUE SPECIALISTS IN OPHTHALMOLOGY AT THE WILLS HOSPITAL. BIOGRAPHIES. COMBINED SPECIALTIES. SPECIALISM

THE old order changeth; the day of the general surgeon in ophthalmology was over. Modern ophthalmology had been born and was now installed as a separate branch of medical science. It is true that for some years afterward a few general surgeons continued to perform operations upon the eye, but those who went abroad to study after 1860 returned as ophthalmologists, as specialists in diseases of the eye. Many treated diseases of the ear as well as those of the eye, and continued to do so until the development of otology and otolaryngology relieved them of this necessity.

Those were able men who began the practice of ophthalmology in Philadelphia after the Civil War; all had the benefit of its large surgical experience. As we shall see, of the group, Dyer, Keyser, McClure, Norris and Strawbridge all studied abroad. They sat at the feet of the fathers of modern ophthalmology and brought home with them something of their spirit, as well as much information they had gathered from them. Who could not help but be impressed by the wizardry of Von Graefe, or the enthusiasm and learning of Donders? Their colleagues upon the Wills Staff were made to share with them the skill in operating and the clinical acumen which they had acquired while abroad. Thousands of students at the University of Pennsylvania were to profit by Norris's five years of study in Vienna, and an equal number at the Jefferson College were to be impressed by his friend and colleague, Thomson's keen insight into many phases of ophthalmology and by his strong personality.

The biographies of this group of men, the first real specialists in ophthalmology, follow. They were distinguished men for the most part, and all had had sound training in Philadelphia schools of medicine under unusually brilliant teachers in surgery.

It will be noted that although Doctors Hall and Harlan were elected surgeons at the Wills Hospital earlier than Doctors Levis, Agnew and Goodman, they were not included in the second group of men, though both had done general surgery in the Army. After the Civil War was over, both confined their work to diseases of the eye with the treatment of a few ear cases. These two gentlemen were therefore the first two specialists, strictly speaking, upon the Wills Hospital Staff, the former elected primarily in 1861 resigned to go into the Army in 1864 and was re-elected at the end of the War in 1868. Doctor Hall began to serve the Hospital in 1864. Directly following Doctors Hall and Harlan were Doctors Dyer, Keyser, McClure, Norris, Thomson, and Strawbridge, their appointments all occurring in the years 1872 and 1873. Doctor Schell, though not appointed until 1877, is included in this group also.

BIOGRAPHIES

GEORGE CUVIER HARLAN

Resident Physician, 1857

Attending Surgeon, 1861-1864: 1868-1901

Consulting Surgeon, 1901-1909

George C. Harlan, a Philadelphian by birth, was the son of a physician and scientist. After taking his B.A. from Delaware College in 1855, he entered the Medical Department of the University of Pennsylvania, receiving his medical degree in 1858. His interest in ophthalmology began while he was in the medical school, as is evidenced

by his graduating thesis entitled "The Iris." In 1857, prior to his graduation, it will be noted, he served for several months in the capacity of Resident at the Wills Hospital, and received a special certificate signed by the four Attending Surgeons commending his unusual courtesy and careful attention to duty (Edward Jackson). Subsequently, he served as interne in the Pennsylvania Hospital, and in the St. Joseph's Hospital. He was elected Attending Surgeon to the Wills Hospital in 1861, but the breaking out of the Civil War interrupted his service as he resigned to be appointed acting assistant surgeon in the United States Navy, an appointment he shortly relinquished to become a major in the United States Army. He was taken prisoner by the Confederates and sent to Libby prison. He was honorably mustered out of the service in 1864.

Doctor Harlan returned to active service at the Wills Hospital in 1868 and continued in the capacity of Attending Surgeon until 1901, when he resigned and became Consulting Surgeon to the Institution. He was early accepted as a surgeon of ability and became ophthalmic surgeon to the Children's Hospital, St. Mary's Hospital, and the Pennsylvania Hospital, serving the latter from 1879 until his death in 1909. In 1879 he became ophthalmologist to the Pennsylvania Institution for the Instruction of the Blind. He was also made professor of ophthalmology in the Philadelphia Polyclinic and School for Graduates in Medicine, where his knowledge of the subject and his geniality at once made him a popular teacher. In these positions, as in his service at the Wills Hospital, he showed interest and enthusiasm for the teaching of ophthalmology. Among those who had profited by the instruction he incidentally gave his assistants, were W. W. McClure, Charles A. Oliver, Edward Jackson, P. N. K. Schwenk and McCluney Radcliffe, who later

became attending surgeons to the Hospital. He also taught the residents, who saw his cases during his term of service, and the large number of students who came from the Philadelphia Polyclinic.

He was a member of the American Ophthalmological Society and became its president in 1893. He was also a Fellow of the College of Physicians of Philadelphia and chairman of its Library Committee for a number of years.

The reputation of Doctor Harlan is based upon his great skill as an operating surgeon, especially in plastic work upon the lids. Resourceful and calm, as well as encouraging to those about him, he was full of expediency in the treatment of his cases, and always seemed to have measures at his command to fit any emergency. He was a frequent writer upon clinical subjects and many of his papers were read at the monthly meetings of the Section on Ophthalmology of the College of Physicians and at the annual meetings of the American Ophthalmological Society. The chapter written by him in the *Norris and Oliver System* upon the "Surgery of the Eyelids" is especially praiseworthy. He published a little book for the layman in 1879 entitled "Eye Sight and How to Care for It," which did much to spread a knowledge of diseases of the eye.

Doctor Harlan had a fine sense of humor and knew how to look upon the bright side of things. Dr. M. W. Zimmerman, who was a former resident of the Hospital, states that upon one occasion when he had informed Doctor Norris that Doctor Harlan had spoken in favorable terms of what had seemed to the rest of the Staff a most unfavorable situation, Norris, in his slow measured manner replied, "Doctor Harlan could gild the sun with his words when he felt so inclined."

The long term of service he enjoyed at the Wills Hospital did much towards the making of the enviable repu-

tation this Institution has acquired. The high regard in which he was held by the managing board may be appreciated from the fact that the Committee on the Wills Hospital of the Board of Directors of City Trusts consulted him frequently in regard to the needs as well as the administration of the Institution. This remarkable career was brought to a close in 1909 when he was thrown from a horse which he was riding in Fairmount Park, and died.

ANDREW DOUGLASS HALL

Attending Surgeon, 1863-1893

Consulting Surgeon, 1893-1905

Andrew Douglass Hall was the son of the Reverend Richard Drason Hall and Mary Douglass Hall. He was born in Hempstead, L. I., in 1833, where his father was rector at the time. He was educated in the Academy, later in the College Department of the University of Pennsylvania, receiving his B.A. degree in 1851. He studied medicine at Jefferson Medical College, Philadelphia, under the preceptorship of the celebrated surgeon, Dr. Joseph Pancoast, receiving his medical degree in 1854. After graduation, he spent a few months in Europe, returning to become resident physician in the Episcopal Hospital (1854) and later in the Pennsylvania Hospital (1856). He began the practice of ophthalmology in Philadelphia in 1858 in association with Dr. Squier Littell, one of the original surgeons at the Wills Hospital, and in 1863 married his daughter. In this same year he was made Attending Surgeon at the Wills Hospital, a position he occupied with distinction until 1893. During the Civil War he served as assistant surgeon in the United States Army. He was one of the attending surgeons at the Filbert Street Army Hospital, Sixteenth and Filbert Streets, Philadelphia. In 1867, he was appointed ophthalmic surgeon

to St. Mary's Hospital, from which he resigned after a period of five years.

Doctor Hall spent the winter of 1872-1873 abroad, visiting eye clinics in London, Paris and Vienna, and wrote three letters to the *Medical Times*¹ of what he saw there. He had already been an Attending Surgeon at the Wills Hospital for ten years and was well qualified to pass judgment upon European methods. In his first letter he said, "I am able to speak with somewhat of confidence as to the justness of my observations." The surgeons at Moorfields at that time were Streatfield, Jonathan Hutchinson, Bowman, Critchett, Lawson, Couper, Soelberg Wells, Wordsworth and Hulke. Among the new (1872) operative procedures he speaks of Critchett's for cataract and of Bowman's method of trephining the cornea for Saemisch ulcer, the object being to relieve tension. The latter procedure appears very similar to that employed by Elliott for glaucoma some thirty years later! Jonathan Hutchinson showed him examples of the notched teeth of congenital syphilis and referred to a peculiar appearance of the temples in these cases, "Consisting of a furrow or excavation in the space between the zygomatic arch and the superciliary ridge of the orbit." Doctor Hall was impressed by Streatfield's dexterity and by the personalities of Bowman and Critchett. "Bowman is a slender, scholarly-looking man, with a quiet, gentle face and of medium height, apparently about sixty years of age." He was entertained by Bowman in his home and was evidently on terms of considerable intimacy with him. He found Critchett in personal appearance just the opposite of Bowman, "A large, well-made man, bald with a fringe of dark hair, dark side whiskers, having a quick, dark eye, a bright, mobile face, with very frequent humorous expression, jolly." Mr. Couper gave a course of ophthalmoscopic dem-

¹ January 22, June 15, July 1, 1873.

onstration at four o'clock in the afternoon followed by a lecture an hour later in which Liebreich's Atlas was used constantly in explanation of the fundus findings. He visited other hospitals also and described Bader as "a very rapid, adroit operator; in two hours he must have done twelve or fifteen operations. He is a slight gentleman of English appearance but having a slightly foreign accent. He is a German but left that country during the Revolution in 1848."

Liebreich at St. Thomas's Hospital impressed him very favorably.

"He had been family oculist to the French Imperial Family and had left Paris during the War, and being called to the chair of ophthalmology at St. Thomas's Hospital settled permanently in London. On the walls of his clinic room were the chromo lithographs so familiar to us from his Atlas, framed and glazed for reference by the students. His hand is so tremulous that it is almost painful to see him operate; and yet he operates well; for certainly his results as I saw them were admirable."

On his way to Vienna, Doctor Hall stopped in Paris, where he saw de Wecker, whom he describes, also his tattooing of the cornea for cosmetic purposes. In Vienna, he found Arlt "a homely man, of plain, earnest manner that impresses one strongly as to his thorough honesty." Edward Jaeger's and Stellwag's clinic were also visited. He thought teaching in Vienna carried to perfection, superior to that in London: "As in England as with us, teaching is too apt to be but a step to something else, to be relinquished when that something more desirable is attained. In Germany it is looked upon as a man's business; he begins as a teacher and he expects to end as a teacher and as a consequence the instruction is most painstaking and most thorough." This visit must have been of uncalculable

benefit to Doctor Hall, and to his subsequent twenty years of service in the Wills Hospital.

Doctor Hall was a Fellow of the College of Physicians, a member of the American Ophthalmological Society, and one of the original members of the Pathological Society, contributing many papers to the first volume of its transactions. While he wrote but few papers for the medical journals of his time, he has provided us, by the addresses and reports he made in the reports of the Wills Hospital, the most illuminating records of the status of ophthalmology in the Hospital and in Philadelphia to be found in any of the contemporaneous medical literature. A section of the annual report for 1877 from his pen may be quoted in this connection:

“Of the first rank in importance is the operation for the extraction of cataract; and in cases appropriate for it, the modified operation of Von Graefe is the one chosen almost exclusively. Liebreich’s operation has been tried, but discontinued, on account of the frequency of occurrence of anterior synechiae. The same may be said of Wecker’s method of extraction, on account of the difficulty in the extraction of the lens, and the danger of leaving soft cortical behind. So Graefe’s modified extraction may be called the official operation of the Hospital. In young persons, with soft lenses, the anterior needle operation is the one usually resorted to.

“The use of the spoon, or loop, to deliver the lens, once so common a sight in former years, is no longer resorted to as a matter of routine, but only in exceptional circumstances, as when pressure fails to extrude the lens, loss of vitreous, or backward dislocation of the lens renders the use of a tractor necessary.”

A quiet man of studious habits, kind to his patients and an excellent colleague, Doctor Hall’s service, extending over so many years, was of the greatest value to the Hospital. He was rarely seen in ophthalmic circles after his resignation from the Hospital in 1893, but lived a secluded

life, mingling but little with his professional friends. He died in 1905.

EZRA DYER

Attending Surgeon, 1872-1873

Member of Board of Managers, 1866-1870

Ezra Dyer was born in Boston in 1836. He obtained his B.A. degree from Harvard and was graduated from its medical school in 1859. He then went abroad and studied in Dublin, Bonn and Vienna. In this latter city his interest in ophthalmology was evoked by his contact with Arlt and others of the Viennese school. After remaining in Vienna for some time, upon the advice of Arlt, he journeyed to Berlin to study with Von Graefe. Hasket Derby, of Boston, who was a student in Vienna with Dyer and his companion on this trip, has described it in a paper written at the time, but only recently edited and published by his son.² This account is so intimate and unusual, and affords such a clear description of the great founders of ophthalmology, who, by a fortunate chance, were contemporaries and were doubtless so helpful to one another that we cannot refrain from recommending to the reader the careful perusal of the entire story.

Upon the completion of their tour, Derby and Dyer returned to their native land, the former to Boston and the latter to Philadelphia, both to make good use of the wonderful opportunities they had enjoyed during their post-graduate period.

The Civil War broke out shortly after Dyer's return to Philadelphia and he was placed in charge of all the eye and ear cases in the Philadelphia Army Hospitals. When the Satterlee Hospital (the West Philadelphia

² "Personal Recollections of Von Graefe, Arlt and Donders," by Haskett Derby, edited by George S. Derby, *Archives of Ophthalmology*, September 29, 1930.

Army Hospital) was constructed and placed under the management of Dr. Isaac Hays, Dyer became a member of the staff of attending surgeons. Some time after the War he became a member of the Board of Managers of the Wills Hospital. He was also one of the original members of the American Ophthalmological Society, organized in 1864.

Dyer will be best remembered, perhaps, by a practice which he introduced and described in a paper read before the American Ophthalmological Society in 1865 entitled "Asthenopia Not Connected with Hypermetropia." A paper with the same title was read by him before the International Congress in 1876. Both papers described a method perfected by him for using the eyes for near work in daily progressive periods of time, in order to overcome asthenopia after long illnesses. This method, generally known as "Dyerising," evoked wide discussion. Hirschberg later called attention to the fact that Von Graefe had practically described the same method of treatment in a previous paper.³ In this paper Von Graefe pointed out that in those cases where there is a lack of strength in accommodation at near work, there should be not only rest for the tired muscles but also methodical exercise of the same, the latter being carried out for weeks and months. Von Graefe also pointed out that a muscle is best exercised when it is in a state of partial contraction. Hirschberg claims that others had called attention to the fact that the methodical employment of convex lenses is necessary in treating such forms of asthenopia.

Credit must be given Dyer for introducing Snellen test type into America. Upon his visit to Donders he met Snellen, his assistant, who had explained to him the principles upon which the type were based, and the charts were actually introduced here in America before they

³ *Archiv. für Ophth.*, vol. 2, p. 1171.

were published in Europe. Dyer's letters, which were of different patterns placed in juxtaposition, were printed on a sheet for private use, and distributed by him among his colleagues. John Green⁴ was of the opinion "Credit must be given Dyer for his prompt recognition of Snellen's invention, and for making it known in this country in advance of its general promulgation in Europe." An ingenious perimeter was also invented by Dyer in 1884.

Dyer's brilliant career in Philadelphia came to an end in 1873, when he was compelled to leave this city on account of the illness of a member of his family. He removed to Pittsburg, where he was equally successful in obtaining a large practice. While in that city, in 1880, misfortune again overtook him, for he suffered a severe fall which necessitated his permanent retirement from practice and his removal to Newport, R. I., where he died in 1887. A biographical note⁵ says of him: "Unswerving integrity, unselfish and enduring loyalty, a child-like faith in those he loved—these were among the characteristics of Ezra Dyer."

PETER DIRK KEYSER

Attending Surgeon, 1872-1897

Member of Board of Managers, 1865-1870

Peter Dirk Keyser came from an old Germantown, Philadelphia, family of Dutch ancestry. He was born in Philadelphia in 1835 and educated at Delaware College, being graduated in the class of 1852. Chemistry appealed to him and he studied this branch of science under Professor Genth, a distinguished chemist of Philadelphia.

He served for a time in the United States Army during the Civil War but resigned on account of ill health and went abroad. He studied medicine in Jena and took his

⁴ *American Journal of the Medical Sciences*, vol. 53, p. 117, 1867.

⁵ Doctor Harry Friedenwald.

doctor's degree there in 1864. Becoming interested in ophthalmology, he studied that subject intensively in Berlin, Paris, Holland and London. Upon his return to Philadelphia in 1865 he engaged in private practice, paying particular attention to ophthalmology although not restricting himself to that subject, which had not at that time risen to the dignity of a specialty in America.

In 1870, he founded the Philadelphia Eye and Ear Hospital, although previously (in 1868) he had anticipated this move by delivering courses of lectures upon "Refraction and Diseases of the Eye in General." This hospital was situated first at Eleventh and Buttonwood Streets but removed in 1872 to 516 N. Eleventh Street. Doctor Keyser was the only surgeon on its staff and it is probable that the institution was conducted solely in the interests of its founder. But two annual reports appear to have been published and it is more than likely that its existence terminated when Doctor Keyser became surgeon at the Wills Hospital. In its first year there were nearly eight hundred out-patients and thirty-two in-patients. In 1870, one hundred forty-one operations were performed upon the eye, seventeen of which were for cataract. Instruction was also given in ophthalmology and otology. Thirteen students took the course, some of whom were practicing physicians.

After becoming surgeon to the Wills Hospital in 1872, he served that institution with unswerving fidelity until his death in 1897. He was elected professor of ophthalmology in the Medico-Chirurgical College in 1884 and served until 1895. He was vice-president of the section on ophthalmology of the Ninth International Congress of Medicine held in Washington in 1887. He was also a member of the Loyal Legion and of the G.A.R.

Doctor Keyser's contributions to ophthalmic literature were mostly of a clinical nature. Especially outstanding

was the report made in 1883 concerning his observations and operations covering his ten years' experience at the Wills Hospital published under the title "Some Ophthalmic Observations During Ten Years Service (1872-1882) in the Wills Hospital."⁶ He had come to Wills with the increase in the number of Staff surgeons and with the changing of the periods of service—each surgeon serving throughout the year, three days a week. This increased the work of the hospital materially and as high as 200 patients were treated daily. Doctor Keyser in ten years of service had 5243 new cases under his care.

His analysis of this experience reflects not only the character of his work but gives a good idea of what possibilities were open to all of his *confrères* associated with the Hospital. He performed 1282 operations during this period, of which one hundred forty-eight were extraction of cataract; thirty-six discissions of soft cataract, with four suction by Bowman's pump; one hundred sixty-four iridectomies; five iridotomies; eleven Passavant's operation for posterior-synechia; one of Streatfield's operation for the same condition; ninety-two tenotomies of recti muscles; one hundred six operations on the lacrimal apparatus; two hundred lid operations; eighty-seven enucleations of the eyeball; three optico-ciliary sections; four drainage operations after the De Wecker method, and four hundred forty-two sundry operations on the cornea, lids, conjunctiva, *etc.* He also gave notes of a family with congenital cataract which had extended through four generations.

In considering the ultimate result of his cataract operations, he regarded vision equal to 20/200 as perfect success, and on this basis he obtained nearly 92 per cent. perfect results. The total loss he acknowledged was 6 per cent. Those cases of occlusion of the pupil which might have

⁶ *Transactions of the Medical Society of Pennsylvania*, vol. 15, 1883.

been improved had consent been given for further operation, he placed at $2\frac{1}{2}$ per cent. In reviewing his own statistics he states that "one cannot expect to obtain in a hospital, in which the indigent alone are admitted, as good results as one obtains among a better class, as in private patients. Also that in a hospital where all cases of eye diseases are admitted and all kinds of operations upon the eye and its appendages performed, there is naturally more danger of inflammation and sloughing from the germs of the disease, that will in spite of all the cleanliness possible in such institutions, develop in the house and be apt to spread infection. In private practice the patients are removed from such dangerous influence, and a greater percentage of success is always obtained." He believed that, given the same advantages as the private cases, the percentage of perfect success, could be brought to 96 or 97 per cent. in the hospital cases.

In his cataract operations he employed the Von Graefe incision in nearly all cases, but nearer the corneal limbus and not so far back as recommended and employed by the German surgeon. In his cystotomies, he removed as large a piece of the anterior capsule as possible, thereby avoiding discission of secondary cataract. He claimed that this procedure reduced the danger of subsequent inflammation and rendered the necessity of operation for occluded pupil less frequent. He deprecated too frequent handling of an eye after an operation and did not dress the wound in ordinary cases for twenty-four hours, and where vitreous had been lost, not for two or three days. Absolute cleanliness he regarded as essential at all times in the care of all cases.

Doctor Keyser was a strong personality, very alert, with a keen eye and active manner. He was slightly above medium height and rather thin, with a somewhat soldierly bearing. He was a fluent speaker and enjoyed great popu-

larity as a lecturer. His skill as a surgeon was widely known and built for him a large and lucrative practice. His twenty-five years' service at the Wills Hospital not only greatly enhanced his reputation but also that of the Hospital. He died in 1897.

WILLIAM WALLACE McCLURE

Resident Physician, 1866

Assistant Surgeon, 1868-1872

Attending Surgeon, 1872-1907

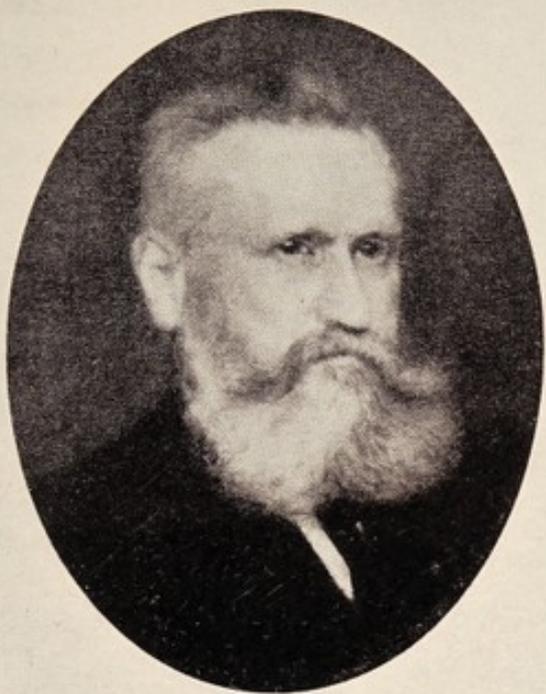
Consulting Surgeon, 1907-1923

William Wallace McClure was born in Philadelphia in 1842. He received his preliminary education in that city and was graduated from the Jefferson Medical College in 1864, becoming an interne in the Philadelphia Hospital the same year. The Civil War, now at its height, placed great demands upon the medical profession in Philadelphia and Doctor McClure became affiliated in consequence with the U. S. Army Hospital known as the "Satterlee," where Dyer, Isaac Hays, S. Weir Mitchell and other well-known men also served. In 1866 he was made a Resident Physician in the Wills Hospital, serving under Doctors Morton, Hall, Levis and Agnew—a most distinguished group. Upon the completion of his term of service, he went abroad and visited the foreign clinics of repute. He found those of Von Graefe in Berlin and those of the Vienna School most instructive. While in Vienna he worked for a time in Stricker's laboratory. At or about the same time, Wm. F. Norris, subsequently of the Wills Hospital Staff, was engaged in some original research in this laboratory. In 1868, Doctor McClure returned to Philadelphia and was made Assistant Surgeon at the Wills Hospital in the service of Doctor Harlan. In 1872 he became ophthalmic surgeon to the Presbyterian Hospital, Philadelphia, which connection he held until his retire-

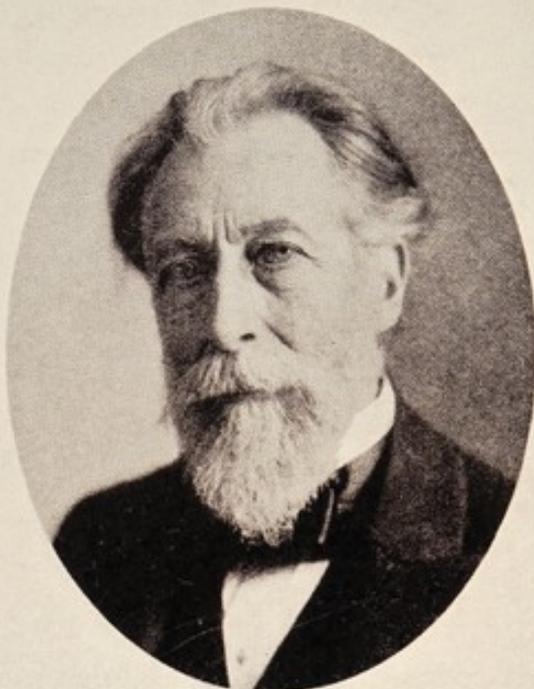
ment in 1886, when he was made consulting ophthalmic surgeon. In the same year (1872) he was made Attending Surgeon to the Wills Hospital along with Dyer, Goodman, Keyser, Norris, and Thomson, only Doctors Harlan and Morton remaining of the old Staff.

While this new Staff was outstanding, it did not remain intact for very long. In 1873, Doctor Dyer resigned for causes purely personal and Doctor Strawbridge took his place. Doctor Morton and Levis resigned in 1874 and their positions were allowed to remain unfilled. This marked the passing of the general surgeon from the activities of the Wills Hospital. In 1877, Doctor Thomson resigned and Doctor Schell was elected. This staff of eight continued until Doctor Strawbridge resigned and Doctor Schell died in 1890.

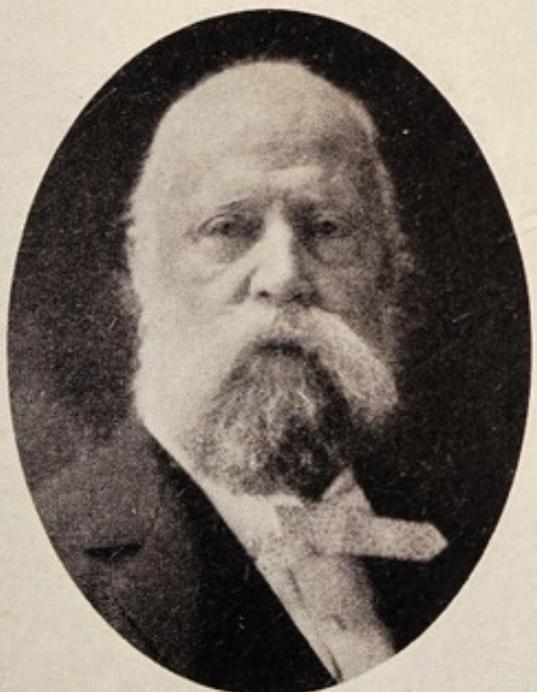
Very early in his term of service, Doctor McClure delivered a course of lectures at the Wills Hospital which became very popular and were well attended, crowding the front clinic room where they were given. In these lectures, Dr. S. Lewis Ziegler, who wrote a biography of him, says: "He discussed the human eye in its minutest details and also presented studies in comparative anatomy, especially portraying the fundus appearance of birds and fishes through stereoscopic slides. Among other things, he exhibited a stereoscopic diagram of his new plastic operation for ptosis which clearly antedates (1867) the one we know as the Hunt-Tansley operation, although the details are slightly different." For these lectures he stained and mounted many beautiful microscopic sections of the retina and other ocular tissues, which were far above the average of that day. He likewise prepared some beautiful models of the eye and its musculature, which Dr. Norris considered so fine that he frequently borrowed them for use in his annual demonstrations before the senior medical



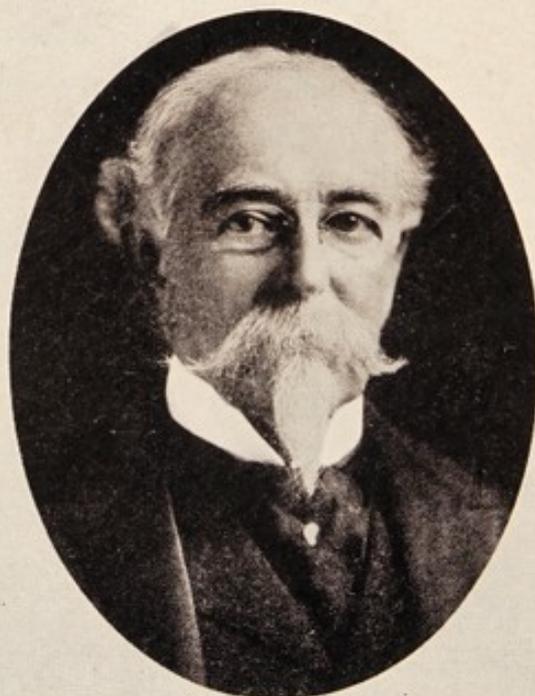
Peter D. Keyser



William W. McClure



William F. Norris



William Thomson

class of the University of Pennsylvania. The success of these lectures incurred the envy of certain members of the Staff and in 1877 caused the Board of Directors of City Trusts to order their abandonment. Doctor McClure never recovered from this rebuff. He never published his lectures nor did he add anything to the literature of ophthalmology.

Upon his return from Europe he had made many original studies of the ocular fundus and demonstrated the Helmholtz ophthalmoscope to his colleagues. No one was better acquainted than he with the refraction of the eye. He was the first to determine the ocular refraction of his friend Doctor William Thomson and directed that gentleman's attention to ophthalmology. Doctor McClure was at one time offered the chair of ophthalmology at the Jefferson Medical College, but he declined, this decision being influenced by shyness and a distaste for appearing in public.

His work in improving the methods of examining the ocular refraction gives us insight to his thoroughness. He was the first to add fractional strengths and lenses to the trial case. These were made in "eights" of a diopter up to 1.00 D., and in "quarter" diopters from 1.00 D. to 2.00 D. All the lenses at this time, however, were constructed upon the English inch system and these fractional strengths were merely the equivalent of the figures given above. It was not until the Nacet (French) trial cases were introduced into America that diopters came into common use in our country. His private case records were complete and voluminous while those of his hospital work were extremely meager.

Doctor McClure was extremely ingenious. He invented in 1868 his iris scissors (Fig. 6) with the delicate "Balloon springs" interlocking near the tips. When correctly made

and properly sharpened they opened of their own accord and closed with perfect adaptation at the will of the operator. Doctor McClure was a skilful operator, and, though indifferent to antiseptics, had astonishingly good results. He was also a good therapist, and his hints as to the proper drugs to apply in certain cases were unusually productive of results.

He was fond of curios and Oriental rugs and possessed many fine examples of them. His chief recreation was fishing. Nothing delighted him better than to go off in the woods with some friends camping and fishing, and he invariably returned with a basketful of fish. He was also an expert rifle shot. Although always retiring, he became

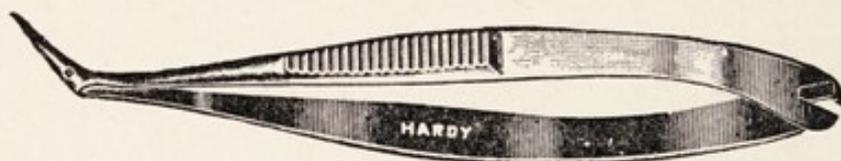


FIG. 6.—*McClure's iris scissors.*

more so upon the death of his son, Doctor Sorden McClure, who was his Assistant Surgeon at the Wills Hospital. The sudden loss seemed to overwhelm him and he resigned from the Wills Hospital in 1907 after a service of more than forty years. He died in 1923, of cerebral hemorrhage.

At the time of Doctor McClure's death the Board of Directors of City Trusts spread the following note upon its minutes:

"Doctor McClure's connection with the Wills Hospital for over forty-one years deserves more than a passing notice. He was appointed Resident Surgeon in 1866, an Assistant Surgeon in 1868 and Attending Surgeon in 1872, and in all of these positions and for all these years his skill and the result of his work were preëminent. He has the heartfelt thanks of the thousands of patients whom he served so efficiently and he deserves this acknowledgement from our Board."

WILLIAM FISHER NORRIS

*Attending Surgeon, 1872-1901**Consulting Surgeon, 1901*

William Fisher Norris was one of Philadelphia's most distinguished ophthalmologists. Born in 1839, the son of an eminent surgeon of that city and descended from a prominent and wealthy family, he had many opportunities for development and advancement, of which he took full advantage. Graduating in Arts at the University of Pennsylvania in 1857 and in Medicine four years later, he became a resident physician in the Pennsylvania Hospital. During the Civil War he served in the Medical Corps of the United States Army with distinction, and was in charge of the Douglass Hospital in Washington, D. C. While in the army and in association with his later colleague, Dr. William Thomson, the first photographic negatives were made, by the wet process, of the fields of the microscope with the high and low powers. This work initiated the results obtained later through the resources of the Surgeon-General's Office, and was the means of interesting both Doctor Norris and Doctor Thomson in optics, and led them to their choice of ophthalmology as a profession. At the conclusion of the War, Doctor Norris went to Vienna and obtained there the most thorough training in ophthalmology any American ophthalmologist had had up to that time. He remained in that city five years and studied with Arlt, Jaeger and Mauthner, and worked for a period with Stricker in his laboratory. In conjunction with the latter he published a paper upon "Experimental Pathologic Histology of the Cornea."

At that time the Vienna school was at the height of its glory and Doctor Norris obtained in that city a splendid training for his life work; he also met in that city the lady who eventually became his wife.

While in Vienna he purchased the original drawings made by E. Jaeger to illustrate his famous atlas. The illustrations are wonderfully executed and invaluable for teaching purposes. They are now in the possession of the College of Physicians of Philadelphia.

After a short tour in company with Dr. Richard Derby of New York, a younger brother of Dr. Hasket Derby, embracing the clinics in Berlin, London, Paris and Utrecht, he returned to Philadelphia in 1870. Very shortly afterwards he was appointed lecturer upon ophthalmology and otology at the University of Pennsylvania. The otological part of the chair, however, was soon relinquished and he became clinical professor and finally, in 1876, full professor of ophthalmology. In this interval he had worked very assiduously in the creation of the University Hospital. He was made Surgeon to the Wills Hospital in 1872 and served until his resignation in 1901.

Doctor Norris was the first secretary of the Philadelphia Ophthalmological Society, an organization closely allied with the development of the science of ophthalmology in Philadelphia, although its existence was rather brief. He was elected a member of the American Ophthalmological Society in 1870 and became its president in 1884.

The literature of ophthalmology is rich with many valuable contributions from the pen of Doctor Norris. In conjunction with Dr. C. A. Oliver, at one time his Assistant Surgeon at Wills Hospital, he published "A Text-book of Ophthalmology." In this book he acknowledged his obligation to the teaching he had received in Vienna from Arlt, Jaeger and Mauthner. Later, in collaboration with Doctor Oliver, he published the monumental work, "A System of Diseases of the Eye," in four volumes, to which more than sixty American, British, Dutch, French, German and Spanish authors contributed. Doctor Norris contributed the chapter on the "Crystal-

line Lens." This work was of great importance, second only to that attained by the famous German work edited by Graefe and Saemisch and known as "Das Handbuch der Gesamten Augenheilkunde." His minor literary work was of an equally high standard and included the chapter on "Medical Ophthalmology in the Pepper System of Medicine."

Doctor Norris's knowledge of ophthalmology and his upright character led many men who later became prominent eye surgeons to become his assistants both at the university and Wills Hospitals. At the former Doctor Oliver acted as his Assistant Surgeon until he was promoted to the Staff and was succeeded as Assistant by Dr. William Zentmayer, who remained in that capacity until Doctor Norris resigned and he was elected Attending Surgeon. At the university Doctor Norris had associated with him Doctors S. D. Risley, E. O. Shakespeare, G. A. Piersol, B. A. Randall, James Wallace, G. E. deSchweinitz, G. O. Ring and J. T. Carpenter, Jr., a brilliant galaxy of men. Doctor Norris's teaching was of the soundest, and by reason of his own personality, as well as that of those associated with him in his hospital services, he exerted an influence upon ophthalmology second to none other, perhaps, in America. In a recent paper,⁷ his successor in the chair of ophthalmology at the university, Doctor DeSchweinitz, said of him, "As teacher, author, editor, surgeon, he pursued his fine career with great distinction and dignity. His influence for good on the young men he taught and with whom he came in contact constitutes a valued asset in the development of ophthalmology of this city. He was an exemplar and a model of the ethical life

⁷ DeSchweinitz, George E.: "The Establishment, Development and Work of the Department of Ophthalmology in the School of Medicine of the University of Pennsylvania," *The General Magazine and Historical Chronicle*, University of Pennsylvania, October, 1926.

of our profession." Doctor Norris died in 1901 of pneumonia.

WILLIAM THOMSON

Attending Surgeon, 1872-1877

Attending Surgeon, 1896-1902

Consulting Surgeon, 1902-1907

This strong personality will be remembered chiefly for his work in conjunction with his friend, Dr. S. Weir Mitchell, in demonstrating that headache and other nervous reflexes might be due to eye strain, and also for his test for the detection of color-blindness. He was born in Chambersburg, Pennsylvania, in 1833, and after attending the schools there came to Philadelphia and entered the Jefferson Medical College, from which he was graduated in 1855. Upon the breaking out of the Civil War, with a number of Philadelphia physicians and surgeons who were later to become his colleagues in civil life, he entered the Medical Corps of the United States Army and served until peace was declared. Part of that service was with Dr. William F. Norris, as has already been stated.

While he assumed a country practice for a short time after leaving military service, he returned to Philadelphia, and, inspired by his work with Doctor Norris in the Douglass Hospital in Washington, D. C., he took up ophthalmology as a life work and soon acquired a large and distinguished practice. His contact with Dr. W. W. McClure, who first corrected his troublesome error of refraction, exerted considerable influence upon him and led to his study of ocular refraction most intensively and to his contributions upon that subject. Very early in his work he had observed that if his own pupils were contracted by holding a candle-flame between his eyes and the book he was reading, the discomfort caused by his hyperopia (5.00 D.) was much less. His first paper was

upon the Scheiner experiment with the perforated disk, with the description of an instrument for the practical utilization of this test in the examination of the ocular refraction. A later invention was an instrument for testing the refraction by means of circles of diffusion. Doctor Thomson was an early advocate of the employment of cycloplegics in refraction work and believed in ordering full correction, being one of the first to recommend it in myopia. Doctor Harlan, his colleague and biographer, says of him that "He was a pioneer in refraction and the reputation for careful and accurate work in this field enjoyed by the 'Philadelphia School' in the early days of modern ophthalmology was largely due to his influence upon the ophthalmic surgeons and opticians of that city."

His appointment as ophthalmic surgeon to the Pennsylvania Railroad Company afforded the opportunity to bring to the attention of the ophthalmic profession a simplified form of the Holgrem wool test, which is known as the Thomson stick test and has enjoyed many years of use in connection with most of the American railroads, by reason of the fact that it may be applied by a layman or even one himself color-blind. He also invented a lantern-color test.

Doctor Thomson became Attending Surgeon at the Wills Hospital in 1872, joining the group of able men who were later to become prominent and distinguished. In 1877, he resigned and was made Emeritus Surgeon. However, the desire to afford his son Dr. Archibald Thomson an opportunity to acquire the training in ophthalmology which only the Wills Hospital could give, instigated him again to become surgeon when he appointed his son assistant surgeon in his clinic. This affiliation continued until his final resignation in 1902 when he was succeeded by Doctor Posey, who continued with Dr. Archibald Thomson as his assistant surgeon.

Of greater importance than his work at the Wills Hospital was his connection with the Jefferson Medical College, which institution he served successively in the positions of lecturer, honorary professor, professor, and Emeritus professor of ophthalmology.

In the field of ophthalmic literature he contributed many valuable and outstanding papers. He also edited an American edition of Nettleship's "Diseases of the Eye," to which he added a chapter on color-blindness. The chapter on "Diseases of the Eye" in S. D. Gross's "Surgery" was from his facile pen.

He was a member of the American Ophthalmological Society and a Fellow of the College of Physicians of Philadelphia, as well as of other prominent medical organizations.

In appearance and in dress Doctor Thomson was an outstanding figure. Being very musical in his taste, he rarely missed a performance of grand opera in Philadelphia. Sitting in a front row with one of his daughters, his white hair and faultlessly trimmed Van Dyke beard were sufficient to make him a prominent figure, but when enhanced by the scarlet skull-cap which he affected to ward off draughts, his appearance became particularly striking. In public or private, Doctor Thomson was decidedly individual. He died in 1907.

GEORGE STRAWBRIDGE

Attending Surgeon, 1872-1890

Emeritus Surgeon, 1890-1914

Dr. George Strawbridge was born in Philadelphia in 1844, and acquired his preliminary education in the Germantown Academy of this city. The University of Pennsylvania was his Alma Mater, conferring both his A.B. and M.D. degrees, the latter in 1866. After spending one year as interne at the Episcopal Hospital in Phila-

delphia he went abroad to study ophthalmology, making Vienna his first objective. While there he studied with such famous men as Arlt, Jaeger and Stelwag. While in Jaeger's clinic he had the opportunity of examining the eye-grounds of the patients from whom the drawings for Jaeger's celebrated atlas were made. (These drawings subsequently came into the possession of Dr. William F. Norris, as noted in the latter's biographic sketch in this book.)

From Vienna he journeyed to Berlin, where he had the great privilege of being a student of Von Graefe. Holland was likewise visited and courses were taken by him with Donders and Snellen in Utrecht. He also took a course with Helmholtz in Heidelberg. Before his return to America he visited Moorfields in London and observed the work there, notably that of Bowman and George Critchett, who were then in their prime. Truly a splendid preparation in ophthalmology which would have been impossible to duplicate.

In later years, Doctor Strawbridge made several addresses before his colleagues relating his experiences while abroad and describing the characteristics of some of these great surgeons as he knew them.

On his return to Philadelphia in 1870 he established an eye service in connection with the Philadelphia Dispensary. This institution was founded in 1786 and until its recent merger with the Pennsylvania Hospital was the oldest dispensary service in America. Its services to the public have been inestimable and some of the greatest names in American medicine and surgery may be found upon its staff. The Eye and Ear Department started in 1870 was under the direction of Doctor Strawbridge with Drs. J. F. Weightman and Charles H. Burnett as associates. Rooms were rented at 315 S. Seventh Street, but the following year the location was changed to the north-east

corner of Eighth and Locust Streets. So successful was the new department of the Dispensary that in 1874 removal was made to a new building at the north-east corner of Thirteenth and Chestnut Streets. There it remained until the dissolution of the clinic. Out-patients were seen from 11.00 A.M. until 1.00 P.M. and from six until seven in the evenings, the latter hour being found to be of great advantage to working people.

In 1886 the clinic ceased to be a part of the Philadelphia Dispensary, and became a separate organization under the name of the Pennsylvania Eye and Ear Infirmary, but still under the supervision of Doctor Strawbridge, his assistants at that time being Drs. F. P. Henry, A. G. Heyl, Charles Shaffner, and L. B. Hall. Later, Dr. W. W. Moorehead became connected with the Infirmary, and was placed in charge after Doctor Strawbridge's death, by his heirs. In the latter years of its existence the financial responsibility of the institution was assumed by Doctor Strawbridge and after his death, by his heirs. During the first five years of its existence as the Pennsylvania Eye and Ear Infirmary, six thousand patients were treated and seven hundred operations were performed upon the eye alone. Of this number, ninety-five were cataract, eighty-three iridectomies, and sixty-five squint operations.

Doctor Strawbridge's association with the University of Pennsylvania began in 1870 when he was appointed clinical lecturer on diseases of the eye and ear. He continued in this capacity until three years later when the chair was divided, Doctor Strawbridge being retained to lecture and treat diseases of the ear and Dr. Wm. F. Norris those of the eye. He retained this position until his resignation in 1890. He was an interesting lecturer and a man of great virility and charm and brought great credit as well as dignity to the position.

Doctor Strawbridge had been made ophthalmic surgeon

to the Presbyterian Hospital in Philadelphia in 1872 and served that institution in this capacity continuously until 1913, when he was made consulting ophthalmologist.

He was an active member in the affairs of the American Ophthalmological Society and a Fellow of the College of Physicians of Philadelphia. While he made but few contributions to ophthalmic literature he held the position of co-editor of the *American Journal of Ophthalmology*.

He was elected Surgeon to the Wills Hospital in 1873 but resigned in 1890 to become Emeritus Surgeon. In his biography of him, Dr. S. Lewis Zeigler, who was House Surgeon at the Wills Hospital from 1887 to 1889, called him "a great operator, being both rapid and accurate. His plastic work was excellent. In operating for cataract he made a high corneal incision with a Von Graefe knife, turning the blade sharply forwards at a right angle as it emerged, thus making a square-edged shoulder. There was often delayed healing but the final results were excellent."

In 1899, noticing that his skill as an operator was lessening, and judging this to be due to faulty vision, Doctor Strawbridge had an examination of his eyes made, and the diagnosis of probable sarcoma of the left eye was rendered. Immediate enucleation was performed. The microscopic examination of the specimen removed confirmed the diagnosis, although the fibrous character of the growth seemed to warrant a favorable prognosis. The remainder of his life was passed caring for a few private patients and in looking after his private affairs, but he had lost his buoyancy, he who had been so optimistic and jovial.

The elaborate training he had received and the skill he had developed were not without their reward, and he had acquired an enormous private practice treating both diseases of the eye and ear. Being a good business man he made several successful real-estate ventures that served to amass quite a fortune for him. As has already been noted,

he wrote few papers and published no books upon the subject in which he was most competent. He died in 1914 from a recurrence of sarcoma of a metastatic character, twenty-five years after the removal of the ocular growth.

HENRY SAYLOR SCHELL

Attending Surgeon, 1877-1890

Henry S. Schell was born in Philadelphia in 1835 of mixed German and Scotch and Irish parentage. His preliminary education was received at the Central High School in Philadelphia, obtaining an A.B. degree from that institution in 1853, an A.M. in 1858. He was graduated from the medical department of the University of Pennsylvania in 1857. For the following three years he was engaged in the practice of general medicine in Philadelphia. In 1860 he entered the United States Army as assistant surgeon and retired from the service in 1869 with the rank of lieutenant-colonel.

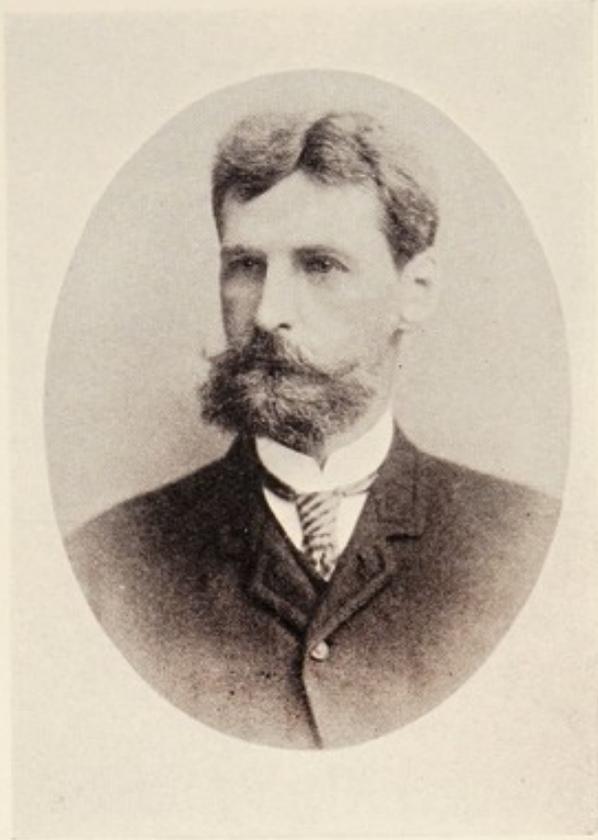
Upon his retirement from the army he returned to Philadelphia, and took up the practice of diseases of the eye and ear. He was made Attending Surgeon at the Wills Hospital in 1877 and served it continuously until his retirement in 1890 by reason of ill health. He was also a member of the surgical staff of St. Mary's Hospital, and ophthalmic and aural surgeon to the Children's Hospital.

Doctor Schell was a member of the American Ophthalmological Society, the Pathological Society of Philadelphia, and a Fellow of the College of Physicians of Philadelphia.

He was quite a prolific writer upon ophthalmic topics. Among his more important papers may be mentioned essays upon iritis, hemiopia and glaucoma. He also published a well-written book entitled "A Manual of Ophthalmic Practice," which had quite a creditable circulation.



George Strawbridge



Henry S. Schell



Frank Fisher



Charles A. Oliver



Failing health prompted his removal to San Diego, California, where he died of chronic nephritis in 1890.

COMBINED SPECIALTIES: EYE, EAR, NOSE AND THROAT

While those who comprised the group just described may be designated as specialists in ophthalmology, the majority treated diseases of the ear as well as those of the eye, and it was not until what might be called the second generation of eye specialists came upon the Staff that their treatment of ear cases was abandoned. This resulted from the gradual development of otology as well as from the birth of a new specialty, oto-laryngology and rhinology. As the progress of ophthalmology advanced, the leading ophthalmologists in the large cities abandoned the treatment of diseases of the ear, while others, particularly those in smaller towns and cities, began to combine the specialties and to include throat, nose and ear as well as eye cases in their practice. This was necessitated in such communities by the difficulty in obtaining sufficient income from treating the one class of case. Then, too, rhinology and laryngology opened a wide field and the results obtained by treatment were often most gratifying.

There can be no question but that this combination of the specialties has not proved a happy one for the development of ophthalmology and that those so engaged too often neglect to develop their knowledge of this science by reason of their closer attention to the more lucrative field of ear, throat and nose cases.

The association of the specialties has, however, been of great value in a better understanding of affections of the accessory sinuses of the nose also of orbital conditions arising from diseases of these spaces, a region in which nose, throat and eyes are all involved.

The association of the two specialties of eye and ear may be judged from the following. The American

Ophthalmological Society held its first meeting June 7, 1864, at the New York Eye and Ear Infirmary. In 1868, the American Otological Society was founded and its first meeting took place July 22, 1868, at Newport. As most of the members of this society were members of the Ophthalmological Society also, after 1868 both societies met in the same places and about the same time, usually at the Pequot House, New London, Connecticut, the Otological usually the day before that of the Ophthalmological, until their annual meetings in Washington in 1907. In that year the two societies definitely split, the Otological being held in Atlantic City in June, while the Ophthalmological was held in New London, in July. Although the two societies were associated until 1907, the *Archives of Ophthalmology and Otology*, which combined both specialties, ceased to be so named as early as 1878 when the section which had been devoted to otology was discontinued, the journal being devoted solely to ophthalmic subjects.

From their biographies it will be readily judged that there were some very able men in the group of the first eye specialists.

For many years Norris, Harlan and Thomson occupied commanding positions in American ophthalmology and greatly strengthened the formative years of that science. All three were careful operators and keen in clinical diagnosis and treatment. Most of the members of the group served the Wills Hospital many years—Harlan thirty-seven years, McClure thirty-five years, Norris twenty-nine years, Keyser twenty-five years, Strawbridge seventeen years, Schell thirteen years and Thomson eleven years. Dyer's service lasted but one year, ill health compelling his resignation at the end of that time. These long years of service left a strong impress upon the Hospital, while

the personalities of these men were reflected in the practice of those who succeeded them.

SPECIALISM

While we have designated the men of this group "specialists," and they are so named to-day, it must be remembered that there was a general feeling against specialists, so called, among the profession at that time. This is perhaps best expressed by a statement of Doctor Ruschenberger's in his memoir of Dr. George Fox which was read at the College of Physicians in 1884: "Despite his long connection with the Wills Hospital and his particular interest in diseases of the eye, he was unwilling to be designated as an oculist or 'eye doctor' because he was unwilling to encourage public preference for specialists of any kind." Hubbell also⁸ wrote that "Littell disclaimed any title of being a specialist and rated himself as a general practitioner, and yet his attachment to an eye hospital had more or less effect in making his ophthalmic practice disproportionately the larger part." Risley's assertion⁹ that "those of that time who permitted themselves to be designated as specialists were regarded as charlatans and somewhat in popular disfavor," probably overstated the situation, and yet Dr. George W. Norris recalls that his father, Dr. W. F. Norris, told him of the opposition he encountered from his family in confining his practice to ophthalmology. They warned him that he would in all likelihood be considered a quack by the profession.

No doubt, the fact that quacks were quick to seize the term "specialist" and to advertise themselves as such, made the profession somewhat chary about all those that called themselves by that title. To-day, of course, to be so designated brings no opprobrium in either professional or lay

⁸ *Loc. cit.*

⁹ *American Journal of Ophthalmology*, January, 1918.

circles, but the term is often misleading and not generally understood, the average layman often having the opinion that one especially educated in any one branch of medicine has had no training in other branches of the science. He is often astonished when told that one specializing in diseases of the eye has qualified in other branches of medicine as well.

In Philadelphia, the standing of the men in the community who were pioneers in ophthalmology and their connection with the Wills Hospital soon dispelled any remarks or innuendoes that were circulated to their discredit, since from the earliest days the management of the Hospital and the character and professional reputation of the Staff had caused it to be regarded most favorably by all.

The Civil War exerted a great influence upon the Wills Hospital. There was scarcely a physician in Philadelphia at that time who was not in the United States service, and every member of the Wills Hospital Staff was in active service. The volunteer service was the first to draw largely from the ranks of the profession, but there were also a number in the regular army and navy. Late in 1861, when plans were being consummated for the Spring campaign of the Army of the Potomac, preparations were being made for a number of large hospitals in cities near the field of action. Next to Washington, Philadelphia became the largest hospital center. In this city six large buildings were obtained and converted into hospitals. During the first year, Dr. John Neill was placed in charge of all of these hospitals; later on they were operated separately. The Satterlee Hospital at Forty-fourth and Spruce Streets had nearly a thousand beds, more than any of the Washington hospitals. This institution was erected on the pavilion plan, with long double corridors extending from a central building into other pavilions coming off at right angles from it. It took but seven weeks to build. Its surgical staff comprised thirty-five medical men with eighteen

cadets. The Mower Hospital at Chestnut Hill was opened the latter part of 1862 and was also very large, being next in size to the Satterlee, the U. S. Hospital at Fortress Monroe alone exceeding it. In the same year, a few months later, the McClellan Hospital, with a capacity of eleven hundred beds, was constructed near Norristown upon much the same plan as the Mower; and by December, 1864, there were fifteen military hospitals in and about Philadelphia with a total bed capacity of 14,508. Thus Philadelphia throughout the War was a hospital center of the greatest importance, being exceeded only by Washington, with a bed capacity of 24,426.

One of the three laboratories established by the Government for the manufacture of medical supplies was situated in Philadelphia, and far surpassed the other two in the country in its record of economy.

Great demands were naturally made upon the physicians of Philadelphia and right patriotically did they respond to them. The surgical skill they gained from such service was enormous and the Wills Hospital Staff were among those benefited.

By 1870, the city had grown enormously and now had a population of 674,000, with six hundred and six physicians to care for it, something less than one physician to every one thousand inhabitants, a considerable increase of the population of a half a century before. Instead of two hospitals, the Pennsylvania and Philadelphia, there were now thirteen. This necessitated more physicians and more specialists to fill positions upon the staff. Surgeons at the Wills Hospital who had served the Hospital, or it and the Pennsylvania Hospital, were elected to other positions, and many served upon the staff of several. The medical schools of the University of Pennsylvania and Jefferson were thriving, filled with students, all of whom were soon to receive special and compulsory instruction in ophthalmology.

CHAPTER VIII

MANAGEMENT UNDER THE BOARD OF DIRECTORS OF CITY TRUSTS: 1870. DAWN OF A NEW ERA

THE year 1870 was destined to mark the beginning of a new era for the Wills Hospital. The management was to be vested in the newly created Board of Directors of City Trusts, and under its able guidance the Staff was to be enlarged, thereby making it possible to utilize those men whose names have come down to us as pioneers in American ophthalmology—Norris, Harlan, Thomson, McClure, Dyer, Hall, Strawbridge, Keyser, and Schell. Since the change in management may be accredited with most of the subsequent developments of the Institution as a factor in the advancement of ophthalmology, it is not inappropriate to give a brief outline of the origin and composition of the Board of Directors of City Trusts.

Board of Directors of City Trusts. For some time prior to 1870 it had become manifest that the various charitable funds which the city had been administering as trustee were not being managed to the best advantage. Under the old plan, with its rapidly shifting personnel of Councilmanic Committees, there were various disadvantages and dangers incident to that form of responsibility, and these were becoming more and more evident. A number of prominent citizens, among them William Welsh, interested themselves to the extent that an Act of Assembly was passed and approved June 30, 1869, creating the Board of Directors of City Trusts, though not without considerable opposition.

By this act, the Honorable Judges of the Courts of Common Pleas of the County of Philadelphia were directed to appoint twelve men of outstanding prominence

in the community, which appointees, together with the mayor of the city and the Presidents of Select and Common Council acting ex-officio, were to constitute the body to be known as the Board of Directors of City Trusts. By this means a permanent organization was created to administer all trust funds, large or small, that might be willed or granted to the city. There was to be no limit to the term of appointment, and as a result only death, and resignation for personal reasons, have altered the personnel of this body. All the charitable funds left to the city have naturally come within the scope of its administration. The principal of these is Girard College, with its vast assets, but in addition there are fifty-seven other trusts, including the Wills Hospital, the several Funds for the Relief of the Poor, and certain Scholarship Funds. Since the creation of the Board there have been fifty-five appointments. Thirty appointees have died and but thirteen have resigned, showing the high esteem in which this honor is held by those fortunate enough to obtain it.

THE WILLS HOSPITAL COMMITTEE

Upon its creation, the Board divided itself into special committees in order to expedite its work, and the Committee on the Wills Hospital and Minor Trusts came into being for the administration of this Institution and of all other funds except those of Girard College. The first committee, appointed February 25, 1870, was made up of James L. Claghorn, Chairman, William B. Mann, John H. Michener, Alexander Biddle, and Mayor Fox. Since that first committee, equally distinguished men have served upon it, the chairmen having been the following:

James L. Claghorn	February 25, 1870–April 13, 1870
Edward King	April 13, 1870–December 31, 1870
William B. Mann	January 1, 1871–March 10, 1873
Alexander Biddle	March 10, 1873–June 10, 1874

Charles H. T. Collis	June 10, 1874–December 31, 1880
William B. Mann	January 1, 1881–October 17, 1896
Edward S. Buckley	November 9, 1896–May 13, 1903
Edwin S. Stuart	June 8, 1903–October 11, 1903
William S. Lambert	December 7, 1903–June 1, 1912
Charles E. Morgan	January 1, 1913–March 8, 1915
Hobart A. Hare	April 12, 1915–December 31, 1915
D. Newlin Fell	January 1, 1916–February 6, 1918
Mayer Sulzberger	February 13, 1918–March 14, 1923
Murtha P. Quinn	January 1, 1924–

The constructive service which this committee has rendered has ever been wise, humane, and economical. This will become more and more apparent as the history of the hospital progresses. Credit, however, should be given the management under Councils from 1834 to 1869 for the work they did. They definitely determined the high standards which the Hospital was to maintain in after years, and the Hospital, though hampered at all times by lack of sufficient funds to expand its usefulness, grew steadily.

From 1834 to 1869, 5,911 patients were treated as house cases and 28,972 in the dispensary service—a total of 34,883. The number of those treated in the out-patient department should be larger as no figures are available for the first twelve years.

Seventeen thousand, six hundred dollars and seventy-eight cents had been received by legacy and had been added to the general funds of the Hospital.

Under the new management, the affairs of the Hospital were continued along the same general lines as heretofore, with certain minor changes. Among these was the change of the clinical hour for out-patients from 11 A.M. to 2 P.M., doubtless made at the request of the Staff as better suited to their convenience, the change enabling them to devote their morning hours to private work, the afternoon thus being left free for hospital duties. This custom has prevailed up to the present time. In New

York, the same arrangement obtains, while in Boston, as in London, the public clinics, for the most part, are held in the morning.

In studying the annual reports since the foundation of the Hospital, one notes a number of interesting items, not the least of which is the continuance of the same harmonious relationship under the Wills Hospital Committee as had existed between the managers and the Staff—the Staff suggesting improvements as they found need for them in their daily work, the Committee granting them as they had funds at their command so to do. In the matter of State and private aid, the Staff has individually and collectively exerted all possible effort to place before the friends and patients of the institution, from time to time, the urgent needs of the Hospital, and has coöperated with the Board of Directors of City Trusts in bringing to the attention of the State Legislature and others in authority the claims of this great charity for consideration. These efforts have not been in vain, as the record will show.

The following letter from Dr. J. A. Lippincott, formerly of Pittsburgh, but now living in Nice, France, is an interesting sketch of the Hospital in 1873 when he served as Resident Physician.

“Hospitals, like trees, must grow or die: and it is manifest that the Wills of to-day with its splendid organization, its highly capable Staff and its enlarged facilities is a much more imposing institution than the one I entered as Resident in 1873. But in one respect there is no change. The vitalizing spirit so apparent now was equally active in the '70s, and in that spirit lay the promise and the potency of present and future development.

“Of the ten members of the visiting Staff during my service as Resident Physician, Norris, Thomson, Harlan, McClure, Hall, Keyser, Goodman, Strawbridge, Levis and Morton (Dyer left for Pittsburgh a few weeks after I came on duty), three were general surgeons with a strong leaning to the refinements

of the surgery of the eye. Of the remainder, the majority treated aural as well as ocular affections in private practice or in other institutions. But, as a whole, the Staff represented what was best in the Philadelphia ophthalmology of that period, and the names of a number of them, notably, perhaps, Norris, Thomson and Harlan are inseparably associated with the history of ophthalmological progress. All were well fitted by natural endowment and cultivated intelligence to fill their important positions and all gave scrupulous attention to those who sought relief from their disabilities. Nearly all were skilful operators and their results were usually good.

"The old-fashioned flannel bandage was used after operations by all except Levis, who had devised a method of keeping the lids closed by means of adhesive plaster cut to a special pattern. On one occasion he illustrated his method in the presence of several members of the staff making use of Norris as corpus vile, when the latter, after the dressing was completed, was invited to see if he could open his eyes, he deliberately opened them wide and solemnly gazed at his colleagues with an expression so droll that the latter could not help joining in the general merriment.

"It is noteworthy that, although the germ theory was then only, 'an infant crying in the night' and crying to inattentive ears, cases of post-operative infection were rare—a comparative immunity to be explained not only by the protective influence of the tears but by the fact that among civilized people habits of cleanliness had long preceded the science of bacteriology, so that one did not see 'finger-nails in mourning,' and a doubtful-looking cataract instrument would have been as objectionable as a table knife suggesting the use of a napkin.

"At the time at which I speak there were no assistant surgeons. Several members of the staff were aided by 'clinical clerks' who offered their service in keeping the individual records with the idea of picking up some knowledge of ocular diseases and therapeutics. They had no official position. One of the most intelligent of these men, becoming discouraged with the slowness of his material progress, professed the homeopathic faith and was duly welcomed, honored and set on his feet by his new-found brethren. In after years he returned to the original fold, but I understand that the reception he met with from his old acquaintances was not such as

to compensate him for the resentment caused by his second change of heart. *Facile est descensus Averni, sed vestigia retrorsum reddere*—is different!

“During the period of my service, the efficiency of the Hospital was partly due to the watchful care of that public-spirited citizen, the late William Welsh, who, as chairman of the Board of Directors of City Trusts found time, in the midst of his numerous public and private engagements to make frequent visits to the Hospital so that he was thoroughly familiar with its needs. In this connection I should like to mention the steward, Mr. Joseph Pettit, meticulous in the performance of his duties, and his estimable wife, a neat, motherly person and an excellent example of the famed ‘Philadelphia housekeeper.’

“I feel pretty sure that the following bit of experience will not suit your purpose. But I make note of it partly as showing how far we have traveled in the matter of nursing and partly as illustrating the friendly interest of the Staff on an occasion of some importance to the writer of these lines.

“Towards the end of my time of service I was extremely ill with double-sided femoral phlebitis. One day, at a time when recovery seemed doubtful, several of the Staff accompanied my kind and able physician, the late Dr. James P. Hutchinson, when he came to pay his morning visit. Doctor Hutchinson was strongly opposed to the use of alcoholic stimulant in the treatment of most diseases, and if I had been in a condition to form an opinion I should have agreed with him as all my life the taste and smell of whisky have been very disagreeable. One of the visitors—I think it was Goodman—said, ‘Hutchinson, if you don’t give that boy whisky, he is going to slip through your fingers.’ It was finally decided that I should have two ounces of whisky in milk each morning and evening. Now Tom, my faithful attendant, a convalescent patient (it was before the days of trained nurses) did not happen to know that the glass he used and which he thought measured two ounces really held four. So that the first day I took double the amount prescribed. The next day I was sufficiently aroused from my lethargy to remark ‘Tom, that seems pretty good medicine, suppose we double the dose.’ That day, therefore, I took a pint of spt. frumenti and so continued for ten or twelve days. By that time convalescence had fairly set

in. Appetite was beginning to return and with it my distaste for whisky. A not unusual instance of physiological ingratitude."

In 1889, Doctor Lippincott invented an intra-ocular syringe (Fig. 7) which was widely used¹ and a few years later he devised a magnet which was portable and more easily managed than the well-known Haab magnet, though less powerful.²

In addition to Doctor Parvin (see page 62) there were a number of physicians who also became famous in

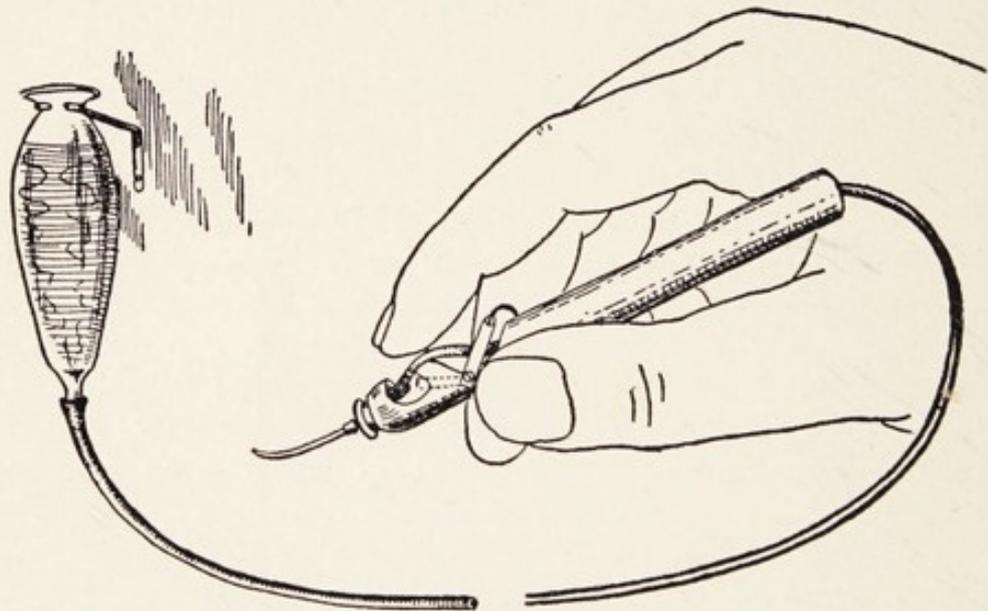


FIG. 7.—Anterior chamber irrigator, Lippincott.

branches of medicine other than ophthalmology, who served the Wills Hospital. James C. Wilson and Morris Longstreth, later distinguished members of the faculty of Jefferson Medical College, were Resident Physicians in 1869. Dr. Charles K. Mills, noted neurologist, was a clinical assistant and reported a series of cases in the *Medical Times* (1871–1872), which he had observed in the services of Doctor Goodman and Doctor Harlan. In the

¹ *Q.v.*, Casey Wood's "System of Ophthalmic Operations," p. 781; Tr. A.O.S., p. 341, 1889.

² Tr. A.O.S., vol. 9, p. 152, 1900.

October 12, 1872, issue of that journal he stated that "Doctor Levis had just operated upon fourteen cases of cataract by Liebreich's method and with good results in each instance." A list of Doctor Mills' reports dealing with the Wills Hospital cases are in the *Medical Times*, as follows:

November 15, 1871, "Paralysis of the Sphincter Pupillæ, etc."

February 15, 1872, "Hypermetropia."

April 15, 1872, "Syphilitic Iritis."

July 1, 1872, "Muscular Asthenopia."

August 15, 1872, "Simulation Amaurosis."

September 2, 1872, "Retinitis."

October 12, 1872, "Extraction of Cataract, etc."

October 26, 1872, "Sympathetic Ophthalmia."

Another clinical assistant, Dr. W. H. Winslow, also reported a number of interesting cases from the service of Doctor Harlan.³ It was at this time that Doctor Hall visited Europe and in a series of several papers in the same journal⁴ kept the profession at home informed upon ophthalmic topics.

OUTBREAK OF CONTAGIOUS CATARRH

In 1873, the inevitable happened. An outbreak of contagious catarrh of the eyes broke out in the Hospital, so that for a prolonged period during the year, many if not a majority of the surgical Staff declined to admit cases to beds in the house, forty-four fewer patients were admitted than during the previous year and operations were postponed until a more favorable time. In their report for the year the surgeons offered the consolation that the only possible benefit to be derived from this unfortunate occurrence was that it might be offered as an irrefutable argument for the necessity of better accommodations in the

³ *Medical Times*, March 22, April 12, May 31, 1873.

⁴ *Medical Times*, April 26 and May 10, 1873.

wards, as they thought there was no doubt but this disease was caused by the overcrowding of the wards with beds and by the utterly defective ventilation. They pointed out that the Hospital failed to keep pace with the increased population of the city and said that there had been no increase in the number of beds since it had been built forty years before. With a population of 726,000 in 1873 Philadelphia was to be compared to Berlin or Vienna, with a population of 600,000, and while in these two cities there were one hundred twenty to one hundred thirty beds for 126,000 fewer people, Philadelphia's total bed capacity was limited to forty beds. They suggested that the remedy, and the only remedy for this evil would be the construction of two new pavilions, arranged with due regard to a proper air space for each bed, and with such processes of ventilation as the latest investigators had shown to be most advantageous. The committee on the Wills Hospital considered this appeal very seriously, and thanks to its efforts sufficient funds were obtained to enable them to build the two wards as suggested.

OPENING OF THE TWO NEW PAVILION WARDS

DEATH OF MR. WILLIAM WELSH

The two pavilion wards so long needed and so long asked for by the Staff were finally opened October 11, 1875 (Figs. 8 and 9). Each of these wards had a capacity of twenty beds and were praised by all as being most satisfactory. A number of people, both ladies and gentlemen, were in attendance at the opening and were addressed by General C. H. T. Collis, who was chairman of the Wills Hospital Committee at the time. That of General Collis was followed by an address by Mr. Wm. Welsh, president of the Board of Directors of City Trusts, who described the construction of the wards very min-



FIG. 8.—One of the pavilion wards. Men's cataract ward.

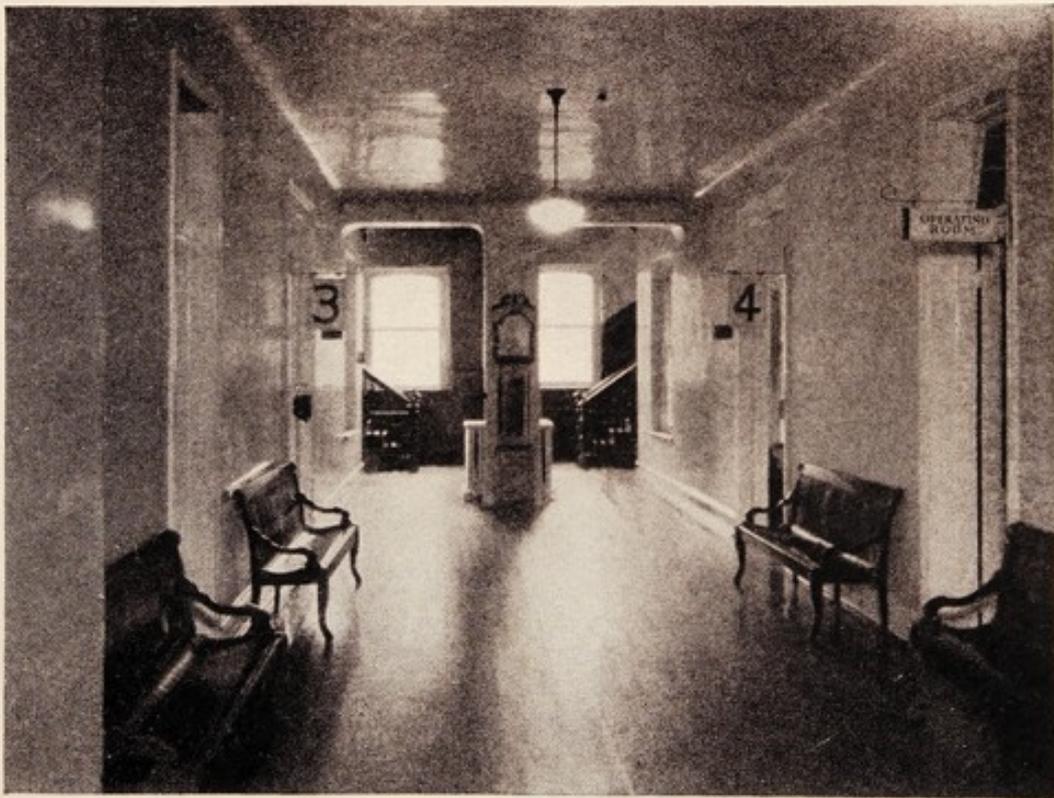
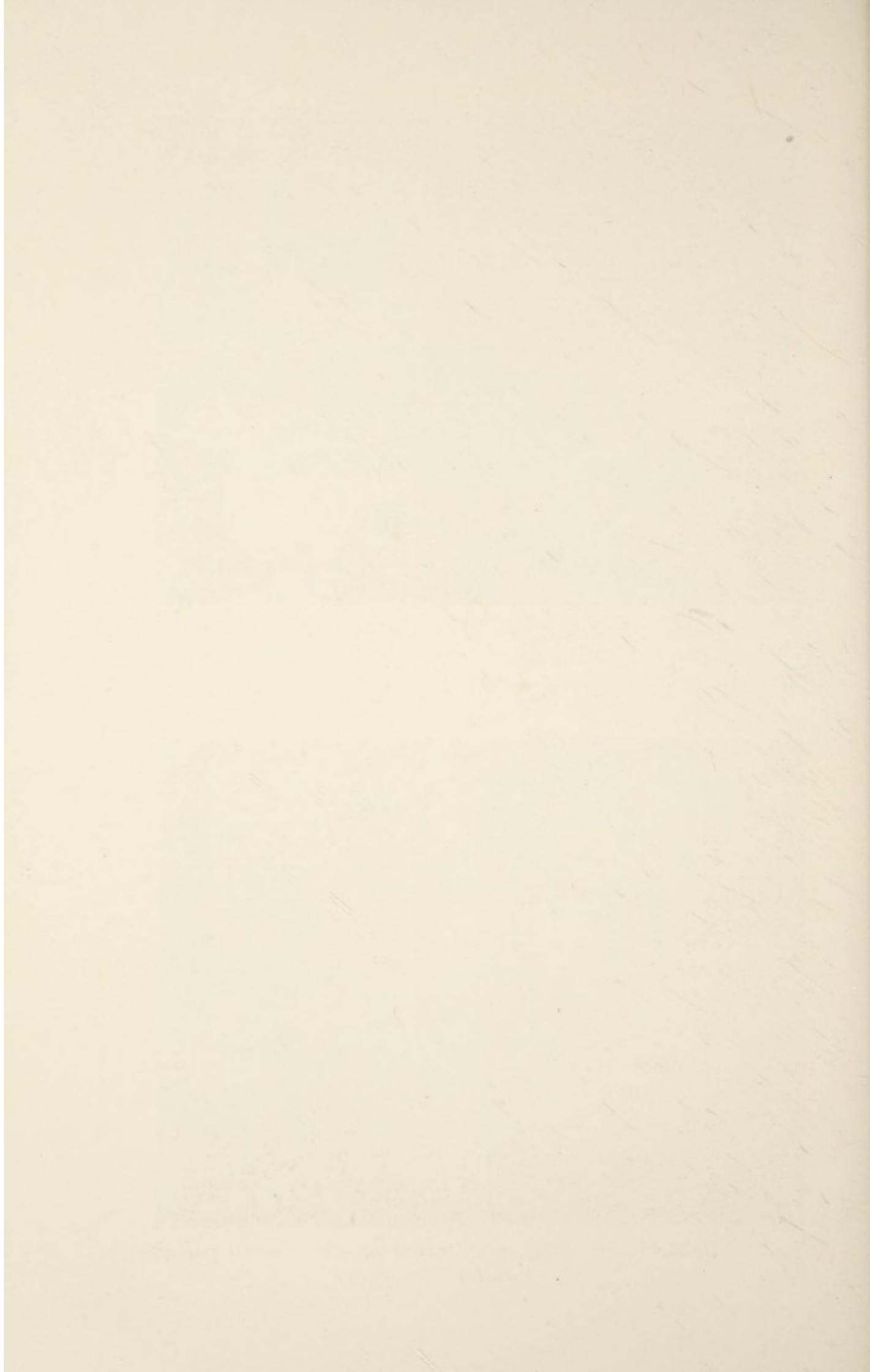


FIG. 9.—Central hall. Showing entrance into rear clinic rooms 3 and 4.



utely, and pointed out how admirably they were adapted to the purposes to which they were to be devoted. Dr. A. D. Hall, responding for the Staff, said:

“For the first time in forty-three years we have wards built for the express purpose of treating diseases and injuries of the eye, with all the improvement of ventilation, heating, bathing and drainage that the latest science and experience can suggest. It is no exaggeration when we say that no other hospital in all the round world has wards so well adapted to the business to be carried on within them.”

. Two years later the Board was grieved to announce that Mr. Welsh had passed away, and called attention to the fact that it was he who almost alone and during a period of unusual business depression raised the money from private sources for the erection of the two wards, and personally supervised their construction.

William Welsh was born in Philadelphia in 1807, the son of John Welsh, Jr., one time Minister of the United States at the Court of St. James. He was appointed a member of the Board of Directors of City Trusts in 1869 and later became its president. Mr. Welsh was devoted to the many interests of this vast trust, and found time to interest himself deeply in the affairs of the Wills Hospital. A member of its committee and having the Hospital in his particular charge, he attended their meetings with great regularity. At one of these meetings, held February 11, 1878, he reported at the Hospital in the afternoon and as usual found the clinical rooms crowded with those seeking relief.

Mr. Welsh courteously greeted some of the surgeons present, and passed on through the hallways to inspect the new building. On his way, he met Doctor Norris, one of the surgeons, and spoke a few words with him, then parted, and to quote Dr. Norris, “In a very few moments I was summoned by a messenger, who stated that Mr.

Welsh had been taken suddenly sick in the hallway of the hospital, and I reached his side to find him dead."

Although the summons came to Mr. Welsh in the full vigor of health, no surroundings and no time could have been better fitted for the close of such a life, than to die in the performance of duty in the midst of those afflicted ones for whom his heart had beat so warmly, and for whom he had done so much.

DRUG STORE, 1886

In 1886, the Staff called the attention of the Board to the fact that if a department were created to furnish drugs to patients, as well as glasses, it would prove not only a great convenience to them, but also a protection from the danger of receiving inferior drugs and incorrect glasses, when prescriptions were filled by druggists or opticians, outside of the Hospital, of doubtful ethical standards. The Staff believed that "one department could cover this field where the patients could have their prescriptions filled at such prices as would meet the expense, and be sure of obtaining the very best articles."

The report for 1888 records the opening and equipping of a convenient drug store, to enable the Resident Surgeon to put up medicine used in the house, worked well and saved money for the Hospital. It was not until 1924 that the Board established a well-equipped drug store, in which out-patients as well as house patients could obtain drugs at small cost.

STATE AID

In 1889, there were ample accommodations in the Hospital for one hundred patients. In the early part of the year, however, only sixty patients could be accommodated and later but forty, owing to the lack of an expected appropriation from the State. This was a great drawback

to the Hospital's usefulness, and many of the applicants were refused.

In their report for that year the Board emphasized the fact that the Hospital was a wholly charitable institution, where all conditions and all classes of poor might apply and receive relief without cost. They pointed out further that while the Legislature was frequently applied to by hospitals devoted to all kinds of general work, the Wills Hospital was the one institution in Pennsylvania devoted solely to caring for those with diseases of the eye. Also, that while in conformity with the terms of the bequest of James Wills, preference is given to those seeking treatment, who are citizens of Philadelphia, about half of the number of patients admitted to the Hospital reside in counties outside of Philadelphia, thus giving the Hospital a fair claim to recognition as one of the State charities. They argued, also, that the very large number of injuries resulting from mining and in the pursuit of various mechanical occupations would seem to give reason for claims upon manufacturing and mining companies for help.

They further emphasized that the work of the Wills Hospital has progressed and broadened in the past largely through its own limited resources, and through the energy and great personal sacrifice of the Committee in charge and through the devotion of the surgical Staff.

PROGRESSIVE CHANGES IN THE HOSPITAL FROM 1870

From 1870 on, the growth of the Hospital's service was most phenomenal and we may refer with great satisfaction to the statement in the report for 1884 commenting on the semi-centennial anniversary of the existence of the Hospital. From the opening of the Institution March 3, 1834, there had been treated 99,734 patients, and 11,548 operations performed. The ward patients in 1834 num-

bered twenty-four, while those in 1884 numbered five hundred twenty-six. In the first year of the out-patient department, 1839, only nineteen patients were treated, while in 1884 there were 7,012 out-patients.

As early as 1879, steps were taken by the Management to weed out all applying for admission or treatment at the Hospital who were able to pay. Frequently individuals, in the early years especially, would don old clothes and appear at the Hospital with such a pathetic tale of poverty and misfortune that the questioner at the application desk would be misled and services extended to persons not entitled to them. Such persons often would boast to their friends of the deception they had practiced, never realizing that their misguided cleverness, had not only robbed those who had ministered to them so patiently and so skilfully, but had deprived some needy poor patients, by the time they had consumed in receiving the attentions of the Staff.

The Social Service Department, lacking at the time at the Wills Hospital, has solved this problem to a great degree in many hospitals, but at Wills reliance has had to be placed upon the discrimination of the superintendent in separating those entitled to the services of the hospital, from those who systematically take advantage of every charity and philanthropy. In the past forty years the superintendents have been particularly awake to their responsibilities and have creditably handled this annoying situation.

PLEA FOR BETTER ACCOMMODATIONS FOR OUT-PATIENTS

In the report of 1881 there is a good account of the manner in which the general work of the Hospital was conducted. Except in operative cases, the practice of the surgeons was confined almost entirely to out-patients. To carry on this work in the most effective manner required



FIG. 10.—*One of the old clinic rooms.*

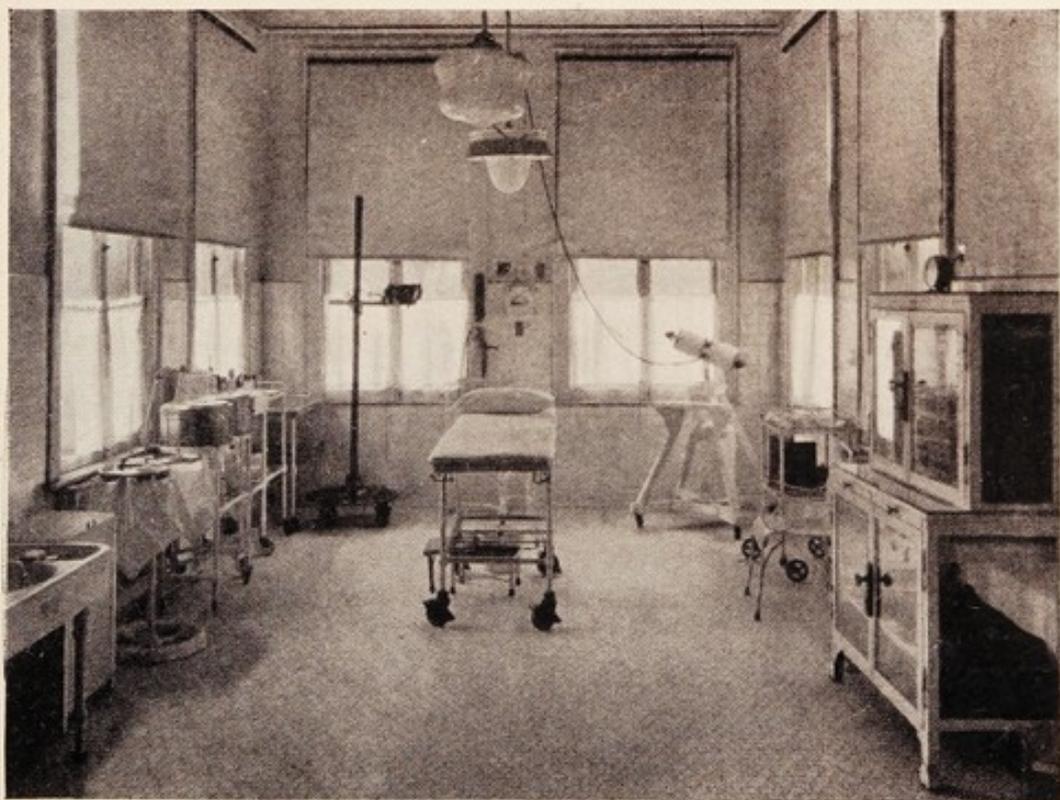
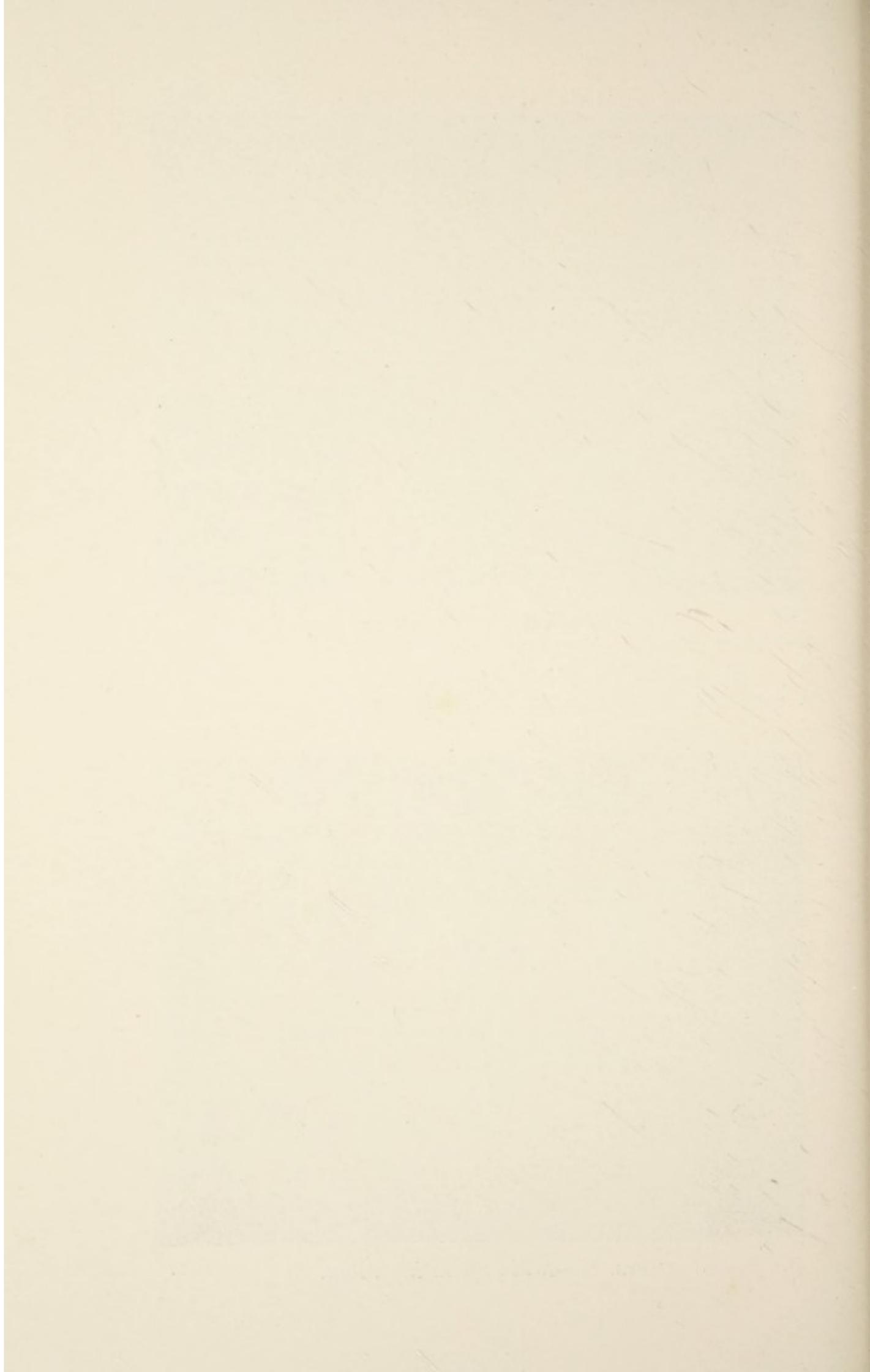


FIG. 11.—*Main operating room.*



that the arrangement and classification of these beneficiaries should be as carefully attended to as that of those cared for in the house. The existing arrangement was such that the waiting patients and those under immediate examination were huddled together and overflowed the two rooms devoted to their use, and crowded the common hall of the Hospital, which should have been kept free for entrance and exit. The Management, realizing the truth of this, and appreciating the necessity of having more commodious quarters, so that quiet and freedom from interruption could be found for the Staff in the performance of their duties, in the report of 1892 made the following statement:

“At the present time the crying need of the Institution is for better facilities for the treatment of those applying in the out-patient department. These it will be seen, constitute almost 95 per cent. of all the patients. In no clinic is more careful and painstaking work done, and no clinic shows better results therefrom than the Wills Hospital. Above all things the waiting and consulting rooms should be separate; for this reason new rooms for the dispensary service are urgently needed.” (Figs. 10 and 11.)

The Staff also took action, and recommended that a wing be added to the main building, for which there was an abundance of room on the grounds of the Hospital.

The needs of the Hospital were not confined to the out-patient department, however. In their annual report to the Board of Directors of City Trusts in 1886, the Staff called official attention to the ever-increasing difficulty of providing patients with ward accommodations. As sixty beds were at that time the maximum at their disposal, many patients had to be refused admission, a great hardship as well as detriment to a large proportion of those cases coming from distant parts of Pennsylvania, many of

which were of a most serious nature, being the results of accidents in the mines and distant industries.

Two years later, it is gratifying to note that a well-ventilated and properly appointed ward was erected, which permitted the abandonment of the insufficiently ventilated apartments in the old building, thereby increasing the capacity of the Hospital to one hundred beds.

CONTAGIOUS WARD

As early as 1879, the Staff had invited the attention of the Management to the great need of accommodations in which cases of a highly contagious character could be treated. It was suggested that a small separate building would furnish the best means of isolating the patients while undergoing treatment, and thus diminish the risk of infecting others. Again, in 1883, the Staff bewailed the need of such accommodations. They said in their annual report that in consequence of this lack, patients were refused admission, and, as "diseases of this character usually quickly destroy the eye, unless prompt relief is afforded, provision ought to be made for their treatment." In 1891, warning was again given: "The danger of infecting other patients bars us from admitting many worthy cases of this character and thus doubtless some eyes are lost that might otherwise be saved."

A further plea was made in 1895 as follows:

"The question of our needs in this direction and of the merits of our application for aid from the treasury of the Commonwealth, is so convincingly put by the chairman of the Committee on Wills Hospital and Minor Trusts in the following report, that it is submitted in full for the consideration of the authorities at Harrisburg:

"Confident in the expectation of an appropriation of at least \$20,000 from the State of Pennsylvania, and having the use of an appropriation of \$10,000 made at the previous session of the Legislature, for the erection of a new building at

the Wills Hospital, work was begun upon a building in which it was designed to treat cases of a contagious nature, but the expected appropriation was cut down to \$5,000 in the Legislature, and even this small sum was vetoed by the Governor. Before this occurred, work on the Contagious Ward had begun. When it became evident that no aid could be expected from the State, all work on the new building ceased, except sufficient to place it in condition to be safe from deterioration through exposure to the weather, in which condition it now is and will remain until the means to continue the work are provided. Besides the stoppage of this work, the absence of a State appropriation seriously hampers the general work of the Hospital, even on its old lines and within its present limitations."

It was not until 1903 that the Legislature saw fit to appropriate the sum of \$10,000 toward the building, though it was pointed out at the time that this sum would still be insufficient to complete the work, \$20,000 being necessary for that purpose.

The annual report of 1904 records that the lower story of the Contagious Ward had been made ready for occupancy. In 1905, came another grant from the Legislature of \$20,000, part to be expended upon the Contagious Ward, the rest of the money to much-needed improvements in the older buildings. In 1906, by reason of another grant from the Legislature, the interior of the third floor and of the basement of the building were completed and a smoke-proof fire-escape added, and in 1908 the building was finally completed, just twenty-nine years after the need of such an isolation ward had been stressed. The total cost of the building had not been prohibitive—\$56,018.13—but appropriations came slowly in those years.

It doubtless seems strange to many that while the Hospital was often in sad need of funds, the Board of Directors of City Trusts did not divert any of the vast sums under their control from the Girard Estate to the Wills Hospital, or that the city of Philadelphia with its resources did not

come to its aid. It must be remembered, however, that while the Board of Directors of City Trusts directs both the Girard Estate and the Wills Hospital, both are separate charges, quite distinct from one another, and no diversion of funds in either case is permissible. As for the City of Philadelphia, it would be unlawful for it to give financial assistance to any institution not owned and controlled by it.

In 1891, a graceful act of fitting remembrance was the placing of memorial tablets in the corridors, bearing the names of all donors since the foundation of the Hospital. In 1894, a library was created, a room being set aside for that purpose, and gifts of books solicited from the Staff and others. The work of the Hospital was growing rapidly.

Dr. George R. Rohrer, of Lancaster, a resident in the Hospital in 1882, writes: "My year at Wills Hospital was rich in practical experience and invaluable to me. Cases came under my observation which I have not seen in the forty-seven years of my private practice."

CHAPTER IX

OPHTHALMOLOGICAL SOCIETIES. POST-GRADUATE INSTRUCTION FROM 1870-1900. THE WILLS HOSPITAL AS A SCHOOL OF OPHTHALMOLOGY. RESIDENT SURGEONS

As the interest in ophthalmology continued to increase, men felt the need of meeting together and of interchanging ideas and experiences in this field, and as a result ophthalmic societies sprang into existence. As early as 1864 a great impetus was given this movement by the creation of the American Ophthalmological Society.

THE AMERICAN OPHTHALMOLOGICAL SOCIETY

This society was founded by Dr. Henry D. Noyes, of New York, and Dr. Hasket Derby, of Boston, in association with Dr. Freeman J. Bumsted, of New York, at a meeting held for its organization in New York, January 9, 1864. The first regular meeting occurred June 8, 1864. Many of the early members had been well acquainted with each other while studying abroad and eagerly seized this opportunity to cement old friendships as well as to discuss ophthalmic subjects. They formed a powerful group and soon exerted a great influence in the maintenance of the highest grade of medical ethics.

This society was national in scope from its very beginning and continues to hold annual meetings at which ophthalmic subjects alone are discussed. Its aim from its inception has been to encourage and maintain the very highest ideals in the matter of ethics among its members, the number of which is limited.

The first president was Edward Delafield, of New York.

Ezra Dyer, Addinell Hewson, William Hunt, and T. G. Morton, all of Philadelphia, were among the first members of the society, as well as prominent in the activities of the Wills Hospital. Isaac Hays was made an Honorary Member at the first meeting. The transactions of this society appeared in printed form very early in the career of the organization and have been continued annually ever since. Many important and valuable communications on ophthalmic subjects have been brought to the attention of the ophthalmic world through the medium of this publication.

The American Ophthalmological Society is the oldest ophthalmic society in America, and, indeed, the English-speaking world. It was thought by some to be the oldest in the world, but precedence must be conceded to the gathering of ophthalmologists who met yearly in Heidelberg since 1857 under the leadership of Von Graefe, to discuss diseases of the eye, and which led to the Heidelberg Congress, formed September 5, 1863.

THE PHILADELPHIA OPHTHALMOLOGICAL SOCIETY

The first effort to establish a local society of Philadelphia ophthalmologists was made in 1870, and, though its life was short, it had its value and paved the way for the more lasting organization of the Section on Ophthalmology of the College of Physicians. It was organized February 1, 1870, and the first meeting was held at the Pennsylvania Hospital, though the subsequent ones were held in the hall of the College of Physicians of Philadelphia. The records show that at the first meeting there were present Isaac Hays, Edward Harsthorne, Thomas George Morton, Ezra Dyer, William Thomson, William Hunt, George Strawbridge, John Ashhurst, Jr., William F. Norris, L. H. Adler, S. R. Knight, George C. Harlan, W. W. McClure, A. D. Hall and Mr. Joseph Zentmayer. Historically

minded readers will note that the membership included a number of general surgeons and an optician.

Dr. William F. Norris was the first secretary of the society and the minutes of all the meetings for the first two years are in his handwriting. He resigned in 1872 and was succeeded by Doctor Hall. Doctor Hays, now no longer young, resigned from the presidency in 1872 and Doctor Hall took his place. The meetings were held monthly and were well attended and the papers read were freely and ably discussed, but in 1874 dissension occurred over some matter not apparent and the attendance began to fall off. In 1875, Doctors Norris, Harlan, Schell, Thomson, and S. W. Gross resigned. Doctor Strawbridge was then elected president, Doctor McClure secretary, and Doctor Goodman treasurer.

Under this change of administration the meetings were held every two months instead of monthly as formerly, but the attendance continued to decline, and the names of the leading ophthalmologists became less and less frequent on the list of those present at the meetings. Only those general surgeons, like Levis, Morton, and others who combined the surgery of the eye with the practice of general surgery being habitually present. After many vicissitudes, the society finally died in 1875, the last meeting being held at the house of Doctor Strawbridge.

According to Dr. S. D. Risley, who, as a young man, had attended the meetings of this society, dissolution was inevitable. It had come to a parting of the ways. On one hand was a group of general surgeons who had included the surgery of the eye in their practice; on the other hand the smaller one of eye specialists in the new science of ophthalmology. As Risley well says, "the final dissolution was indeed an expression of the leaven of specialism working more and more potently in the medical life of the city."

SECTION ON OPHTHALMOLOGY OF THE COLLEGE OF
PHYSICIANS OF PHILADELPHIA

This Section was organized November 18, 1890. Doctor Norris was its first Chairman and Dr. Edward Jackson its first Secretary. In a paper upon the "Life and Work of Dr. S. Weir Mitchell," read by Doctor Jackson before the Denver Medical Society,¹ describing the formation of this Society, he said:

"In 1890 some of us who were Fellows of the College of Physicians wished to start in Philadelphia an ophthalmic society, but the older men—Norris, Harlan and Thomson—would have no part in it unless it could be arranged under the auspices of the College. Finding that a formal Section would not be considered by the governing powers of the College, as it would too violently shake established traditions, we humbly asked the use once a month of one of the smaller meeting rooms at the College. This was granted, yet such a radical innovation would never have been permitted had we not obtained the support of D. Hayes Agnew, then President of the College, and of S. Weir Mitchell, who advocated it from the floor. We got the permission for three years and at the end of that time the College adopted a by-law providing for the formal organization of the Section. The charter members were: T. H. Fenton, H. E. Goodman, H. F. Hansell, G. C. Harlan, F. N. Perkins, B. A. Randall, S. D. Risley, E. Jackson, W. F. Norris, C. A. Oliver, George deSchweinitz, Charles Schaffner, Wm. Thomson, and C. H. Thomas."

Monthly meetings, except in May, June, July, August and September, have been held regularly since 1890 and are regularly attended by Fellows of the College interested in ophthalmology, invited guests, practitioners of ophthalmology and students of the same subject. Cases of interest are presented and discussed before the regular papers of the meeting are read.

The Wills Hospital Clinical Society and the Polyclinic

¹ *Colorado Medicine*, vol. 2, 1914.

Ophthalmological Society were inaugurated at the beginning of the present century.

THE WILLS HOSPITAL SOCIETIES

The present society is the outcome of several attempts to inaugurate a similar organization in the Hospital and to utilize the abundance of material available for teaching and discussion. The first, organized in 1895, met at the Hospital on Monday evenings. One of the assistant surgeons presided while the attending surgeons in turn presented and discussed cases. After a year's trial, the hour of meeting was changed to late Monday afternoon and was intended to encourage the assistants in the study of ophthalmology, being called the Clinical Assistants Society. It succumbed in a few years and was in turn followed by a Clinical Society under the auspices of the major Staff. The meetings were held monthly at the close of the clinical service on Monday and Thursday afternoons, alternately. Cases were presented and discussed by the Staff, by visiting ophthalmologists and students. The World War caused a temporary cessation of the meetings, but in the past few years they have been carried on as before.

The Polyclinic Ophthalmological Society was conducted in much the same manner as the foregoing in that hospital, under the chairmanship of members of the staff and largely for the benefit of the student body. Interrupted by the War the meetings have not as yet been resumed.

THE SECTION ON OPHTHALMOLOGY OF THE AMERICAN MEDICAL ASSOCIATION

In 1878, at a meeting of the American Medical Association held in Buffalo, New York, through the efforts of Doctors Eugene Smith, of Detroit, and X. C. Scott, of

Cleveland, Ohio, a number of special Sections were organized wherein specialists and others particularly interested in the subjects covered by these Sections might read and discuss papers. Dr. Herman Knapp, of New York, was elected the first chairman of the Section on Ophthalmology and in succeeding years other prominent ophthalmologists from various parts of the country have filled this position, five of whom have been members of the Staff of the Wills Hospital.

The Section has flourished and has exercised a very great influence upon ophthalmology in this country. Any member of the American Medical Association may become a member and may enter into the discussion. The Executive Committee of the Section is responsible for the papers which are read and which are restricted in number. Some time in advance of the annual meeting this Committee issues a preessional volume which contains in printed form all the papers which will be read at the coming session. The members in this way are able to familiarize themselves with the contents of each paper in advance and thus prepare their discussion. The papers are read at the meeting in abstract, thus saving time and giving greater opportunity for discussion.

In 1810, the Section established a Knapp Memorial Fund, the members of the Section contributing voluntarily to it each year. This fund subserves a number of purposes: It honors the name of Herman Knapp, its first chairman and one of America's most distinguished ophthalmologists, and it provides money for a medal which is awarded for some particularly meritorious work in ophthalmology presented at the previous meeting of the Section. It also provides funds for the expenses of the Section not cared for by the parent body of the American Medical Association, such as the defraying the expenses of guests who have come from a distance to take part in

its proceedings. Although there are two other ophthalmological societies in America, the Section on Ophthalmology of the American Medical Association may justly be considered as the National Ophthalmological Society, especially since there are no restrictions to its membership. It is representative of all state and local units of the American Medical Association and receives the support of all those interested in American Ophthalmology.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND
OTO-LARYNGOLOGY

This society was organized April 9, 1896, in Kansas City, Missouri, and was at first but a purely local society known as the Western Ophthalmic Oto-Laryngic Society (W. O. O. L.). Dr. Adolph Alt was the first president. The membership was made up of those practicing in the mid-Western district, and the Society did not begin to expand until it changed its title and adopted a broader scope. In 1903, the name of the society was changed to the American Academy of Ophthalmology and Oto-Laryngology, and its scope was broadened to include the North, East, South and West (eventually including Canada). The first president of the society was Dr. Edward Jackson, once a Philadelphian and a member of the Wills Hospital Staff. In recent years its growth has been rapid and it has become the largest society of its kind in the country.

The American Academy of Ophthalmology and Oto-Laryngology devised a highly original scheme of post-graduate instruction in its specialties in connection with the yearly meetings, and has established a pathological collection which is housed in the Army Medical Museum in Washington.

NATIONAL BOARD OF OPHTHALMIC EXAMINERS

In the desire to raise the standard of the practicing ophthalmologists in America, this organization originated

the idea of examining all those individuals who might desire to treat diseases of the eye and to furnish them with credentials as to their qualifications. This culminated in the creation of the National Board of Ophthalmic Examiners, by the coöperation of the American Ophthalmological Society and the Section on Ophthalmology of the American Medical Association, and paved the way for the creation of similar examining boards in connection with the other specialties. Upon several occasions examinations have been conducted at the Wills Hospital.

POST-GRADUATE INSTRUCTION

It was during the period of from 1870 to 1900 that schools for graduates in medicine began to be established in America, the idea upon which they were founded being twofold: first, to enable graduates of some years' standing living apart from great medical centers to return for a short course of instruction in branches in which they had found themselves deficient; and second, to give elementary as well as advanced teaching to those who desired to receive instruction in one or more of the specialties in which they had not been taught while undergraduates, and which they now desired to include in their practice. Many general practitioners took such courses with a view to becoming specialists in diseases of the eye, ear, nose, and throat. Such courses extended usually over a period of six weeks and were highly intensive, groups of excellent teachers filling up the hours of the day with lectures and demonstrations.

The Philadelphia Polyclinic and College for Graduates in Medicine founded in 1883 was one of these, and by reason of the excellence of its faculty was very popular. One of the Wills' Staff, Dr. R. G. Levis, was its first president, and with his nephew, Dr. John B. Roberts, was largely instrumental in its establishment. Doctors Harlan,

Jackson and Risley, all of the Wills Hospital Staff, were professors of ophthalmology prior to 1900. Similar institutions sprang up in other large cities, notably in New York and Chicago, and students from many States received a smattering of ophthalmology in this way. About the beginning of the present century however, the courses in these institutions, notably in the Philadelphia Polyclinic, were lengthened and became more valuable. In the Polyclinic courses of three months' study were demanded of each student and the lectures and demonstrations were so graded that the essentials in ophthalmology were fully covered in that period, each student being carefully trained in refraction and ophthalmoscopic work. Part of this graduate work was carried on at the Wills Hospital, Polyclinic students having the privilege of observing the cases and receiving instruction from the members of the Staff who were also teachers in the Polyclinic Hospital. Since the latter was founded Doctors Harlan, Jackson, Risley, Posey, Zentmayer, Sweet, Holloway and Griscom have been members of both staffs. This school subsequently merged with the University of Pennsylvania becoming the nucleus of its Graduate School of Medicine.

Many students went abroad to study and availed themselves of the vast clinical material to be seen in some of the cities of the old world.

During these years Vienna held first place in the affection of American students, many of whom wished to supplement their studies of ophthalmology with that of the ear, throat and nose with the view of practicing those specialties upon their return home. Ernest Fuchs, professor of ophthalmology in Vienna at that time, was the most eminent ophthalmologist in the world. He had been the assistant of Arlt and was made professor of ophthalmology at Liège in 1880, where he remained five years. In 1882, he was awarded a prize of £80 for the best essay on "The

Causes and Prevention of Blindness," upon the hundredth anniversary of the foundation of the French Asylum for the Blind by Huey. This essay brought him international fame and gave impetus to the movement, which later resulted in the various Conservation of Vision Societies. Fuchs' "Text Book on Diseases of the Eye," first published in 1889 and destined to pass through many editions, has been recognized the world over as the leading text-book on ophthalmology. It has been translated into many languages. An American edition was translated by Dr. Alexander Duane, of New York, who added much new material to the book on refractive and muscular conditions. This book was warmly endorsed by Professor Fuchs and has had a wide sale in English-speaking countries. Both Professor Fuchs and his assistant, Dr. Meller, were very popular and attracted many students to Vienna. In Vienna, it was possible to obtain short courses of four to six weeks by capable men, many of whom spoke English, and there was always a bounteous supply of both clinical and pathological material.

Berlin had its American students also, and other German cities contained universities where famous men held the chairs of ophthalmology, like Leber in Heidelberg, Axenfeld in Freiburg, Schmidt-Rimpler in Goettingen, and Uthoff in Breslau. Americans remained longer in these smaller cities, learned the language and devoted themselves seriously to laboratory as well as clinical work. The Hirschburg Clinic in Berlin was one of the most interesting of the German clinics, being crowded with Americans as well as with physicians of other nations, listening to the lectures of this famous man, and studying his painstaking clinical methods.

Paris also was frequently visited, for a remarkable group of men was to be found there. Panas, who had been a general surgeon, was the first professor of ophthalmology

in the University of Paris. His lectures were both eloquent and learned; his operations skilfully performed. Like the majority of the great oculists in Paris at that time, Panas was of foreign birth—a Greek—deWecker a German, Landolt a Swiss, Galezowski a Pole. Parinaud, who died all too young, and Javal were both natives of France. Trousseau, who operated for cataract by the aid of one instrument alone, a Graefe knife, making the other manipulations with his long and subtle fingers, and Valude of the Quinze-Vingts Hospital, were also natives of France. Most of the clinics at that time in Paris were somewhat spectacular. All of the ophthalmologists mentioned had enormous practices built up about their clinics, where they saw both private and public patients, but in different apartments. Although deWecker was the most noted of these men, Landolt was a favorite with Americans, largely on account of his book, "The Refraction and Accommodation of the Eye and Their Anomalies," which had been translated under the author's supervision by Dr. C. M. Culver, of Albany, in 1886. This book supplemented that of Donders upon refraction and was widely read, exercising a great influence upon the practice of ophthalmology in our own country. Divided into two sections, a mathematical and a practical one, from which latter all mathematical calculations were omitted, the subject of refraction was presented in a simple manner capable of being understood by all.

Few Americans went abroad to study ophthalmology who did not spend some time at Moorfields Hospital, London, the mother of similar institutions in the British colonies and responsible for the establishment of the New York Eye and Ear Hospital in 1820, and the Massachusetts Charitable Eye and Ear Infirmary in 1824, in our own country.

Many famous men have comprised the Staff, but the

names of Bowman, George Critchett, and Jonathan Hutchinson especially, still linger in the minds of all American ophthalmologists, while Gunn, Morton and Lang are still fondly remembered by many Americans who followed these masters in their clinical work.

Regular evening classes for graduates in medicine were largely attended, while the laboratory under the charge of E. Treacher Collins was very popular. Ever hospitable to their guests, many American students were present by invitation at the monthly meetings of the Ophthalmological Society of the United Kingdom.

The vast clinical material at Moorfields attracted students from all parts of our land, many of whom found welcome places in the clinic as assistants. The clinics at Moorfields being held in the morning, many students availed themselves of the opportunity of attending the large service of the Royal Westminster Ophthalmic Hospital at Charing Cross in the afternoon, attaching themselves as assistants to various members of the staff of that hospital. The Queen's Square Hospital was also visited by many, and advantage taken of the opportunity of hearing Sir William Gowers explain his cases. Marcus Gunn, the ophthalmologist of the hospital, was often in attendance at these conferences and discussed with Gowers the import of the eye findings in many intricate and important cases. These conferences formed the basis of Gowers' celebrated book on ophthalmoscopy.²

THE WILLS HOSPITAL AS A SCHOOL OF OPHTHALMOLOGY

It is doubtful whether any other hospital in our country has played a more important part in the teaching of ophthalmology, or exercised a greater influence upon the practice of that science.

² Gowers, Sir William: "Manual and Atlas of Medical Ophthalmoscopy," 1879.

As early as 1839, Isaac Parrish began a course of lectures in the Hospital, which were continued until his death in 1852. Doctor Fox also delivered clinical lectures until he retired in 1854, and other members of the Staff were active in demonstrating cases to visiting physicians and students. A few years later (1867) when the interest of the Staff in the lectures abated somewhat, the Board showed that they desired them continued by passing a by-law to that effect.

It was the custom at that time for students from the university and the Jefferson Medical Schools to frequent the clinics at the Wills Hospital, to learn as much as possible about the eye and its diseases, for with the exception of what they heard of the subject in the colleges in an incidental way from their professors of surgery, there was no regular course of lectures given upon diseases of the eye in Philadelphia until 1870. In this year the department of Ophthalmology was started at the University of Pennsylvania; that of Jefferson Hospital was started in 1894. Though the chair of ophthalmology in Jefferson was not founded until that year, Doctor Thomson had lectured a number of years previously upon that subject.

As may be learned by the reproductions of the accompanying advertisements, which appeared in the *American Journal of the Medical Sciences*,³ Doctor Hall gave courses of lectures in the Wills Hospital in 1869, and in 1873 similar courses were advertised by Doctors Levis, Hall and Dyer. It was at this time that Doctor McClure, upon his return from studying abroad, began a course of lectures at the Hospital in the evenings, illustrating various phases of the dioptric system of the eye by a lantern and slides of his own construction. These lectures were very popular, but it is said their very success stirred up animosity among

³ New Series, vol. 57, p. 290, and vol. 66, p. 292.

THE WILLS OPHTHALMIC HOSPITAL,

Race Street, between Eighteenth and Nineteenth Sts., Philadelphia.

A COURSE OF LECTURES, DIDACTIC AND CLINICAL, ON OPHTHALMIC SURGERY, will be given at the Hospital during the months of November, December, and January, on Saturday evenings, between 8 and 10 o'clock.

The course will embrace all of the important branches of Ophthalmic Science, and will include the *Anatomy and Pathology of the Eye, the Physiology of Vision, the Refraction and Accommodation of the Eye, the Use of the Ophthalmoscope, and the Operative Surgery of the Eye.*

The large Clinics of the Hospital will afford abundant opportunities for the demonstration of the *General Diseases, Optical Defects, and Operative Surgery of the Eye.*

Each member of the class will be afforded instruction in the Use of the Ophthalmoscope, and in the practice of Operations on the Cadaver.

The Diagnosis of the Optical Defects which produce *Long, Short, or Weak Sight, Astigmatism, Strabismus, etc.*, and their Correction by the Scientific Use of Glasses, will be illustrated by apparatus and Clinical demonstration.

FEE FOR THE COURSE TEN DOLLARS.

Operative and Clinical Surgery of the Eye.

R. J. LEVIS, M. D., N. W. cor. Arch and 13th Sts.

Anatomy of the Eye, and Ophthalmoscopy.

GEO. C. HARLAN, M. D., 1806 Chestnut St.

Physiology of Vision, Refraction, and General Diseases of the Eye.

EZRA DYER, M. D., 1429 Walnut St.

PRACTICAL OPHTHALMOSCOPY.

EVENING DEMONSTRATIONS WITH THE OPHTHALMOSCOPE.

Wills Hospital, Race above 18th Street, Phila.

A Fifth Course will begin early in April, in the Operating-Room of the Hospital, and will be continued weekly until the first of July.

It will be the aim of the instructor to give the student a working knowledge of the use of the Ophthalmoscope in the Diagnosis of Diseases of the Internal Eye, and with this view especial care will be taken that the observations are verified by each member of the class.

The special studies will be the Natural and Morbid Appearances of the Optic Nerve, the Retina, Choroid, Vitreous Humor, and the various degrees of Lenticular Opacity.

For illustration and comparison the best and most recent foreign colored drawings are provided. Apply to A. D. HALL, M. D., one of the Surgeons to Wills Hospital,

FEE TEN DOLLARS.

1623 Spruce Street.

FIG. 12.—*Advertisement of early lectures in the Wills Eye Hospital, appearing in the American Journal of the Medical Sciences in 1869 and in 1873.*

other members of the Staff which caused Doctor McClure to discontinue them.

Although the clinics and operating room were crowded with visiting doctors from all parts of the country, witnessing the operations and listening to the surgeons explain their clinical cases during their routine work, there were no post-graduate courses of instruction given in Philadelphia until 1883, when the Polyclinic Hospital was founded, and the professors of ophthalmology of that school who were at the same time on the Wills Staff supplemented their clinical teaching in the former institution by demonstrations and lectures at the Wills Hospital.

Later the Wills Hospital Clinical Society was formed to amplify its teaching. The meetings of this society were held monthly and in the afternoons, at the end of the clinic hours upon alternate days in each month, thus enabling the surgeons upon duty the days of the meeting to bring their interesting cases for conference and to demonstrate them to visiting medical men and students with the least inconvenience to the patients. These meetings were deservedly popular and, as they were reported in various medical journals, were the means of disseminating much that was valuable in the way of ophthalmic knowledge, and at the same time of bringing the Hospital into prominence as a center of ophthalmic teaching. As we have learned, these meetings were discontinued for a time by the Great War, but have been resumed.

In addition to those who came from a distance to observe the clinical work, but had no connection with the Hospital, there must be taken into account the training received by the large number of those who had some form of official connection with it, either as Assistant Surgeon, Resident, Clinical Assistant, *etc.* Serving in the Hospital from day to day, in many instances over a period

of many years, they were imbued with its spirit and became acquainted with its practice.

There has always been the most cordial relationship between the Wills Staff and other physicians in the city and state. Many of the ophthalmologists now practicing throughout Pennsylvania and neighboring states have had their early training here, and bring their charity cases to the Hospital for consultation and treatment. Many attend the meetings of the Hospital's clinical society and take part in the discussions. They rightly regard it as the Home of Ophthalmology in Pennsylvania.

RESIDENT SURGEONS

The position of Resident Surgeon was much sought after by graduates in medicine coming from all sections of our country, many of whom have put to good use the knowledge acquired at the Hospital and have obtained great eminence. Many have become surgeons in large hospitals elsewhere, and a number are serving as professors of ophthalmology in some of the great medical centers in America. Among those who have served as Resident may we mention the following: Doctors J. A. Lippincott, Pittsburgh, Pa.; George R. Rohrer, Lancaster, Pa.; Charles W. Kollock, Charlestown, S. C.; W. F. Robeson, Pittsburgh, Pa.; B. F. Milligan, Cleveland, O.; E. C. Ellett, Memphis, Tenn.; W. R. Parker, Detroit, Mich.; G. C. Curry, Pittsburgh, Pa.; A. C. Snell, Rochester, N. Y.; A. J. Bedell, Albany, N. Y.; and C. S. O'Brien, Iowa City, Iowa.

It is of interest to note that of the forty-two attending surgeons who have served the Hospital from its foundation the following ten have filled the position of Resident Surgeon. Doctors Neill, Morton, Harlan, McClure, Fisher, Ziegler, Pontius, Chance, Parker and Griscom.

All post-graduate teaching in diseases of the eye in Philadelphia has been gratuitous upon the part of the

teachers. It is true that in the Graduate School of Medicine the student pays a fee, but money so collected goes to the Management of the School, not a dollar into the pocket of the teacher or to the Wills Hospital, where some of the clinical instruction is given. Of course, it goes without saying that no surgeon or physician attached to any of the public hospitals in Philadelphia receives any compensation for the treatment of dispensary or ward cases.

Do the patients and the public realize this? Probably not, as it has been frequently the experience of those connected with the Hospital to hear expressions of surprise from well-informed people when told that the Staff receive no pay for their hours of service. They cannot understand the willingness of physicians to transmit the knowledge they themselves have gained at a considerable expenditure of money and after much study to other physicians and students who will soon be their rivals.

CHAPTER X

THE SECOND GENERATION OF OPHTHALMOLOGISTS. LABORATORY. THE WILLS HOSPITAL RE- PORTS

SUCCEEDING the group described in a preceding chapter there followed the appointment of surgeons, who may be designated as the second generation of specialists in ophthalmology. Many had been associated with those who had comprised the former group and had learned their methods and had become well acquainted with their practice. Many had been officially connected with the Wills Hospital as assistant surgeons. This position was created by the Managers in 1868 and abolished in 1872, but was re-created in 1890 and has been continued ever since. Established primarily to relieve the attending surgeons of some of their duties, and to give official recognition to assistants who had shown their capabilities, as was intended, many have found it a stepping-stone to the surgeons'hip.

Of the eleven men included in this group, several served in this position for varying lengths of time: Doctor Zentmayer under Doctor Norris, eleven years; Doctor Posey under Doctor Oliver, nine years; and Doctor Schwenk under Doctor Harlan, eight years. This term of subordinate service proved of value both to the Hospital and to the assistants themselves; to the former by long services, while the latter under the guidance of the attending surgeons had opportunity to observe their methods, and perfect themselves in treatment before assuming responsibility. The biographies of those of the group who are deceased follow, and to maintain the record the names of the surgeons who served contemporaneously are also given.

BIOGRAPHIES

CHARLES A. OLIVER

*Clinical Clerk, 1878-1890**Attending Surgeon, 1890-1911*

The service of Dr. Charles A. Oliver to the Hospital was a notable one. A keen observer and painstaking in his examinations, his clinical notes probably surpassed in accuracy and description any others which have been made in the Hospital. Fond of teaching, he was surrounded by a coterie of students and assistants, many of them from other parts of the country. The drill received by these students and observers went far towards inculcating an appreciation of the value of apparently minor details.

Doctor Oliver was born in Cincinnati, Ohio, in 1853, the son of a physician of prominence and first president of the Medico-Chirurgical College of Philadelphia. He studied in the Central High School of Philadelphia and took his degree in medicine from the University of Pennsylvania in 1876. He served as resident physician in the Philadelphia Hospital from 1877 to 1878. In the latter year he began his affiliation with the Wills Hospital, as a clinical clerk serving in that capacity until 1890. Doctor Oliver's knowledge of ophthalmology was acquired largely through Dr. Wm. F. Norris, whose assistant he was until elected attending surgeon. This association was a very valuable one for him, enabling him to absorb much that Doctor Norris had acquired in his years of study in Vienna and other foreign clinics.

With Doctor Norris he wrote a "Text Book of Ophthalmology," and later shared with him in the editorship of their monumental "System of Diseases of the Eye." Doctor Oliver's chapter dealt with errors of refraction and

their correction under the title, "Ametropia; Its Etiology, Course and Treatment." Doctor Oliver assumed most of the correspondence with the various contributors to this work, and in this way made acquaintances which were of service to him the remainder of his career. He was a most prolific writer and contributed countless papers to the ophthalmic journals.

In addition to the literary efforts already mentioned, he published the following: "Description of Some of the Most Important Methods Employed for the Recognition of Peripheral and Central Nerve Diseases." This was translated by Baudry, of Lille, into French, and into German by Wolff. He also translated and edited (1899) the English editions of Ohlemann's "Ocular Therapeutics," Baudry's (1900) "Injuries of the Eye in Their Medico-Legal Aspect," and Donders' "Essay on the Nature and Consequences of Anomalies of Refraction." He also wrote a chapter in Casey A. Wood's "System of Ophthalmic Operations" upon "Paracentesis, Keratotomy, Conjunctivoplasty, and Some Operations Upon the Cornea." He edited the ophthalmic division of Sajous' "Annual of the Medical Sciences" and in conjunction with Thompson Westcott, later William Zentmayer and William Campbell Posey made an annual review of the ophthalmic literature of the world. This review may be regarded as the precursor of the Year Book of Ophthalmology.

Doctor Oliver was an ophthalmic surgeon in St. Mary's, the Presbyterian and Philadelphia Hospitals, and was later clinical professor of ophthalmology in the Women's Medical College, Philadelphia. He was consulting ophthalmologist to several hospitals for the insane, and as a result of his examinations of these patients published a paper entitled "Studies of the Sensory Changes and Conditions of the Ocular Apparatus Found in Imbecility, Epilepsy and General Paralysis of the Insane." He was a member of the American Ophthalmological Society, the

College of Physicians of Philadelphia and other American and foreign societies.

The clinic of Doctor Oliver's at the Wills Hospital, like that of Doctor Norris's, was conducted with the greatest thoroughness. All new patients were subjected to a searching examination, the history of each case inquired into, and the external and fundus examinations were made by the surgeon or assistant surgeon. The vision and accommodative strength were accurately tested and recorded by assistants, and the fields of vision studied in every case where such a test seemed desirable. The refraction work was done as carefully and as conscientiously as in private practice. The cycloplegic, usually a 1 per cent. solution of atropin, was employed in patients under the presbyopic age, the cycloplegic being continued until two corresponding results were obtained on different days. The drug was then discontinued, and a final post-cycloplegic test made at the expiration of two weeks. This method entailed a great amount of work in the clinic and much annoyance and, in many instances, great inconvenience to the patients, but the results were accurate.

In all the institutions in which he was connected, Doctor Oliver served in the same conscientious and faithful manner. Intensely ambitious, he devoted himself to details which had well been assigned to subordinates. The multitude of interests that engaged his attention served to sap his strength and caused his death in 1911 at the age of fifty-eight years.

FRANK FISHER

Resident Physician, 1875

Clinical Clerk, 1875-1890

Attending Surgeon, 1890-1916

Dr. Frank Fisher, a son of a physician, was born in Delaware in 1854. His father dying when the children

were quite young, the mother brought them to Philadelphia and placed them in the public schools in that city. Frank Fisher was graduated from the Central High School in 1871 and then matriculated at the Jefferson Medical College, where he took his medical degree in 1875. While a student in medicine he worked in the Brill Car Works to supplement his income, and formed associations while there which afterward proved very valuable to him. He served as Resident Physician at the Wills Hospital in 1876, and on completion of that service entered the active practice of medicine in all its branches until 1885, when he began to specialize in ophthalmology. He became connected with the ophthalmological department of the Medico-Chirurgical College at this time and continued in this association until 1893.

During this period he was associated with Dr. P. D. Keyser, and observed his methods carefully. Being naturally endowed with skill, he utilized the teaching he received under Keyser and became an expert operator. He acted as an assistant to Keyser at the Wills Hospital also, and in 1890 was elected an Attending Surgeon, continuing in that position until he resigned in 1916—a period of twenty-six years of uninterrupted service.

At all times calm and collected in the operating room, his steady hand and long experience made him a resourceful surgeon and safe operator. He excelled particularly in operations upon the globe; muscle and plastic work did not seem to appeal to him. In cataract operations he preferred simple extraction without iridectomy, excising a portion of the iris only in exceptional cases. Apart from his hospital connections he interested himself but little in professional matters, rarely attending medical meetings and making no contributions to ophthalmic literature.

He was a member of the County and State medical societies, the American Medical Association, and the Amer-

ican Academy of Medicine. He was a good oarsman and was several times elected Commodore of the Schuylkill Navy and President of its Athletic Club, both Philadelphia organizations. Naturally he enjoyed a wide acquaintance among the sportsmen of the city.

Doctor Fisher never married, living for the greater part of his life with his sister, also a physician. His death came suddenly in 1928.

The Dr. Mary Fisher Ophthalmic Lecture Foundation of the Philadelphia County Medical Society was established by her in 1930 as a memorial to her father, James Henry Fisher, M.D., her mother, Catharine Griffith Fisher, and her brother, Frank Fisher, M.D.

SAMUEL DOTY RISLEY

Attending Surgeon, 1890-1917

Consulting Surgeon, 1917

Samuel Doty Risley was born in Cincinnati, Ohio, in 1845. Of New England ancestry, his family moved to Iowa while he was yet young and his early days were spent upon a farm in that state. The Civil War broke out when he was but seventeen years old, but, notwithstanding his youth, he enlisted with an Iowa regiment, serving until the end of the War. The conflict over, he studied in the Iowa State University, going from there to the University of Pennsylvania for his medical degree, which he received in 1870.

Directly after graduation from the University of Pennsylvania, he entered upon the study of ophthalmology and became a clinical assistant in the Wills Hospital in 1871. The next year he was made chief of the eye clinic in the University Hospital under Dr. William F. Norris and in 1873 was appointed lecturer on ophthalmology at the university.

In 1890 he was elected an Attending Surgeon in the

Wills Hospital, his connection with the university being severed at this time. He continued his teaching, however, until the time of his death, in the Wills Hospital and also in the Philadelphia Polyclinic and Graduate School of Medicine (now the Graduate School of Medicine, University of Pennsylvania) in which he was a Professor of Ophthalmology. At the Wills Hospital he was usually surrounded by a group of graduate students, and his classes at the Polyclinic were very popular.

Doctor Risley was a member of many societies but was particularly a prominent figure in those devoted to ophthalmological subjects. He was chairman of the Section on Ophthalmology of the American Medical Association in 1892. This important ophthalmological society, it will be recalled, was founded in 1878, Herman Knapp being its first chairman. Doctor Risley was the first Philadelphian to be so honored, but since his time five other Philadelphians have filled the position, four of whom have been members of the Wills Hospital Staff.

He became a member of the American Ophthalmological Society in 1880 and was made its president in 1908. He was constant in attendance at the annual meetings of this and the preceding society, and a faithful worker in the Section on Ophthalmology of the College of Physicians in Philadelphia. Tall, dignified and an excellent speaker, he was cautious in what he said and did, and may be regarded as one of the leaders in American ophthalmology.

He contributed frequently to ophthalmic literature, and by his writings blazed a way for the appreciation of the comprehensive effects of eye strain, especially in the growing child. His chapter in the Norris and Oliver "System of Diseases of the Eye" upon "School Hygiene," based largely upon original work which he had done in collaboration with Dr. B. A. Randall in the public schools of

Philadelphia some years earlier, was highly regarded, and properly so. Among other observations which he noted was that congenital anomalies in the form of the eyeball are hereditary. He taught that the shape of the family skull, upon which the length of the globe largely depends, is handed down with more uniformity than possibly any other anatomical peculiarity. Likewise he noted that observations are not wanting which demonstrate clinically the important relation which these anomalies, particularly astigmatism, bear to the production of myopia. His own cases, he states, "passed without exception from the hypermetropic ball over into near sight through the turn-stile of astigmatism."

As the result of this original work in the schools, he stressed in this contribution, and in others upon the same subject, the necessity of proper illumination of the schoolroom, and further insisted upon having desks so arranged as to permit of adjustment suitable to the stature of the child. These features of the schoolroom are now commonplace, indeed, but at the time Risley wrote they were revolutionary.

In 1908, the City of Philadelphia celebrated the two hundred and twenty-fifth Anniversary of the foundation of the city by an elaborate celebration covering an entire week of October in that year, not the least of the features of which was the publication of an imposing volume covering the medical activities of the city under the editorial supervision of Dr. F. P. Henry. Doctor Risley, of the Wills Hospital Staff, prepared a history of the Institution for this volume, which was also incorporated into the Hospital report for that year.

Doctor Risley may well be regarded as the local historian of ophthalmology in Philadelphia. Several interesting accounts of the early days at Wills came from his able pen, but perhaps the most prominent of these historical essays and retrospects appeared under the title,

"The Rise and Progress of Ophthalmology as a Specialty in Philadelphia."¹ In this article Doctor Risley sketched with deft hand the countless factors that contributed to the creation of a respected position for ophthalmology in this city. As might be expected, frequent references to the Wills Hospital and its Staff are noted, showing the close connection between the Hospital and ophthalmologists in Philadelphia during the past hundred years.

Doctor Risley, by precept and example, exerted a lasting influence upon his contemporaries in the Wills Hospital. Conservative, but none the less an extremely skilled operator, following his cases carefully through their convalescence, his work came to be greatly appreciated by his *confrères* as well as by his patients.

Doctor Risley was an able and ready speaker, seldom ill at ease when the demands of his position might call for an address or extemporaneous speech. On the occasion of his retirement from the Wills Hospital his friends tendered him a dinner and loving cup in honor of his long and distinguished service. Another group of intimates followed this in 1916 with a surprise luncheon in celebration of his birthday, but the embarrassment it caused the honored guest, as well as the emotion, left him unable to express himself adequately—a most unusual occurrence. He died a few weeks later of encephalitis.

EDWARD JACKSON

Attending Surgeon, 1890-1898

CONRAD BERENS

Clinical Clerk, 1883-1890

Assistant Surgeon, 1890-1893

Attending Surgeon, 1893-1914

Conrad Berens was born in Philadelphia in 1859 and died there in 1923. His parents were Bernard and Rachel

¹ *American Journal of Ophthalmology*, p. 28, January, 1918.

Susan (Passmore) Berens. His father was a grandson of Count von Graefenstein, a family having university privileges in the city of Göttingen. With his brothers, Joseph and Bernard, he came to this country in 1830, and was among the first to practice homeopathic medicine in Philadelphia.

Conrad Berens spent his boyhood in his native city, attending private schools. He entered Yale in 1876, and was graduated from that university with the degree of A.B. in 1880. During his college career he was awarded honors in scholarship and also excelled in debate and athletics, winning prizes in each of these activities.

After graduating from Yale, he entered the medical department of the University of Pennsylvania, receiving his medical degree in 1883. While a student of medicine, he published a volume of notes on the medical lectures, and received the Alumni prize for the best work of original research in experimental therapeutics, his thesis being entitled "The Physiological Action of Quinolin."

After graduation he went to Caracas, Venezuela, as a private physician and instructor, but the climate proved trying and he returned to Philadelphia, where he began practice in January, 1884.

In 1885, he was appointed clinical lecturer and the next year professor of laryngology and otology at the Medico-Chirurgical College, Philadelphia. In 1896, he resigned this professorship, having been elected Attending Surgeon to the Wills Hospital three years previously.

Doctor Berens was an expert surgeon and a keen diagnostician. He devised an original method to correct symblepharon and invented a number of instruments. He published several monographs, and was the author of an excellent historical sketch on the Wills Hospital, which was published in the Wills Hospital reports for 1895; a

publication authorized by the Board and brought out under the editorship of Doctors Oliver and Berens (p. 185). It also contained a list of the medical and surgical officers from the opening of the Institution to the year 1895 and several interesting clinical papers by the Staff.

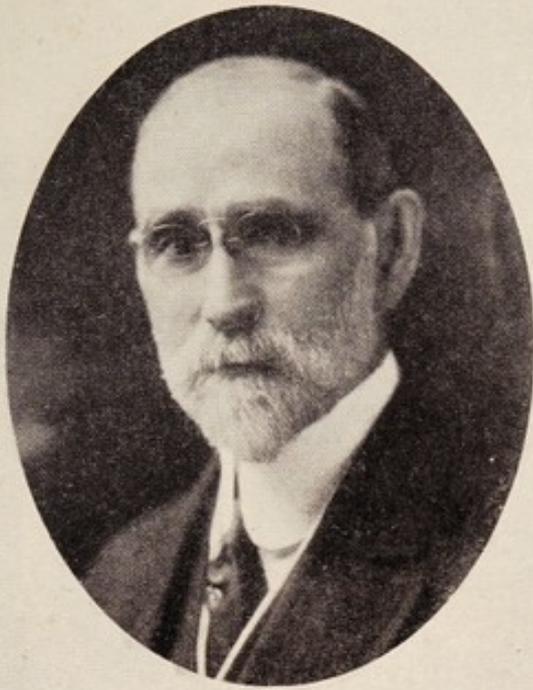
The Staff at the time believed this to be the first effort made to record the experiences of the Hospital in medical literature, being unaware of the reports previously made by the original Staff which were published in the *American Journal of the Medical Sciences*. Doctor Berens took great interest in the pathological work of the Hospital and busied himself in its illy equipped laboratory before the appointment of Doctor von Goldberg as pathologist. Doctor Berens' health failing, he resigned from the Hospital in 1914.

He was a member of the County and State medical societies, the American Medical Association, and the American Association of Laryngology, Otology, and Rhinology.

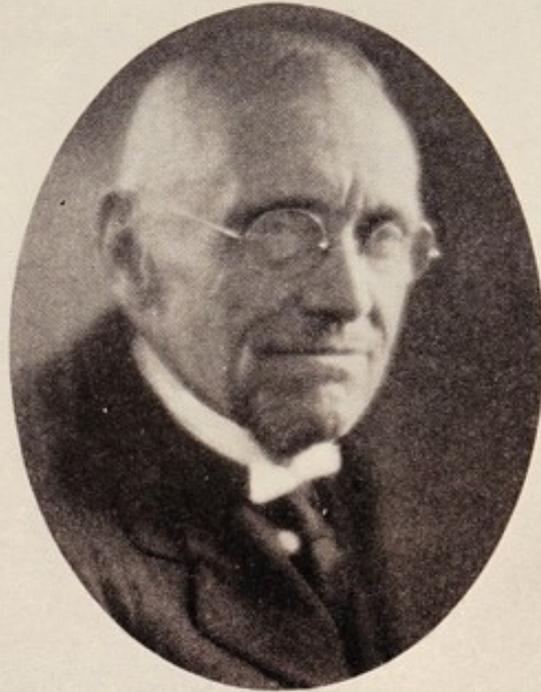
Like his colleague, Dr. Frank Fisher, he was actively interested in athletics, at one time being commodore of the Schuylkill Navy, as well as a founder and president of the American Association of Amateur Oarsmen. He was an ardent follower of golf, fishing and all forms of outdoor life.

Doctor Berens had three brothers, all graduates of the medical department of the University of Pennsylvania. One brother, Bernard, received the degree of B.S. from Yale before entering Pennsylvania, while another brother, Joseph, was graduated from Williams College before pursuing his course in medicine.

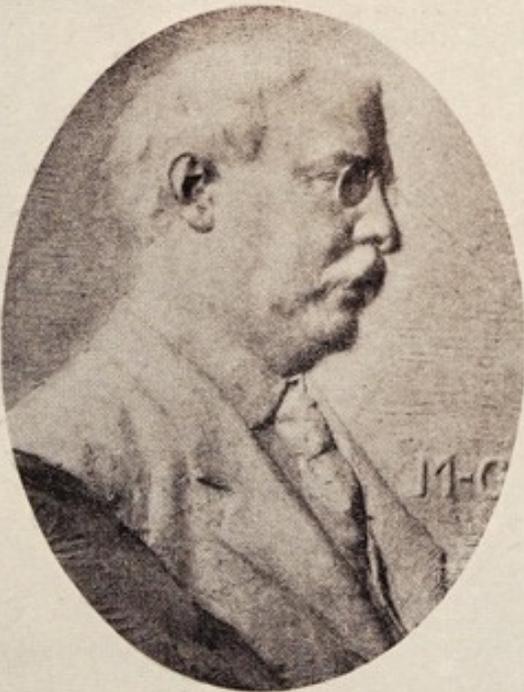
Doctor Berens was married in 1886 and when he died in 1923 two children survived him, one of whom is Dr. Conrad Berens, Jr., of New York, a well-known ophthalmologist.



Samuel D. Risley



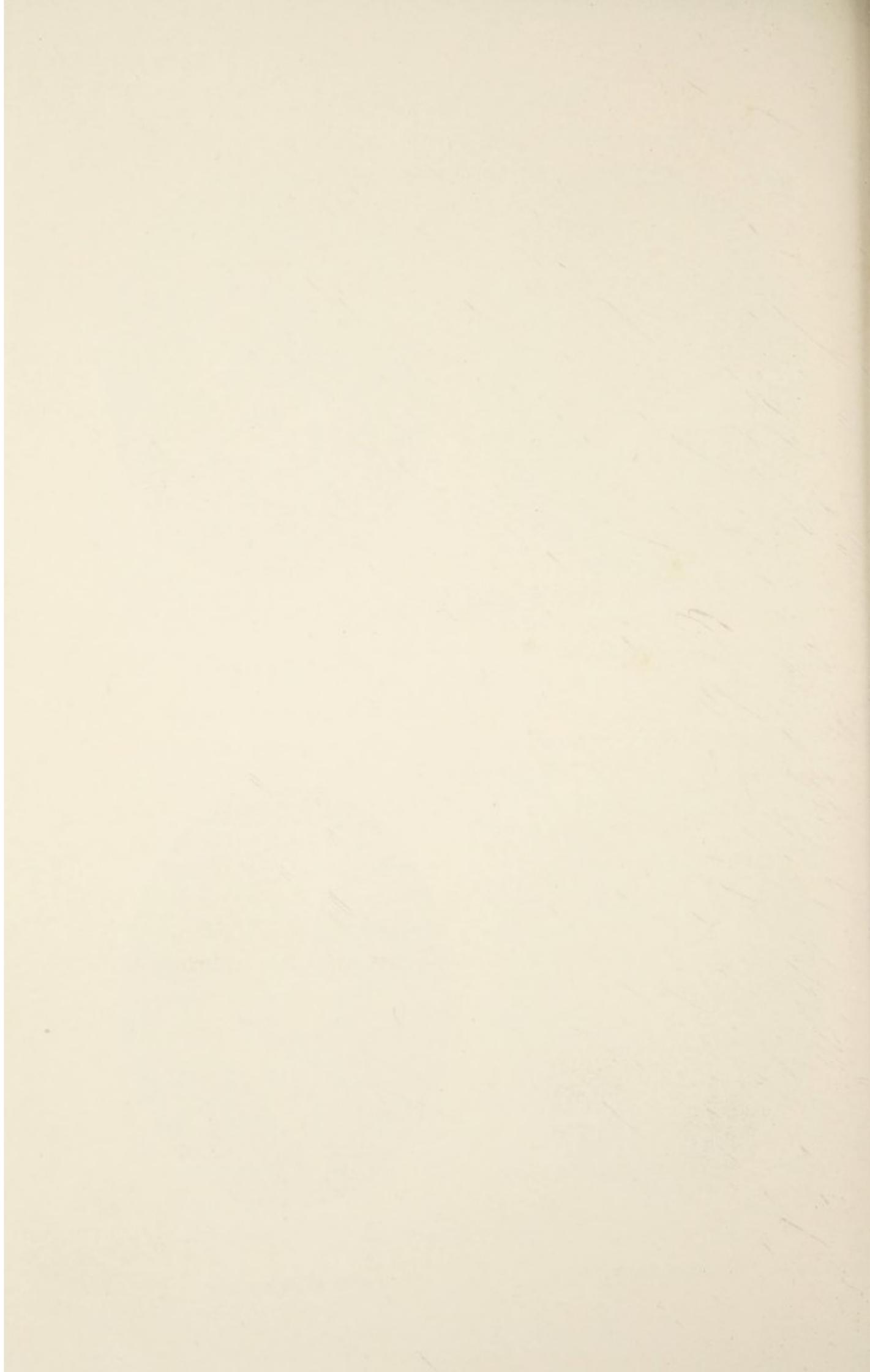
Edward Jackson



Conrad Berens



John W. Croskey



JOHN W. CROSKEY

Assistant Surgeon, 1893-1897
Attending Surgeon, 1897-1900

PETER N. K. SCHWENK

Assistant Surgeon, 1890-1898
Attending Surgeon, 1898-1924
Consulting Surgeon, 1924

MCCLUNEY RADCLIFFE

Assistant Surgeon, 1891-1901
Attending Surgeon, 1901-1924
Consulting Surgeon, 1924

S. LEWIS ZIEGLER

Resident Physician, 1887-1888
Assistant Surgeon, 1890-1901
Attending Surgeon, 1901-1916

Doctor Ziegler was born in Lewisburg, Pennsylvania, in 1861, the son of a clergyman. Educated in the public schools of his native town and in Bucknell University, he entered the medical department of the University of Pennsylvania and was graduated in the class of 1880. He was an interne in the Germantown Hospital and in the Episcopal Hospital, and served two years in the Wills Hospital in the same capacity. He became an Assistant Surgeon in this institution immediately after his internship, and was made Attending Surgeon in 1901, acting in this capacity until 1916, when he severed his connection with the Hospital.

His medical career was always intimately associated with the Wills Hospital and he acted as its executive officer for several years. He was elected ophthalmic surgeon to St. Joseph's Hospital in 1889 and continued in that capacity until his death.

Doctor Ziegler was a surgeon of ability, devising many new operations and new instruments, among them the



FIG. 13.—Ziegler's knife-needle.

V-shaped incision for iridotomy and a new knife-needle. (Fig. 13). Electricity had a great interest for him and he



FIG. 14
Ziegler's
cysti-
tome.

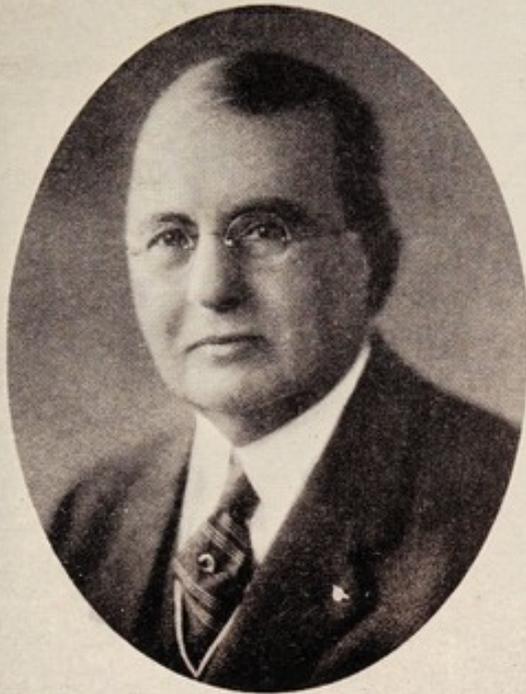
employed that agent constantly in his practice. For the more convenient application of that form of energy he devised the small cautery handle and points for lid operations which bears his name. He devised also a speculum, a cystitome (Fig. 14), lacrimal dilator (Fig. 15), a lens loop with serrations, and other instruments. While he contributed many valuable papers and monographs to ophthalmic literature, his great ambition was to publish a work upon the surgery of the eye, and he spent many months in the preparation of illustrations for the explanation of the text, but unfortunately died before completing what would have been a noteworthy accomplishment.

He belonged to many societies, including the American Ophthalmological Society, and the College of Physicians of Philadelphia. He was an extensive traveler and made many trips to Europe, taking part in nine international congresses of ophthalmology.

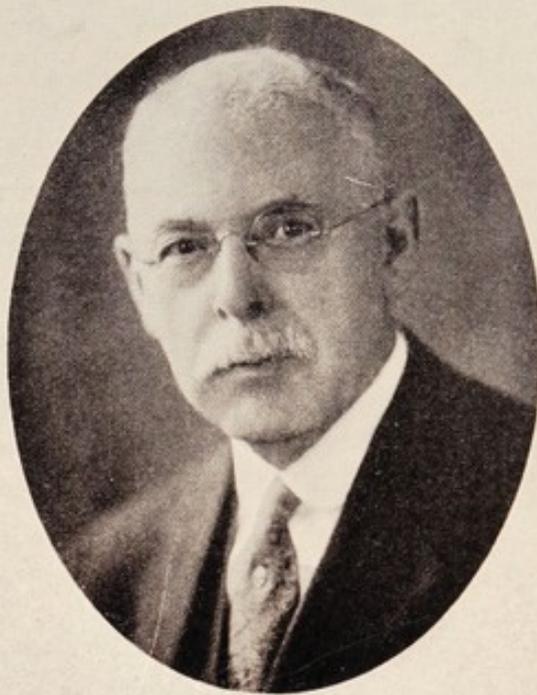


FIG. 15.—Ziegler's rapid lacrimal dilator.

He was interested in civic affairs and was made Director of Public Health in Philadelphia, filling this position with



P. N. K. Schwenk



McCluney Radcliffe



S. Lewis Ziegler



William Zentmayer

great credit. He died of pneumonia in 1926, leaving a widow and two children.

WILLIAM ZENTMAYER

Assistant Surgeon, 1890-1901
Attending Surgeon, 1901-1928
Consulting Surgeon, 1928

WILLIAM CAMPBELL POSEY

Assistant Surgeon, 1893-1902
Attending Surgeon, 1902-1919
Consulting Surgeon, 1919

There were some able men in this group. Doctor Risley, for example, was a prominent figure in ophthalmology. None did more to advance the science in national assemblies, while as teacher and operator he was unexcelled. As editor and author of many carefully prepared treatises, Doctor Oliver vied with Hays and Littell as foremost among those of the Staff to devote themselves chiefly to literary pursuits. Like his former chief, Doctor Keyser, Doctor Fisher excelled in operations upon the eyeball and was a skilled clinician.

COLONEL WILLIAM B. MANN

The devotion of the members of the Wills Hospital Committee to the Hospital has always been great, particularly that of its chairman. Mr. Welsh's sad death has been noted. Again, in 1896, the Hospital suffered another great loss in the death of Col. Wm. B. Mann, who had succeeded Mr. Welsh as chairman of the Committee.

The report of the Board for 1896, commenting upon Colonel Mann's death, says:

"As Chairman of the Committee on the Wills Hospital for twenty years, he made the interests of that Institution his own, and the extensive addition of buildings and the introduction of modern appliances must be ascribed to his unceasing efforts

in securing the appropriations from the Commonwealth needed for these purposes.

"Always alive to the suffering of his fellow men, and ever ready to extend the helping hand to the unfortunate, he was peculiarly adapted to this important work, into which he entered with all his heart and soul. Under his chairmanship many needed reforms were made, new buildings were erected, and a number of additional beds were endowed; but above and beyond all this, Colonel Mann was active in securing for the Hospital much needed additional income to aid the annually increasing charitable work of the large corps of surgeons and assistants of the Institution."

NEW OPERATING ROOMS

For some years it had been apparent that the one operating room on the ground floor of the hospital erected years before offered insufficient accommodations for the large number of operations performed daily. The Staff had urged that the Board correct this evil, and in 1901 in response to their request two rooms opening off the upper floor of each of the large pavillion wards were fitted up as operating rooms, particularly suitable for cataract operations, inasmuch as they opened off the upper wards which were devoted solely to cataract patients. Cataract cases could thus be wheeled in and out of the operating rooms while still recumbent on their own beds, thus avoiding the danger and strain incident to being lifted to and from the operating table. Modern sterilizing apparatus was also introduced as well as proper receptacles for instruments.

LABORATORY

As early as 1893, the Staff entered a plea for a laboratory, as follows: "A pathological laboratory is sadly needed that the scientific side of the Hospital may keep pace with the humanitarian." The position of Curator and Pathologist was created in 1900 and Dr. W. F. Norris was elected to this office, which he held until 1903. Although he held



William Campbell Posey



Paul J. Pontius



William M. Sweet



Burton Chance

this position, it was a sinecure only and no work was done in the small room, which had been set aside for laboratory purposes, until 1903, when Dr. H. G. von Goldberg was appointed Curator and Pathologist. Of the work at that time, Doctor von Goldberg writes:

“It consisted largely in the preparation of specimens for gross and microscopic study, the bacteriological examination of smears and occasional cultures. This latter work was conducted principally for the study of infections, rather than for the prevention of disease, so that it was of no special clinical importance except as a matter of interest and scientific investigation.”

It was not until 1907 that a regular sum was set aside for the work of the laboratory, enabling the purchase of proper apparatus. The examination of secretions in preparation for operation was then generally practiced, and although no provision was made for the services of a technician, Dr. Nelson M. Brinkeroff donated his aid. During Doctor von Goldberg's term of service, a large number of microscopic slides and glycerine-jelly microscopic mounts were added to the permanent collection in the Museum, and in addition a library of microphotographic plates was started, and increased from time to time. A freezing microtome was finally added to the laboratory equipment and bioscopic studies carried on.

Through the efforts of Doctor Oliver, embryological material and zoological specimens were obtained, also normal eyes from executed criminals. In December, 1913, Doctor Brinkeroff succeeded Doctor von Goldberg, and a salary was given him. Under Doctor Brinkeroff's direction in addition to the routine microscopic study of tissues and bacteriological examination of secretions, autogenous vaccines were introduced, the work in cultures and smears was increased, and Wassermann studies became a part of the laboratory routine. In March, 1923, Doctor Brinkeroff

resigned and Dr. Perce DeLong was elected in his place. Doctor DeLong's report for the year 1930 sets forth in detail the work accomplished in the laboratory at this time, and is summarized as follows:

REPORT OF THE PATHOLOGIST

Bacteriological examinations	
Blood cultures	I
Cultures	3066
Smears	1530
	<hr/>
Total	4596
Sputums	
	I
Parasitological examinations	
Ova and parasites (feces)	I
Serological examinations	
Wassermann reactions	997
Meinicke reactions	2267
Spinal-fluid tests	49
Colloidal-gold reactions	49
Swift-Ellis preparations	38
	<hr/>
Total	3400
Hematological examinations	
Coagulation times	305
Blood-sugar determinations	242
Complete blood chemistry	42
Complete blood counts	48
Leucocyte and differential	45
Hemoglobin percentage	11
	<hr/>
Total	693
Blood-sugar tolerance	7
Tissue examinations	133
Milk analyses	12
Urinalyses	2986
Additions to museum slides	366

The above analysis for the year 1930 shows a marked increase in the number of tests performed. The increase, however, is not as astounding as that of 1929, due to the fact that the laboratory is practically running at full capacity.

The bacteriological examinations show about one thousand increase, the serological examinations show approximately

four hundred increase, and the hematological two hundred. The tissues examined show about the same amount as that of last year, but there is an increase of five hundred urinalyses over that of the preceding year. Much of the increase is due to the fact that a greater demand has been thrown upon the laboratory by all the departments.

As in former years, we are teaching the second-year class of the Graduate School of the University of Pennsylvania, and at the same time giving the resident physicians an opportunity to join the class in pathological instruction.

In addition to the above routine work, several pathological problems are under way, two in conjunction with Doctor Klauder's department, and one in conjunction with the Dermatological Institute. We have also a bacteriological problem which is being carried out in conjunction with the Dermatological Institute.

The reason for the transference of some of this work is that there are no facilities for housing animals and carrying out the proper amount of experimental work.

PERCE DELONG, M.D.,
Pathologist.

THE WILLS HOSPITAL REPORTS

Desiring to bring the attention of ophthalmologists in this country and abroad to the clinical and surgical work carried on in the Wills Hospital, and to report unusual cases which they had observed in their practice, the Staff, with the consent of the Wills Hospital Committee, brought out in 1895 the "Wills Eye Hospital Reports," under the editorship of Drs. C. A. Oliver and Conrad Berens. The reports were designated as vol. 1, No. 1, but in reality they should have been vol. 2 or Series 2, No. 1. The quarterly reports published by the members of the first Staff, in the *American Journal of Medical Sciences* in the early years after the founding of the Hospital (p. 59), really represent the first series of Reports of the Hospital's work. It is to be hoped that any Reports which may be issued in the future will take into account those of a

hundred years ago, and will be designated as Series 3. There was but one number of the reports issued by Doctors Oliver and Berens, failure of other numbers to appear being due to the difficulty in receiving contributions from the Staff, as well as in securing a sufficiently large circulation to make the publication self-supporting. There were too many competitors.

The table of contents was as follows:

Board of Directors of the Hospital

Officers

"A Brief Historical Sketch of the Wills Hospital," by Dr. Conrad Berens

List of Officers of the Wills Hospital from Its Organization to 1895

"Three Cases of Cilia in the Anterior Chamber," by Dr. George C. Harlan

"Blepharoplastics," by Dr. P. D. Keyser

"Clinical Records and Memoranda," by Dr. H. Ernest Goodman

"Acute Glaucoma in a Child of Twelve Years, Caused by Atropia," by Dr. Frank Fisher

"A Series of Clinical Cases," by Dr. Charles A. Oliver

"Corneal Abrasion—Dense, White Opacity Following the Use of a Lotion Containing Acetate of Lead," by Dr. S. D. Risley

"Limitation, Subsidence, and Disappearing of Opacity After Injury of the Crystalline Lens," by Dr. E. Jackson and Dr. T. B. Schneideman

"Blanks for Sketching the Fundus Oculi," by Dr. Conrad Berens

"Pediculi Ciliaris; With a Report of a Number of Cases of 'Crablice' in the Eyelashes," by Dr. P. N. K. Schwenk

"Comparative Value of the Administration of Eserine and the Performance of Iridectomy in the Treatment of Simple Glaucoma, Based Upon the Clinical Observation of One Hundred and Sixty-seven Cases," by Dr. William Zentmayer and Dr. William Campbell Posey

"Headache," by Dr. John Welsh Croskey

"Report of a Series of Cataract Extractions Performed at the Hospital," by Dr. E. C. Ellett and Dr. W. R. Parker

"A Clinical Report of a Series of Cases of Injury to the Eyeball," by Dr. Glendon E. Curry

Report of the Surgical Staff for the Year 1894

Report of the House Surgeons for the Year 1894

Classification of Cases Treated in 1894

Operations

As may be seen, most of the papers dealt with case reports. Two, however, were upon the study of an extended group of cases, that by Doctors Zentmayer and Posey upon a number of cases of chronic glaucoma, which they had collated from the clinical material of Drs. W. F. Norris and C. A. Oliver, whose assistants they were; another by Drs. E. C. Ellett and W. R. Parker, who were House Surgeons at the Hospital at the time, was based upon a study of one hundred and thirteen cases of cataract operation performed by various members of the Staff.

THE NEW HOSPITAL FRONT

During the decade 1890 to 1900 there was great excitement among all connected with the Hospital, about a proposed change in its front, as projects were being discussed of opening a Boulevard from the City Hall to Fairmount Park. The direction of the proposed Boulevard and its exact location were not made public, but it was understood that it would necessitate a triangular portion being cut from the southwest corner of Eighteenth and Race Streets, and that the corresponding corner of the Hospital would be included. A reconstruction of the front of the Hospital seemed necessary and plans were prepared which called for the erection of a wing to the east of the Hospital building which would give room for the conduct of the ever-increasing out-patient service.

Fortunately for the Hospital, the lines of the proposed

Boulevard were changed and moved farther north, so that none of its property was encroached upon. The increasing demands made upon the out-patient department, however, made additional accommodation for this class of patients absolutely necessary, so that the Management, in compliance with an urgent plea from the Staff, requested an architect to prepare plans for the reconstruction and enlargement of the entire original building. These plans were finally submitted by Mr. John T. Windrim, a well-known architect of the city, whose father had been for many years a member of the Board of Directors of City Trusts, and a well-beloved and efficient member of the Wills Hospital Committee.

While the plans removed the long familiar Greek front of the old building, they gave place to a new and dignified façade quite in keeping with the proportions of the Hospital and provided the enlargement necessary. Upon the main floor were three well-lighted and spacious clinic rooms, a large waiting room for patients, and an office for the use of the superintendent. On the second floor additional room was added to the quarters of the superintendent. Alterations in the basement and third floor and also of a portion of the second floor remained to be completed. Later these improvements were made possible by an appropriation of \$45,000 made by the 1909 State Legislature.

DONATION DAY AND CONTRIBUTING LIST

In 1901, a Committee of the Staff appointed to confer with the Wills Hospital Committee as to the best means of bringing the Hospital before the public instituted a Donation Day, being confident that if charitably inclined citizens were apprised of the urgent necessities of the Hospital, sufficient funds could be acquired to sustain its ninety-six free beds, and insure the opening of its much-

needed wards for the treatment of infectious eye diseases. It was also suggested that a Contributing List be started among the friends of the institution and that the day of the Hospital's foundation—April 2—be utilized for that purpose. Donation Day was finally established in 1903, and a small sum raised annually from various sources, until 1927, when, appeals having been allowed to lapse, the Day was abolished. The Contributing List is still continued.

CHAPTER XI

CLINICAL WORK AT THE WILLS
HOSPITAL. OUT-PATIENT DE-
PARTMENT. SURGICAL PRACTICE.
X-RAY LABORATORY. MAGNETS

IN THE early years, practically all who sought relief in the out-patient department came on account of inflammatory symptoms, and they were variously classified in keeping with the knowledge of the day. Trachoma was recognized in the acute and chronic stages as granular conjunctivitis. In the chronic form, with pannus, applications of solution of sulphate of quinine were made to the granules; other astringents were also recommended. When the pannus was very dense, inoculation was made of the affected eye with gonorrhoeal pus, or a solution of jequirity bean.

In 1872, when the Hospital Management was turned over to the Board of Directors of City Trusts, among 2,876 new patients, one hundred and sixty-one cases of granular conjunctivitis were recorded. Ten years later, in 1884, with 7,538 new cases, there were one hundred and sixty-nine cases of granular conjunctivitis. In 1894, with 12,614 new cases, there were one hundred and fifty-four cases of granular conjunctivitis. In 1904, with 14,225 new cases, there were but eighty-seven cases of trachoma. In 1910, among 15,335 new cases, there were but one hundred and thirteen cases of trachoma. In 1920, of 12,767 new cases, there were but ninety-one cases of trachoma, and in 1930, among 24,900 new patients, there were but twenty-three cases of trachoma.

These figures indicate a marked decrease in the number of trachoma cases. Forty or fifty years ago the clinics, especially those held on Saturday, the Jewish holiday, were crowded with such cases, mostly of the chronic type, the

Jews having contracted the disease in Europe where they were oppressed and compelled to live under mal-hygienic conditions. In the latter part of the century the rapid increase of immigrants from Russia and southeastern Europe had brought such a number of cases of trachoma into our country that the United States Government became alarmed, and in 1897 passed stringent laws which excluded all cases of trachoma, either in the acute or chronic stages. As the disease in this region has been limited to immigrants almost entirely, thanks to this stringent law the number of cases of this disease has markedly diminished. It is very rarely that one now sees a case of trachoma in an acute form in Philadelphia.

At the time that the Wills Hospital was founded and for fifty years or more thereafter, one of the most potent causes of blindness was gonorrhoea, at least 10 per cent. of all cases of blindness being due to that cause. Babies born in lying-in establishments were particularly prone to be affected, by the discharge from the mother which entered the eyes at the time of the birth.

In 1884, Credé (Carl Siegmund), professor of obstetrics in Leipzig at the time, found that the disease could be prevented by putting a few drops of a 2 per cent. solution of nitrate of silver into the eyes of infants directly after birth—a simple procedure, but attended by remarkable results for by this means Credé was enabled to reduce the number of cases of blindness in such establishments from 20 per cent. to 1/10 per cent., another great boon to humanity, and giving Credé the right to be enrolled with Von Graefe and others in the list of ophthalmological immortals.

In the United States Schools for the Blind scattered over our country in 1908, 28 per cent. of the inmates had lost their sight from gonorrhoea, while in 1928-1929 the

percentage had fallen to 9 3/10 per cent. as the result of the faithful application of the Credé method.

It is difficult to estimate the effect of this treatment upon the practice of the Wills Hospital. The reports indicate a decreasing number of cases of purulent conjunctivitis, both in adults and infants each year. For some years past, however, it has been the custom to refer many such cases, particularly infants, to the Philadelphia General Hospital for ward treatment, the resources of the Wills Hospital being inadequate to properly handle such cases. Any deductions, therefore, drawn from the number of cases of purulent conjunctivitis listed in the annual reports would be fallacious. It has been the experience of the surgeons at the Wills Hospital, both in that Hospital and elsewhere, that ophthalmia neonatorum is now but rarely met with, thanks to the general employment of Credé's method, and the campaigns which have been made by Visual Conservation Societies to educate the public concerning the dangers of venereal diseases.

A certain number of cases of vernal conjunctivitis were observed each year in about the same proportion as occur in other American and European cities.¹ An occasional case of diphtheritic conjunctivitis was also recorded.

Various types of catarrhal conjunctivitis are listed in the reports, but purely on a clinical basis, for no other means of differentiation was possible prior to the advancement of the science of bacteriology by Robert Koch, of Berlin, who discovered the bacilli of two different forms of conjunctivitis in 1883. In 1886, Koch and John E. Weeks, of New York, discovered the organism causing pink eye. The discovery by Victor Morax, of Paris, and Theodore Axenfeld, of Freiburg, acting independently of one another, of the diplo-bacillary form of conjunctivitis

¹ Posey, William C.: "Vernal Conjunctivitis," *Journal of the American Medical Association*, p. 9, July 25, 1903.

in 1896 and 1897 respectively also contributed to our knowledge of the bacteriological origin of conjunctival diseases.

Cases of iritis came to the Hospital frequently and were recognized as being due to systemic causes, either syphilis or rheumatism, and were treated accordingly. Tuberculosis and gonorrhoea were not recognized as causal factors until the close of the century.

In recent years, the study of focal infection has done much to establish the pathogenesis of many ocular affections, and, as we shall see, the creation of the associated clinical departments of the Hospital has been found a satisfactory manner of discovering the origin and treating many cases of iritis, as well as other inflammatory conditions of the uveal tract.

Many cases of orbital affections have been treated in the Hospital. Tumors involving that region—both benign and malignant, and causing marked displacement of the eyeball—have been operated on not infrequently. The first Krönlein operations in Philadelphia were done in the Hospital. Abscesses of the orbit, arising in the accessory sinuses of the nose, have been drained. Displacement of the eyeball, due to encroachment upon the orbital cavity by mucoceles of the sinuses, have been relieved by reëstablishing drainage from the sinuses into the nose by orbital operations.

SURGICAL PRACTICE—INJURIES

A large number of injuries to the orbit by gunshot wounds, and the penetration of that cavity by many other kinds of foreign bodies may be found on the records.

A very large proportion of those coming to the Hospital on account of injuries were from the mining regions. Many were desperate cases, demanding a prolonged and skilful treatment to save even a small portion of sight.

Other cases coming from a distance were sent by local physicians who lacked facilities at their command to deal with cases of such a nature.

In 1900, there were a total of 13,739 new cases. The records show that in this year the Resident Physicians removed 2,697 small foreign bodies from the conjunctiva and cornea; also that five foreign bodies were removed from the lens, three from the anterior chamber, and four from the sclera. In addition, the following injuries were noted: lids twenty-one, conjunctiva twenty-three, cornea fifty-four, and perforating wounds of the eyeball nine.

In 1910, there were 17,588 new cases. Seven presented wounds of the conjunctiva, fifty-seven of the cornea, nine of the sclera, ninety-four the lens, and ten of the iris. Extensive wounds of the eyeball were reported in thirty cases. Two foreign bodies were located in the anterior chamber, two in the lens, and seven in the vitreous humor. The Resident Physicians removed from the cornea or conjunctival cul-de-sac 2,253 foreign bodies.

X-RAY LABORATORY

In the Staff reports for 1902, an appeal was made for the proper equipment of an X-ray laboratory. It was pointed out that the possession by the Hospital of an X-ray apparatus would not only be a great convenience to the patients, but would also save the Hospital the expense of having such examinations made elsewhere. A similar plea was made in 1907, but it was not until 1910 that it was granted by the Committee. A few years later, in 1914, thanks to the generosity of Mrs. William H. Lambert, the wife of the chairman of the Hospital Committee, a more powerful apparatus was installed, enabling the detection and localization of foreign bodies in the eye, and also examination of the sinuses contiguous to the orbit, the lesions of which are so liable to involve

the eye. In 1914, two hundred twenty cases were referred to the X-ray department, of which number one hundred eighty-nine were cases of injury in which sixty-four foreign bodies were located in the eyeball and fifteen in the orbit. In 1920, one hundred twenty radiographs were made, of which one hundred were for the purpose of locating foreign bodies in the eyeball. Forty-five of these were positive. The remaining radiographs were as follows: of the orbit eight, sinuses nine, skull three.

The report of the X-ray department for 1930 is as follows:

“The department of roentgenology has shown a rapid growth during the past twelve months, more than doubling the output as compared with the preceding year. This has included not only the number of patients examined but also the number of radium treatments given.

“The relation of eye infection to diseases of sinuses and teeth has passed the experimental stage and is now among the well-established medical facts. Consequently, a large per cent. of the clinic cases are being referred for study of the nasal accessory sinuses and teeth in search of foci of infection.

“These studies from the roentgenological point of view are used in coöperation with the findings of the nose and throat and dental departments, where such foci are treated and removed.

“Radium has likewise taken a recognized place in the treatment of malignant condition about the eyes. The number of treatments given and results obtained have been extremely gratifying and demonstrate unquestionably the outstanding value of this addition to our previous facilities. Our radium is contained in needles of five and ten milligrams. These are built into packs and applied to patients with deep-seated lesions in such manner that the rays enter the diseased area from as many paths as possible, depending on the size and anatomical situation to be treated. Soft radiation which damages the superficial tissue without penetrating the deeper structures is filtered out by means of lead and brass, and only the hardest gamma radiation is used. This is ‘cross-fired’ into the lesion so that the maximum of effect is obtained. By means

of long periods of treatment with the extremely high filtration the maximum of value is obtained without the damaging effects which were observed by older methods. For more superficial lesions the needles are built into placques and applied directly. When the area can be reached surgically, needles are embedded in and about the orbits. This implantation method is used in conjunction with the large, heavily filtered packs and a great quantity of effective radiation reaches the desired area under perfect control.

"Many newer methods of study of the pituitary, orbits and sinuses have been investigated and put into routine practice during the past year. One of especial interest to the ophthalmologist is the investigation and measurements of the optic canals. We began this work as merely an experiment, but at present it has taken an important place in tumors, infections and bone conditions, involving the orbits, optic canals and sphenoid sinuses, and is part of our regular routine study of such cases. We are at present trying to perfect a method of study of the profile of the orbital canal which will have a direct bearing on the prognosis, especially in cases showing edema and choking of the disc.

"Our department has kept pace with the newer developments and the expanding field of usefulness of roentgenology generally, especially the more recent work in eye, head and face examination. We feel that the full importance of X-ray investigation in this field has only recently been recognized.

"Tabulation of cases referred to this department is as follows:

FOREIGN BODIES		
Positive and localized	48	
Negative	<u>131</u>	
Total		179
ACCESSORY SINUSES AND MISCELLANEOUS		
Accessory sinuses	726	
Skull	276	
Orbit	121	
Sella-tursica	135	
Optic foramina	66	
Mastoid	20	
Face	2	
Jaw	27	
Lacrimal duct (lipiodol)	15	

Shoulder	7
Chest	48
Spine	3
Ribs	2
Elbow	4
Hand	3
Heart	50
Pelvis	1
Knee	3
Leg	12
Ankle	3
Total	1524

TEETH

Complete set	197
Partial set	88
Total	285
	1988

SUPERFICIAL THERAPY

Cases	7
Treatments	24

RADIUM

Cases	31
Applications	144
Milligram-hours	96906

B. P. WIDMANN, M.D.,
Roentgenologist.

The first Roentgenologist in the Wills Hospital was Dr. William M. Sweet, who was appointed in 1914 and resigned in 1918. The names of his successors are as follows:

	APPOINTED	RESIGNED
Dr. F. C. Parker	1918	1927
Dr. Ray W. Hayworth	1927	1929
Dr. Bernard P. Widmann	1929	
Dr. Edward W. Spackman (Assistant Roentgenologist)	1929	

MAGNETS

The Hospital became the possessor of a Haab Magnet in 1892, the gift of an anonymous benefactor. The report of

the surgical Staff contained the following note: "They [the Staff] also wish to thank the unknown donor, for that most useful instrument, the Haab Magnet, which will prove of inestimable value in the removal of fragments of steel from the eye." The magnet was suspended from the wall, was readily manipulated and proved of the greatest service, as prior to its reception the staff had to rely upon a Sweet Magnet, an efficient but much less powerful instrument. In 1906, Doctor Parker, an Assistant Surgeon at the time, invented a hand magnet of much the same magnetic strength, but with certain advantages over that of the Sweet Magnet, one of which was an indicator to inform the operator when the current was off or on. This instrument was manufactured by J. C. Ferguson who presented one to the Hospital.

Though Himley and Beer were the first to point out that after an injury to an eye a peculiar inflammation of its fellow often occurred some time later,² Mackenzie established this as a fact and described the dangerous nature of this sympathetic disease and its intractability to treatment.

The Staff at the Wills Hospital was among the first to appreciate the truth of Mackenzie's teaching, and early enucleation of injured eyes was practiced, particularly when the region involved was in the danger zone, and when foreign bodies were retained in the eye, as experience has taught that in such cases sympathetic trouble usually followed. In 1872, there were nine enucleations for iridocyclitis and sympathetic ophthalmia. In 1882, there were fifty-nine for the same purpose. In 1892, it is impossible to ascertain from the records how many eyes were removed for sympathetic trouble, but there were one hundred thirteen enucleations in all recorded for that

² Mackenzie, William: "Practical Treatise on Diseases of the Eye," Third Edition, p. 523, 1840.

year, two of them being noted specifically as for sympathetic irritation.

Conditions which might give rise to sympathetic ophthalmia were listed as follows—foreign body within the eyeball thirteen, perforations in the eyeball sixteen—figures from which no inferences can be drawn.

Many cases came into the Hospital every year blind from sympathetic trouble and enucleation was performed, but unfortunately no record was made as to whether there were sympathetic symptoms or not, the diagnosis being entered as iridocyclitis and the enucleation listed under that heading.

SINCE the opening of the Hospital in 1834, thousands of operations have been done within its walls and countless patients relieved. Many blind have received sight, many others have been relieved of pain, others of deformities, *etc.* Almost every kind of operation which has been essayed and received the sanction of eye surgeons elsewhere has been performed here. As the most important and serious the eye surgeon has to deal with, the operations for the cure of cataract and glaucoma will be described at length, while the surgical procedures for other conditions will be given brief attention.

CATARACT

The Wills Hospital has always been renowned for its cataract operations. This was due partly to the skill of the surgeons, but also partly to the striking results from the operation itself. Patients blind from this cause were led into the Hospital and in a few weeks walked out the doors unaided, with seeing eyes. No other operation in surgery gives such brilliant results.

Fortunately, we are able to trace the evolution of the cataract operation as practiced in America, by means of the writings of members of the Wills Staff down to the present day.

Littell, Hays, Agnew and Norris have all described the procedures in practice in their time and recorded their opinion of early methods. Finally, W. R. Parker, professor of ophthalmology in the University of Michigan, and at one time an interne in the Wills Hospital, has in recent years added to these records a valuable résumé of cataract cases operated upon by him by various methods. The Staff

of this venerable Institution has had much to do with bringing the operation to its present state of perfection.

When the Hospital was founded, three ways of operating were in vogue: couching, or depression; keratonyxis, or breaking up of the lens; and extraction; and of these three methods there were various modifications.

Couching, or depression, was the operation of the earliest surgeons and until the beginning of the eighteenth century was the only procedure practiced. It consisted in simply displacing the lens below the level of the pupil, was easy of performance and oftentimes gave immediate successful results.

Keratonyxis was performed by lacerating the capsule and dividing the lens so that the lens substance might be exposed to the action of the aqueous humor and thus be gradually dissolved and absorbed. This procedure was very popular for a time and had adherents well into the last century. In Wharton Jones's book,¹ edited by Isaac Hays, a full account of the operation is given, and the opinion rendered:

"Considered as an operation, this is the most successful of all those for cataract, both in performance and in the extent of injury necessarily inflicted upon the eye. . . . In the cases proper for the operation, the prognosis is good. . . . In general, it may be said that in children the absorption process proceeds more quickly than in adults."

Littell² says of keratonyxis:

"It is easily performed, occasions little pain, and is fully adequate to the cure of the disease; it is particularly applicable to cataract as it occurs in childhood. In very early infancy, the thickness of the cornea, and the consequent proximity of the iris, may, perhaps, constitute valid objections to its employment. Less injury is thus inflicted upon the organ, and

¹"Principles and Practice of Ophthalmic Medicine and Surgery," p. 275, 1847.

²"Diseases of the Eye," p. 171, Philadelphia, 1837.

keratonyxis is, therefore, sometimes resorted to on the first occasion in adults; but the surgeon has not such entire command over the needle as when it is introduced through the sclerotica, and the difficulty of breaking up of the lens renders it less adapted to the performance of the subsequent operations."

He states that solution is the operation generally preferred in this country. He enters the needle through the sclerotica a little above its transverse diameter, and about a line from the cornea.

Extraction. In 1745, Daviel revolutionized the operation for cataract by making an incision into the eyeball and removing the opaque lens from the eye. Some years later, Beer, of Vienna, modified Daviel's method and invented a triangular knife, by means of which a large enough section of the cornea to permit of the egress of the lens from the eye could be made by simply pushing the knife forward until it cut its way out through the cornea. No iridectomy was done. Many cases were successful but many were lost by suppuration. This was thought to be due to the fact that the incision lay entirely in the cornea, and for some years a more peripheral incision was practiced in the sclera, and removed as far from the corneal tissue as possible. The results obtained by this modification, however, were but little better.

Littell did not favor extraction and wrote of it in the following terms,³ which are printed verbatim that a proper conception may be gained of the opinion of a conservative surgeon of that day:

"Though much has been justly said in favour of the operation by extraction, there are reasons which will ever prevent it from being practiced by the great body of the Profession. It is comparatively complicated and difficult, requiring more than ordinary resolution and steadiness on the part of the patient—circumstances which restrict its employment to adults

³ *Loc. cit.*, p. 296.

—and greater experience and manual dexterity than can be expected from the generality of surgeons, who have few opportunities either of witnessing or of performing such operations. These objections, however, are rather so many reasons why persons should not undertake that which they are not qualified to perform, than arguments against the operation itself. Neither would the accidents which accompany, or the dangers which follow extraction, be entitled to more weight, if it were really the surest means of restoring vision, for it would, on that supposition, be the duty of the patient to incur the risks attendant upon it.

“A comparison⁴ of the results furnished by the different modes of operating for cataract leaves no doubt as to their relative value. Of three hundred and six cases of *extraction* at La Charité, the cures were in the proportion of two and a half to one; while of an equal number *depressed* by Dupuytren at the Hotel Dieu, there were more than five to one. Of seventy operations by extraction, forty-three by displacement, and twenty-one by keratonyxis, performed at the institution last mentioned between the years 1806 and 1810, the successful cases were respectively nineteen, twenty-four and seventeen.”

Although Littell and doubtless others of a conservative nature adhered to solution of the lens and couching, others had relinquished these procedures for extraction. Some years before the Wills Hospital came into existence, we have recorded elsewhere Physick's and McClellan's (see pp. 4, 16) success with this method and doubtless other Philadelphia surgeons, and among them some of the Wills staff, practiced it.

In any event, they soon came to do so after Von Graefe in 1862 made his modifications in the method of extraction. The first improvement this great surgeon introduced was that of a linear incision which did away with the gapping caused by the Beer incision, on Graefe being of the opinion that the suppuration attending the flap method was caused by the gapping of the wound which it

⁴ *Loc. cit.*, p. 179.

occasioned. To obviate this he made his incision in the upper part of the cornea and combined it with an iridectomy. About the same time, Jacobson introduced a flap section in the sclera, also combining with iridectomy.

It is interesting at this juncture to obtain the opinion of a member of the Wills Staff, and of one particularly qualified to pass upon the various methods of cataract operation in vogue during the greater part of the nineteenth century. We refer to that of Dr. D. Hayes Agnew, as he expressed himself in his monumental work upon surgery.⁵ None better than he was able to pass judgment upon the operation. As a student under Gibson he had listened to the teaching of that great surgeon, and as an operator himself with a large practice, and a member of the Wills and Pennsylvania Hospital Staffs he had opportunity to observe the practices of his colleagues, to hear their judgment upon this and that operation and best of all as a conscientious and skilful operator was able to study his own results. His was a judgment worth having.

Of couching he says:⁶

"The operation is so generally followed by destructive changes in the vitreous body and by slight subacute inflammation of the iris and choroid that a very large percentage of eyes operated on by this plan are ultimately lost. Except for the historical interest the operation should be abandoned."

As to keratonyxis:⁷

"The operation, at one time very popular, is at present reserved for cases of congenital cataract in children, or to soft cortical cataract in young cases. The operation is not suitable to senile cataract."

It is interesting to note, also, what another surgeon of the Hospital, writing twenty years later in 1890, thought

⁵ "Principles and Practices of Surgery," vol. 3, p. 271, 1883.

⁶ *Loc. cit.*, p. 269.

⁷ *Loc. cit.*, p. 268.

of these earlier procedures. Thus, Dr. W. F. Norris, in speaking of the discission and absorption methods says:⁸

"The main difficulties are the length of time required for complete absorption (a period which usually extends over several months) and the resistance of the hard nucleus of senile cataract. Even these hard lenses have, however, been successfully treated by this method, and fifty years since it was the prevailing method at the Wills Hospital, then the only eye hospital in Philadelphia. Dr. Isaac Hays invented a knife-needle for this purpose, and, by means of it, introduced through the posterior chamber, the lens was gradually sliced away and cut up. Excellent vision was sometimes obtained, and the author has seen patients thus operated upon who were years afterward in the possession of good eyesight. While by no means advocating this procedure, believing it to be much inferior to properly executed extraction, it is here recorded as a matter of history, to show that it has been extensively used and that it is practicable even in senile cataracts when undertaken with a sharp knife-needle."

Agnew practiced Von Graefe's method from the very first, and dwells upon the remarkable number of failures of scoop and flap operations as compared with the linear method.

Excellent as Von Graefe's results were with this method, they were still further improved a few years later by his introduction of the *modified flap operation*, which combined the advantages of the linear incision, by which he obtained a close coaptation of the lips of the wound, and a scleral incision which protected against suppuration. The narrow or linear knife devised by him was soon almost universally employed by the profession, and still continues to be so.

Then came numerous modifications of Von Graefe's method by various operators. Some, to avoid injury to the iris and to obtain a round pupil, preferable for cosmetic

⁸ "A System of Diseases of the Eye," vol. 4, p. 370, 1900.

reasons and oftentimes for visual, omitted an iridectomy and performed what is known as the *simple operation*. Others, pointing out the danger in this procedure of more frequent iris prolapse and the great difficulty in the removal of the lens, lens cortical, capsular débris, *etc.*, than when iridectomy is done, insisted upon the performance of that step and did the *combined operation*.

Preliminary Iridectomy. Another group of surgeons preferred the performance of iridectomy some weeks prior to the extraction of the lens, claiming that if such a method is performed in all cases of a critical nature, *i.e.*, when the other eye is already lost or blind, it should be the operation of choice in every case. The objection raised to this was the greater risk of infection in two operative procedures, and the greater mental and physical strain entailed upon the patient.

The manner of opening the capsule also evoked discussion and led to different methods of accomplishing this step. The cystitome was preferred by most, but their manner of incising the capsule differed. Others tore off a bit of the capsule with forceps like Foerster's or Treacher Collins's. Other experienced and skilful operators incised the capsule with the tip of the cataract knife, as the instrument was made to sweep across the anterior chamber in the preliminary section of the globe. There were others⁹ who thought it advisable to open the capsule and ripen the lens several days or weeks before completing the operation of cataract. This procedure was never extensively employed. A conjunctival stitch to close the wound was insisted on by some, while others advocated washing out the anterior chamber in all cases.

After a time, it became apparent that no one type of operation was suitable to all cases, that each was peculiarly

⁹ Smith, Homer: "Cataract Extraction with Preliminary Capsulotomy," *Ophthalmic Record*, p. 493, October, 1906.

adaptable to certain individuals and certain eyes, which could be decided only by surgical experience and wisdom.

Frequency of Cataract. Dr. W. F. Norris¹⁰ noted that in various clinics throughout the world, in those with lens opacity sufficiently developed to cause their complaint to be entered on the books of an eye hospital as cases of incipient cataract, the frequency of cataract ranges from 5 per cent. to 10 per cent. Thus, in the twenty years from 1872 to 1891 inclusive at the Wills Hospital, there were 129,806 cases of eye diseases and 1,428 extractions, making 1, 1 per cent. of mature cataract, the number of extractions representing, as it nearly does, the number of ripe cataracts. In later years, when the number of patients became much larger, the percentage was smaller. Thus, in the five years from 1886 to 1891 inclusive, there were 53,453 cases of diseases of the eye and four hundred eighty-eight extractions, a percentage of 0.9 per cent.

An interesting survey of the cataract patients coming to the Wills Hospital was made by Edward Jackson.¹¹ Among 10,000 cases attending his service in that hospital and in the Hospital of the Philadelphia Polyclinic, there were 1,545 cases over fifty years of age. Of this number four hundred forty-nine had some lens opacity at fifty years. Arranged in five-year periods, the percentages showing such opacities were as follows: 15 per cent. between fifty and fifty-five, 16.1 per cent. between fifty-five and sixty, 30.2 per cent. between sixty and sixty-five, while in the ten-year period between sixty-five and seventy-five, 77 per cent. were found.

Before the days of general anesthesia, cocaine, of course, not being available until years later, patients and surgeon had to make out as best they could, the one to endure, the other to operate skilfully and swiftly. After general

¹⁰ "System of Diseases of the Eye," vol. 4, p. 323.

¹¹ Section on Ophthalmology, American Medical Association, p. 63, 1898.

anesthetics were introduced it was a question whether the relief from pain which they afforded the patient and the opportunity given the surgeon to operate with greater precision and ease counterbalanced the evils from retching and vomiting which the anesthetic often occasioned. There are many statistical reports dealing with this subject *pro* and *con*. Agnew, who lived through this unsettled period, says¹² "The administration of an anesthetic must be determined by the composure and self command of the person who is to undergo operation. Far better that one should not be employed. The operation is not a painful one, and a few words of assurance from the surgeon will generally remove any timidity which may be experienced and restore the tranquillity of the patient. Derby, of Boston, to settle the question of the administration or the withholding of an anesthetic in this operation, furnished the results of two hundred cases of extraction. One hundred patients were operated on while under an anesthetic, with eight losses; the second one hundred without an anesthetic and with only a single loss. Strawbridge¹³ found the depressing sequelae of ether detrimental.

To demonstrate the superiority of Von Graefe's modified linear incision, Noyes, of New York, at a meeting of the American Ophthalmological Society in 1879 presented a series of 10,094 cases which had been operated upon for cataract by thirty-five different surgeons, and by various methods. These cases ranged from two hundred forty-four operated upon by Daviel in 1777 to three hundred ninety-six by Rothmund in 1868. This series showed that there was a loss of 16.91 per cent. by the old flap method, while in 1,661 cases operated on by the method of Von Graefe, the operations being performed by one hundred ten different operators, including Von Graefe himself in 1865

¹² *Loc. cit.*, p. 260.

¹³ *Transactions of the American Ophthalmological Society*, 1886.

to H. Knapp in 1877, there was a loss of but 6.52 per cent. From this latter list, Noyes obtained the results of six operators: Arlt, Von Graefe, Mooren, deWecker, Rothmund and Knapp. In 5,566 cases taken from this list there

V. = $\frac{20}{200}$ to $\frac{2}{20}$ have been entered as good results.

V. = $\frac{20}{200}$ — $\frac{1}{20}$ “ “ “ “ moderate results.

V. < $\frac{1}{20}$, i. e. $\frac{1}{20}$ and 0, have been entered as failures.

SERIES OF 100 CASES.	TIME OF OPERATION.	METHOD OF EXTRACTION.	RESULTS.			FAILURE FROM	
			Good.	Moderate.	Failure.	Suppuration.	Other causes.
First	1866	Very peripheric section, more curved than linear.	70%	22%	8%	3%	5%
Second	1867	Peripheric linear; early secondary discission of capsule.	80%	12%	2%	2%	
Third	1868	The same.	86%	9%	5%	3%	2%
Fourth and Fifth	1869 to 1876	Periph.-linear; removal of anterior capsule.	82%	7.5%	11.5%	8.5%	3%
Sixth	1876 to 1879	Periph.-linear; peripheral opening of capsule.	89%	1%	10%	8%	2%
Seventh.	1879 to 1881	Section less peripheric.	88%	7%	5%	2%	3%
Eighth	1881 to 1882	Section circular-marginal; antiseptis in every other case.	90%	8%	2%	1%	1%
Ninth and Tenth	1882 to 1886	The same.	90.5%	5.5%	4%	3%	1%
1000 Cases	1866 to 1883	Grafe's, variously modified.	85.4%	8.3%	6.3%	4.2%	2.1%

FIG. 16.—One thousand cases of cataract extraction—Herman Knapp. *Transactions, American Ophthalmological Society, 1887.*

was a loss of but 4.52 per cent. Noyes was led to the conclusion that we may regard an average loss of 6 per cent. as what is to be expected in Von Graefe's method of extracting cataract, when done in the most skilful manner.

We have already recorded (p. 113) that, of one hundred forty-eight extractions performed at the Wills Hospital as reported by Doctor Keyser, there was 6 per cent. of loss.

The most convincing series of cases in favor of Von Graefe's method was presented at a meeting of the American Ophthalmological Society by Herman Knapp in 1887. The series numbered one thousand cases, all operated upon by Knapp himself and offered in groups of one hundred cases.

Prior to 1881, no antiseptics were employed in these operations. After that year, strict and aseptic precautions were observed in all cases. Dwelling upon this fact Knapp in the presentation of his report, said:

"Is it surprising that a number of surgeons looked critically and with diffidence on the introduction of the antiseptic means used in general surgery—not to be identified with antiseptic precautions—into the operations of so delicate an organ as the eyeball? Conservatism has its limits, however, and to remain refractory against the application of such antiseptic means which the eye will tolerate, would to-day be an anachronism. To use measures tending to prevent the introduction of pyogenic germs, and if this cannot be done to its fullest extent, render, by sterilizing the soil, the development of germs difficult if not impossible is the new departure in surgery. Owing to the success of these measures, the methods of operating for cataract are gradually changing. At present, we do not dread the cornea as we did, and, as a rule, we spare the iris. But, Gentlemen, the leading principles and experiences of Graefe's time are not lost. Extraction with iridectomy will be, probably always, the operation of necessity in certain cases, and the safest to choose in others. As long as antisepsis is not an absolute guarantee of all unfavorable reactive processes, we may fairly adhere to the principle that, other things being equal, the recovery from any surgical interference will be so much more assured as the operation is simpler, cleaner, and smoother."

While there can be no doubt of the benefit of ophthalmic surgery which has been derived from antiseptic

methods, antiseptics has not been the great boon to it that it has been to general surgery. Statistical studies indicate that; also the experience of those of us who, born in antiseptic times, yet are old enough to have witnessed operations performed by surgeons of the old school who obtained surprisingly good results though careless of antiseptics. The relationship of the eye to neighboring parts and the impossibility of severing the connection of the conjunctival sac with the nasal passages without the removal of the tear sac, in itself a difficult procedure, prevents the possibility of shutting off the conjunctival cul-de-sac from infection, while the delicate character of the tissues involved prevents the use of antiseptics strong enough to destroy noxious bacteria. The results therefore to be gained by antiseptic methods in operations upon the eyeball are problematical, though much can be said in favor of their use to obtain a wound which is free from contamination, and all efforts should be directed toward that end.

Fuchs¹⁴ has stated the problem as follows:

“In operations upon the eye we have less to do with antiseptics; we do not have to disinfect a contaminated wound, but to make a wound that is clean and keep it from contamination.”

Cocaine. The discovery of cocaine about this time (1884) by Carl Koller, formerly of Vienna, later of New York,¹⁵ was of the greatest service to eye surgery, to patient and surgeon alike, relieving the patient from all pain in operations upon the globe and enabling the surgeon to operate deliberately and cautiously. Although in proper strength solution and cautiously used, cocaine may be employed freely when applied to the globe, it may be dangerous to the system when introduced subcutaneously or

¹⁴ “Textbook of Ophthalmology,” first American edition, 1892.

¹⁵ *Transactions of the American Ophthalmological Society*, vol. 3, p. 421, 1891.

even subconjunctivally, so that the introduction of novocaine when such procedures are demanded proved of inestimable service. Various other local anesthetics have certain advantages over cocaine but cocaine remains in more general use.

The following letter from Dr. E. C. Ellet of Memphis, Tennessee, a resident in the Wills Hospital in 1893, gives an excellent idea of the institution while he was there.

"Up to the time when I was appointed Resident at Wills there was only one Resident. I went on as the first junior, Doctor Pontius being my senior. There were then ten surgeons who attended three days each. They were Doctors Norris, Harlan, Risley, Oliver, Hall, McClure, Goodman, Fisher, Keyser and Jackson. Looking back on the practice of those days, the most striking thing was the crude idea of asepsis. There was not an operating gown in the Hospital, rubber gloves were unknown, and instruments were sterilized by wiping off with alcohol and placed in a tray similarly prepared. Eyes were washed with soap and water and irrigated with boric solution, less often with bichloride. Dressings were sterilized by impregnating them with an antiseptic solution. We had a few infections, but not appreciably more than we see to-day.

"Local anesthesia was an infant industry and consisted of instillation of cocaine solution only. One surgeon doubted the effect of this and thought he operated without any anesthetic, but I am sure no patient came under his knife during my time without having a few drops of cocaine 'bootlegged' into his eye.

"A few efforts on the part of some of the younger men and house Staff to pay some attention to noses and throats of patients were frowned upon. More confidence was placed in the internal administration of drugs than is now the case, and we had a number of house mixtures that were in high repute. 'McClure's turpentine mixture' was 'good for' a long list of ills. The junior was the druggist and anesthetist and assistant to the senior.

"While the spirit of the Staff was fine, and the most cordial personal relations existed, there was not much interest shown by any of the surgeons in the work of any of the others. Each

surgeon had one official assistant, who was the only person in the clinic except the surgeon who had authority to admit, diagnose or operate. It seems to me that the most serious defect in the Hospital from the point of view of the House Staff was the lack of systematic instruction. All of the men were helpful as to answering questions, showing cases, *etc.*, but no systematic plan of study was outlined, and a one-sided development was apt to result. The Staff were, as now, leaders of their day, and most of them have left their imprint on the development of ophthalmology. Without any disparagement, I would say that I have always felt most grateful to Doctor Jackson, for the example of scholarly habits, well-balanced judgment and a helpful attitude toward our problems, to Doctors Harlan, Hall, Fisher and Goodman for their very human attitude towards our personal aspirations and difficulties, to Doctor Risley for his example as one of the gentlest, most unruffled souls imaginable, and to all of them for their patience with our youth and inexperience. Of the younger men of that day, Doctors Zentmayer, Posey, Schwenk, Ziegler, Radcliffe, Berens and Zimmerman were the salt of the earth and endeared themselves to us with many kindnesses. The head nurse was Miss Mary Wilson, a wonderful practical nurse, whose knowledge of what to do for a sick eye still commands my admiration.

"Cataract operations and iridectomies were usually done in the patient's bed in the ward. For some reason the cataract wards were closed in the summer, but whether this was in the interest of the patients or to lighten the labors of the Staff was never clear. The abundant material, as well as the excellent Staff, made Wills then, as it is now, an unsurpassed field for the study of ophthalmology. Diagnosis and refraction were to be learned by any one willing to apply himself, and therapeutics and surgery were abreast of the times.

"One anecdote sticks in my mind and has been told to many patients. A man with trachoma came to Doctor Hall's clinic and in due time sat on the stool in front of the Doctor. In an airy manner he enquired, 'Doc, how long will it take you to cure me?' Doctor Hall looked at the lids and said, 'Six months.' 'Hell!' ejaculated the patient, seized his hat and marched out. In three or four months he came back, his tail figuratively between his legs. He had learned something about

trachoma, and was now looking for the man who could cure him in six months."

EXECUTIVE SURGEON

While it is true that antiseptic methods were carelessly carried out by some of the older members of the Staff, others adhered to them rigorously, and as the older scoffers at the method resigned or died, the young surgeons taking their places practiced it as rigorously as the means at their hand afforded. The technique, however, was imperfect, though greatly improved by the creation of the office of Executive Surgeon in 1903. This officer was made "subject to the Board of Attending Surgeons, and shall have direct supervision of all matters relating to the medical and surgical treatment of cases, including the control of the clinical and ward services, Resident Surgeons and nurses as well." The incumbents of this position have been as follows:

1903-1905	Dr. McCluney Radcliffe
1906-1915	Dr. S. Lewis Ziegler
1916-1923	Dr. McCluney Radcliffe
1924-	Dr. J. Milton Griscom

Although most of the surgeons when operating were gowned before the turn of the century, by 1900 all were properly gowned and masked, with hands as sterile as antiseptics could make them, and with instruments boiled and immersed in sterile fluids before being used. White's salve from a formula by Dr. J. A. White, of Richmond, was much in vogue to sterilize the conjunctival sac before and after the operation.¹⁶

¹⁶ J. A. White Ointment:

Hydrag. bichlor.	gr. 1/6
Sodii chlor.	gr. 5/6
Alcoh. dil.	
Petrolat.	℥i

Dissolve the sublimate and common salt in a few drops of dil. alcohol and mix with the vaseline which has been previously kept at a temperature of 212° F. for a half hour. Store until cool.

As to post-operative care, there was much diversity of opinion. Some insisted upon the bandaging of both eyes and rest in bed on the flat of the back for days. Others bandaged the operated eye only and required no confinement to bed. Some surgeons used a thick and heavy form of dressing, others adhesive strips and no bandage. More and improved nursing did much to improve the comfort of the patient and facilitate healing. Accidents, so liable to happen to those with eyes bandaged and particularly to the aged, were fewer and the hospital days of each individual case lessened, thereby making room for others and increasing the Hospital's usefulness.

During the early years of its existence the number of cataract cases operated upon at the Wills Hospital was but few, thus, in their report in 1844, the Board states that during 1843, twelve cataract operations were performed, "which have generally proved successful." In 1847, ten cataract cases were operated upon and the "inestimable blessing of sight restored." Seventeen cases of cataract were operated upon in 1853, six successfully, three undetermined and one lost ("May improve before final discharge"). In 1854, thirty-one patients were operated upon for cataract; in 1855, forty-one; in 1856, sixty-nine; in 1857, seventy; in 1858, sixty-three; in 1860, thirty. In 1870, there were noted forty-nine operations for cataract, twenty-nine of which were by extraction; fourteen by solution and six by suction.

It was about this time that the Americans who had studied abroad under the great masters of ophthalmology returned home, and put in practice the operative methods they had seen performed by Von Graefe, Arlt, Bowman, Critchett and other great surgeons of the day. How eagerly their less fortunate colleagues who had not that advantage must have pressed about Hall, Norris, Strawbridge, Dyer,

Keyser and McClure to see them operate. Those must have been exciting days at the Hospital.

During the next ten years the number of cases mounted considerably and in 1880 there were two hundred and sixty-two extractions, fourteen discissions, and eleven operations for secondary traumatic cataract. In 1890, extraction with iridectomy eighty-eight, without iridectomy twelve. Discission for secondary cataract thirty-eight, for congenital cataract eight, removal of capsule one. In 1900, there were recorded two hundred and seventy-nine operations on the lens; capsulectomy two; capsulotomy seventy, curetting of traumatic cataract five, discission forty-nine, extraction with iridectomy eighty-five, without fifty-eight, *etc.* In 1910, there were four hundred and forty-one operations on the lens as follows: capsulectomy nine, capsulotomy one hundred and thirty-four, discission fifty-six, extraction, curettment (traumatic cataract) thirty-three, after preliminary iridectomy two, with iridectomy one hundred and fifty-seven, without forty-five. In 1920, there were six hundred and seven operations upon the lens; capsulotomy two hundred and forty-one, cystotomy—preliminary (Smith) five; discission twenty-seven; extractions; linear congenital twenty-nine; linear traumatic sixteen, post-iridectomy seventeen, with iridectomy two hundred and thirty-eight, without iridectomy thirty-two, *etc.* In 1930, there were 1,010 operations upon the lens as follows:

Capsulectomy	9
Capsulectomy V-shaped (Ziegler).....	270
Cautery puncture for protruding vitreous (Wilmer)....	1
Discission	55
Discission (Wheeler)	4
Discission modified (Wheeler)	1
Extraction, cataract, intracapsular	97
Extraction, cataract, linear, congenital	19
Extraction, cataract, linear, traumatic	29

Extraction, cataract, post-iridectomy	185
Extraction, cataract, with iridectomy, combined	263
Extraction, cataract, without iridectomy, simple.....	55
Extraction, dislocated lens	22

A remarkable and steady growth with a preponderance of those operated upon by the combined method—Graefe's incision, capsulotomy, iridectomy, delivery of the lens by pressure and counter pressure.

In 1921, the Hospital was honored by a visit from Col. Henry Smith, the great Indian operator. Himself an Irishman, with British qualifications, Smith served for years in India as an officer in the British Medical Service and had a remarkable career in that country. Although a general medical officer and in charge of the Health Department of Jullundur and Amritsar in the Punjab, he took a particular interest in diseases of the eye and particularly in cataract, so prevalent in that region owing to the reflection of the sunlight upon the dusty plains.

His operative skill brought patients to him in droves from all over India so that he averaged 3,000 cataract operations annually. Unable to communicate with many of his patients by language, as many came from remote parts of India where dialects were spoken unfamiliar to Smith and his native helpers, he was compelled to devise an operation which could be performed without the coöperation of the patient, so essential a part of the ordinary cataract procedures. Hence, arose the intracapsular method, now so famous. In 1910, there had been twenty-four thousand cataract cases operated upon in his clinics, since he went to India—one cannot say hospital, for the hordes coming to him for relief soon filled the small building at his command, so that many were compelled to camp out in the open without shelter of any kind. Notwithstanding this drawback and others, when Colonel Smith retired in 1921, fifty-thousand cases of cataract had

been operated upon in his clinic, mostly by the intracapsular method, he personally, or others under his immediate supervision, having performed them all.

Surgeons came from afar to witness his method, many of whom were Americans, to whom Colonel Smith gave the privilege of operating while he stood by. With his enormous prestige and with the advantage of his winning personality, all who came in contact with him were impressed by his honesty and kindness as well as by his great skill. Although Colonel Smith acknowledges that the intracapsular operation is only within the range of men who have had high-class technical training, he is of the opinion that in the course of time it will become the operation of choice and all the world will embrace his method.

The intracapsular method did not originate with Colonel Smith, nor did he claim it did so. First practiced by Richter and Beer and later by the Pagenstechers of Weisbaden,¹⁷ who obtained excellent results with it, their statistics showing that of one hundred and seventeen cases operated upon by Herman Pagenstecher by this method in 1887 a vision of 20/20 was obtained in twenty-eight cases; 20/40 or better in thirty-seven cases; better than 20/200 in twenty cases; 10/200 in two and counting fingers at four feet in one case. In three cases vision equalled zero. One eye was lost by panophthalmitis.

A number of British surgeons stationed in India had been extracting in the capsule¹⁸ some time before Colonel Smith began to practice the procedure there in 1900. Smith, however, modified their methods and far outstripped any of them in the number of cases which he operated upon and the international fame which he ac-

¹⁷ *Archives of Ophthalmology*, 1881.

¹⁸ Greene, D. W.: "A System of Ophthalmic Operation," C. A. Wood, vol. ii, p. 1261.

quired. Further description of Smith and his work in India cannot be given here, but an idea may be had of his results from a summary made by Arnold Knapp in 1906, who, after a visit to Jullundur, confirmed Smith's statistics and stated that "in 2,616 operations, he had 6.8 per cent. loss of vitreous and 0.3 per cent. of iritis in 2,494 operations when the lens came away whole. When the capsule was opened intentionally or was ruptured in delivery, iritis was observed in 5 per cent. of the cases."

Colonel Smith visited America in 1921 and operated in several cities. He was at the Wills Hospital November 17th of that year, and operated upon eighteen senile cataracts. His results in this series were collected by Dr. William Zentmayer and showed "a corrected vision of 6/6 in two cases; of 6/9 and 6/12 in two cases respectively; of 6/15 in three cases; of 6/20 in four cases and of 6/30 in two cases. No record in one case. Vitreous loss and incarceration of iris occurred in 38 per cent. of the cases and in most there remained either vitreous haze or definite vitreous opacities."

Although Smith's results in this country were disastrous, it was the general opinion that he was operating under considerable disadvantages. Although those who assisted him were familiar with his technique, and no word of criticism or complaint was uttered by him, the surroundings were strange, and encircled by crowds of eager surgeons, the operator must have been incommoded not a little. All who witnessed the operations admired the skill of the operator, his poise and command of the situation.¹⁹

In the operating room in India for hours at a stretch, the Colonel had grown accustomed to smoking in his operations. A cigar placed in his mouth and lighted before he washed up, was allowed to remain there until almost

¹⁹ *American Journal of Ophthalmology*, July, 1921.

entirely consumed. At the Wills operations, a Resident observing with horror the long ash which had formed on the cigar being, as he thought, about to fall off into the eye, called the Colonel's attention to it saying: "The ash from your cigar, sir, is about to fall into the eye," whereupon the Colonel unperturbed answered: "It never has yet," with the assurance of 50,000 cataract cases behind him. Notwithstanding his results here, it is the opinion of most surgeons that the removal of the lens in its capsule is the ideal operation for the relief of that condition. Mac-Namara, a distinguished British surgeon who served many years in India, wrote, in 1882:

"Having practiced this operation constantly since 1864, I am convinced that if it were possible in every case in which we operate to remove the lens in its capsule without damaging the other important structures of the eye, we should have reached perfection in the extraction of cataract."

Its greatest exponent in America at the present time is Arnold Knapp, of New York, who devised a method for the extraction of the lens in its capsule in 1915²⁰ by a procedure which is much less hazardous than that performed by Smith. Knapp terms his operation, "intra-capsular cataract extraction with preliminary sublucation with capsular forceps," the operation consisting largely in grasping the anterior capsule in its lower third, sublucating the cataract below, then removing the forceps and by continued pressure extracting the lens by tumbling. The visual results in one hundred consecutive cases were 20/20 or better in twenty-nine cases, 20/30 or better in thirty-seven cases, 20/50 or better in eighteen cases, 20/70 or better in thirteen cases, and 1 total loss. In a second series of the same number of cases reported a few years

²⁰ *Archives of Ophthalmology*, vol. 44, 1915.

later, in seventy-eight uncomplicated cases Knapp obtained a vision from 20/20 to 20/40 in 90 per cent.

In the year following Smith's visit, on October 19, 1922, the Wills Hospital was visited by Professor Ignacio Barraquer of Barcelona, Spain, who demonstrated removal of the lens in its capsule by means of a complicated suction apparatus, termed by him the erisophake. Doctor Zentmayer analyzed the results of the ten cases operated upon by Barraquer while at the Hospital as follows: "Visual results 6/6 in one case; 6/9 in three cases; 6/15 in two and 6/60 in one. There were no prolapses of the iris and no loss of vitreous." The apparatus used by Barraquer was cumbersome, and although the operator showed a great familiarity with its use and was exceedingly skilful, it was the opinion of those who witnessed the operation that the visual results were not equal to those obtained by operators of far less experience in the operation for cataract and did not compare with the methods usually employed, either intra- or extra-capsular.

Barraquer's method was never largely in practice in this country, but Colonel Smith's, or the Indian operation, so called, was; for, though the majority of operators thought its performance was attended by many risks, many were loud in their claims for the procedure. In 1921 Dr. Parker, of Detroit, published a series of cases which he had operated upon by various methods, giving the various results:²¹

	Loss of vitreous	Infection
1013 Combined extraction	10.7	0.48
156 Simple extraction	6.4	1.2
49 A. Knapp method	10.2	0.0
91 Indian method	10.7	1.1
104 With preliminary iridectomy	9.6	2.6
8 Extraction after trephining operation for glaucoma	0.0	0.0

²¹ Parker, W. R.: *Transactions of Section on Ophthalmology*, American Medical Association, 1921.

	<i>Visual Results</i>		
	V = 6/7½ or better	V = 6/9 to 6/60	V = 6/60 or worse
Combined	202	595	111
Simple	28	94	10
A. Knapp method	13	29	6
Indian method	16	57	13
After preliminary iridectomy	12	39	38

The highest percentage of failures was in the Indian operation: 6.5 per cent.; in the Knapp the least: 0.2 per cent.; and in the combined operation: 2.2 per cent. Parker concluded from this study that the combined operation with the conjunctival flap is the most satisfactory method of procedure in all but specially selected cases. As regards the Indian operation, he agreed with Knapp that "the lens cannot be dislocated by external manipulation alone, without subjecting the eye in many instances to greater pressure than seems wise." Parker found the traction method of extraction as described by Knapp the best method of extracting the lens in its capsule; also that an equal number of consecutive cases operated upon by the Knapp method and by combined extraction gave the same visual average in each class of cases. In the discussion which followed the reading of his paper, Col. Henry Smith thought the Indian method did not entail a greater loss of vitreous than from 5 per cent. to 10 per cent.

The present practice at the Wills Hospital is as it has been during the past one hundred years—one of conservatism. Cases suitable for intracapsular operation have been operated upon in that way, but the great majority of cataracts removed at the Hospital have been by combined extraction, by the modified linear operation which Von Graefe introduced three-quarters of a century ago. Simple extraction is reserved for those cases which seem peculiarly adapted for it; preliminary iridectomy is done

in nearly all cases where the other eye has been lost or when the operation is attended with complications.

OPERATIVE TECHNIQUE FOR CATARACT OPERATIONS
EMPLOYED IN THE WILLS HOSPITAL IN 1930

INSTRUCTIONS TO RESIDENT SURGEONS

Pre-operative

Culture on admission, forty-eight hour negative culture.
Magnesium sulphate 1 ounce, morning following admission.
Specimen urine for analysis.
Blood pressure taken and Wassermann for routine of doctor.
Day of operation patient is given a bath and prepared for operation at 1.00 P.M.
Both eyes, brows and skin around, are well scrubbed with green soap and sterile water. Lashes are cut when desired per routine. Sterile patches and Liebreich are applied and patient is put to bed to await operation. Liquids are given for luncheon before operation.

Post-operative

Extractions and iridectomies have liquids for forty-eight hours, then soft foods. Capsulotomies may have soft diet next day. Extractions and iridectomies must stay on back for forty-eight hours and may then turn on side away from operative eye if anterior chamber is reformed. Pillows may be inserted under back to ease pain and after twenty-four hours head of bed may be raised one notch. Ring masks are worn at night and taken off during daytime. Hands must remain at side at all times. Patients are not allowed out of bed until ordered up by the doctor. Mild laxatives may be given after anterior chamber is reformed.

STERILIZATION OF INSTRUMENTS

<i>95 Per Cent. Alcohol—One Hour</i>	<i>Boiled—One-half Hour</i>
Graefe knife	Irrigator and tip
Iris forceps	Speculum
Iris scissors	Fixation forceps
Cystitome	Spoon and spatula
Kalt forceps	Tyrrell hooks—sharp and blunt
Capsule forceps	Lens hook
	Lens loop
	Smith hook

All dressings, *etc.*: autoclave under twenty to twenty-five pounds' heat pressure for one-half hour.

Normal salt solution, boric-acid solution, and sterile water—autoclave under fifteen pounds' pressure for fifteen minutes.

GLAUCOMA

Prior to the discovery of the ophthalmoscope but little was known about glaucoma. Used in general to include all opacities situated behind the pupil, the term was finally applied only to such as gave a sea-greenish hue to the pupil. This appearance was thought to be derived from a peculiar opacity in the lens, later from one in the vitreous and finally to one in the retina or choroid. It remained for the ophthalmoscope to clear away all doubt as to the existence of such opacities, and thanks to the studies of Edouard Jaeger and Von Graefe the fundus picture of the disease was finally evolved.

The first observation which led Von Graefe to his great discovery in 1856 of iridectomy for the cure of glaucoma was that of Mackenzie, who had noted some years prior to that date²² that "hardness of the eye is a constant symptom in the middle stages of glaucoma, and often attends the first and last stages." Paracentesis having been found by Von Graefe to be ineffectual in reducing tension, he tried iridectomy as a means to that end, since he had noted many times previously that the removal of a section of iris made the eyes softer in many cases of anterior staphyloma and corneal ulcers with symptoms of pressure. Thus arose iridectomy as the cure for glaucoma, an operation which has saved the sight of untold thousands and endowed Von Graefe with perpetual fame. To-day, more than three-fourths of a century since its discovery, this procedure still holds sway in the treatment of all forms of inflammatory glaucoma, for it was found after a time that while the results obtained in this type of the disease were usually satisfactory—often remarkably so—the same was not true of the operation when performed upon cases

²² Mackenzie, William: "Treatise of the Eye," third edition, p. 770, 1839.

of the simple chronic type. Surgeons became loath to operate on this class of case and sought other means of relief. A number gave anterior sclerotomy, an operation which had been devised by deWecker, a trial, but the results of this procedure were not found to be lasting and the operation never gained world-wide popularity.

For some years miotics had been used to reduce tension and relieve congestion in inflammatory glaucoma and gradually many of the profession had formed the practice of prescribing solutions of eserine or pilocarpin for local use in the eyes of those afflicted with chronic glaucoma. These drugs were employed by surgeons as a half-way measure, in despair from the results of iridectomy and hoping that vision might be retained by their use. Although this practice was quite common, particularly in private practice and especially in cases where surgeons hesitated to take any risk from operation, it was not generally acknowledged as a treatment to be recommended, and students were taught that iridectomy should be employed in all cases even though the results of operation in chronic simple glaucoma were not to be relied upon.

Cognizant of this and having observed this method of treatment in the practice of some of his friends in certain foreign clinics, as well as in those of his native city, one of the authors was instigated to make a comparative study of the merits of iridectomy and miotics in this class of cases.

The accompanying diagram²³ (Fig. 17) illustrates this comparison. The first miotic series of one hundred sixty cases, taken from the records of the Wills Hospital, were studied by him in conjunction with Dr. William Zentmayer and reported in the Wills Hospital reports (see p. 186). The second of one hundred ten cases was collected

²³ Posey, W. C.: "Miotics Versus Iridectomy in the Treatment of Simple Chronic Glaucoma," *Journal of the American Medical Association*, October 24, 1908.

Table of Comparison of Series of Chronic Glaucoma Treated by Miotics and by Iridectomy.

	Zentmayer and Posey; 167 Cases.		Posey's series; 110 Eyes. (Miotics.) Percent.	Bull's First Series; 94 Eyes. (Iridectomy.) Percent.	Bull's Second Series; 115 Eyes. (Iridectomy.) Percent.	Schleich.		Koster; 20 Eyes. (Iridectomy.) Percent.	Grosz; 62 Cases. (Iridectomy.)	Uthhoff. (Iridectomy.) Number of Cases not Mentioned. Percent.	Hippel. 66 Eyes. (Iridectomy.) Percent.
	Miotics. Percent.	Iridectomy. Percent.				102 Cases. Iridectomy. Percent.	46 Cases. Miotics. Percent.				
Central vision Maintained in.	84	80	80	25	18	15.1	36	26	70	50	14
Gradually lost in	16	20	On an average of 5 yrs. and 3 mos. in each case.	On an average of 4 yrs. and 3 mos. in each case.	70	76.5	61	74	"Favorable result attained." Details of what constituted "a favorable result" not given.	(Actual improvement of V. in 5.) (40 gradual; 10 rapidly.)	("Cured for the present.")
Form fields Maintained in. Gradually lost in. Average period of time each patient was under observation.	68.70 31.25 .	50 10 .	45 55 5 yrs and 8 mos.	14 75 4 yrs and 10 mos.	0 100 5 to 11 yrs.						41, no aggravation of symptoms after 2 years. 20, no aggravation of symptoms after 5 years. 14, no aggravation of symptoms after 10 years. 9, no aggravation of symptoms after 14 years. 25, slow loss in vision. 20, went blind in spite of operation.

FIG. 17.—Table of Comparison of Series of Chronic Glaucoma treated by Miotics and by Iridectomy.

from his own and some of his colleagues' private practice. The operative series had been published by various well-known surgeons in America and Europe.

From his comparative study the author concluded that while the results from the miotic treatment appeared to be far superior to those from iridectomy, further studies of a larger number of cases is necessary. In concluding the paper he said:

"First, that miotics should be relied on as the sole means of treatment only in those cases which are free from attacks of so-called 'glaucomatous congestion,' the presence of such congestive symptoms being in my opinion the chief indication for iridectomy; and second, that to gain the full benefit of the miotics it is necessary that they should be administered properly. Beginning in doses small enough to avoid creating spasm of the ciliary muscle, and rapidly increasing the dose until the pupil of the affected eye is strongly contracted, this degree of contraction should be maintained as long as life lasts by gradually increasing the strength of the solution, from time to time, and by instillations of the drug at intervals of every three or four hours. Conjunctival irritation may be avoided by employing only fresh and sterile solutions of the drug. Suitable cleansing washes should be administered, and attention given to the general health and especially to the condition of the blood-vessels of patients. Careful and repeated correction of the refraction error should be made and restrictions enjoined on the use of the eyes."

Although there are no figures to substantiate the statement, miotics were quite generally employed in the Wills Hospital in chronic glaucoma all through the last quarter of the last century. How else can we account for the few operations performed upon this class of cases? As will presently be seen, barely 25 per cent. are recorded as having been subjected to operative treatment.

In the closing decades of the last century the Staff of the Hospital relied solely upon iridectomy and miotics; only occasionally was an anterior or posterior sclerotomy

performed. Then came a change as new methods of draining the intra-ocular fluid outside the eye were introduced by establishing a filtering cicatrix in the eyeball. The first of these operations was a procedure devised by Lagrange, of Bordeaux, in 1906, and designated by him as iridosclerotomy or iridectomy combined with sclerotomy. This method met with favor, and, though never in general use in the Wills Hospital, is still popular with many conservative and skilful surgeons in this country and abroad, who consider it to be the best procedure when dealing with chronic simple glaucoma. Then came various incarceration methods, notably those of Herbert and Hólth, neither of which were, however, generally practiced in the Wills Hospital. The operation of cyclodialysis devised by Heine, in 1910, however, met with favor in the Hospital and is still employed. It is based upon the desirability of establishing a connection between the anterior chamber and the suprachoroidal space. While of undoubted value in certain cases, it has been the experience at the Wills Hospital, as elsewhere, that while the operation does lower tension, this effect is not permanent and the procedure has not proved of equal value with iridectomy or with other of the recent operations.

The most popular of the recent operations has been the trephining operation introduced in 1910 by Colonel Robert H. Elliott, a British surgeon long a resident in Madras, India, where he had ample opportunity to perfect his method. This operation consists in drilling a hole through the corneal scleral junction into the interior of the eye, thereby creating a hole or cicatrix by means of which the intra-ocular fluid finds escape from the globe. This procedure has taken rank with iridectomy and in some clinics has almost entirely supplanted it and other operations generally employed in chronic glaucoma. It is a strong second to iridectomy at the Wills Hospital. Sta-

tistical figures are still wanting to demonstrate the superiority of the Elliott operation, over iridectomy, the Lagrange or other operative procedures. Its great drawback is the danger of late infection. Indeed, it is obvious that all glaucoma operations which depend for their efficacy on the production of a subconjunctival fistula carry with them the same objection.

Nor has it been demonstrated that sight can be conserved longer by any form of operative procedure than by the continued and proper use of miotics. In no sense curative of glaucoma, these drugs have the property of arresting the disease for many years, and in those who are advanced in years, or in cases where the risks of operation are acknowledged to be unusually great, their employment may well be essayed.

The discovery of the tonometer by Schiotz in 1905 has done much to guide the ophthalmologist in the treatment of this disease. Whereas in former years one estimated the hardness of the eyeball by palpating the globe through the lid, and recorded it as plus 1, plus 2, plus 3, by means of this instrument, one is now able to determine the tension with great exactness.

The great strides made in perimetry during the last quarter of the century and the better understanding of the field changes in glaucoma afford another valuable basis for prognosis and treatment.

It is apparent from the foregoing that the last word is yet to be said in the treatment of chronic glaucoma.

The first note in the reports of the Hospital regarding the performance of iridectomy for glaucoma was in 1862, the year in which Von Graefe's paper on glaucoma (see p. 96) appeared. Ten such operations were performed at the Wills Hospital during 1862, a year in which 1,681 new patients were treated. It is probable that the operation

introduced by Von Graefe six years before though not publicly announced until later, had been performed at the Hospital previous to this, but unfortunately the reports of the Hospital, for the few years preceding 1862, are incomplete.

In 1863, twenty-six iridectomies for glaucoma are noted. Eleven years later, 1874, when there were 3,809 new cases, twenty iridectomies were performed, and eight years later, in 1882, with 6,006 new cases, only thirteen iridectomies. In 1893, with 12,773 new cases of which seventy-four had glaucoma, but eighteen iridectomies were done. In 1900, there were 13,739 new cases, eighty-four of which were cases of glaucoma, and fifteen iridectomies were done, also three sclerotomies are recorded, and in 1911, nine cases of cyclodialysis, though Heine had described this procedure but a year previously. Of one hundred nine cases of glaucoma in that year, there were only eight iridectomies performed, seventeen operations for glaucoma in all. The marked falling off in the number of iridectomies done in the 'eighties and 'nineties was doubtless due to the extensive use of miotics, surgeons becoming disheartened at the results of operative procedures, resorting more and more to the use of those drugs. By 1900, newer operative measures were employed.

The records of 1914 show a total of one hundred eighteen glaucoma cases upon which iridectomy was performed in twenty-four cases, trephining in twenty-seven, cyclodialysis in four and posterior sclerotomy in nine. The influence of an individual surgeon upon the surgical practice of the Hospital is significant all through the Wills records; thus, practically all of the posterior sclerotomies done at this time may be imputed to Doctor Ziegler, an ardent advocate of that procedure in chronic glaucoma. In 1916, with 14,183 new cases, there were

thirteen enucleations for absolute glaucoma and ninety-three other procedures for the cure of the disease, including thirty-eight of iridectomy; eleven trephining; eleven posterior sclerotomies and one of cyclodialysis. A marked falling off in the newer operations and a greater resort to iridectomy is apparent. In 1920, there were 12,363 new patients of which one hundred thirty-two were cases of glaucoma, forty-seven operations were performed as follows: iridectomy thirty-two; Lagrange two; trephining seven; cyclodialysis two; sclerotomies four. In 1925, there were 13,338 new cases of which one hundred seventy-six were for glaucoma: one hundred seventy-one operations were performed: iridectomy one hundred sixteen; trephining thirty-three; cyclodialysis four; posterior sclerotomies eighteen.

In 1930, there were 23,900 new cases, of which one hundred fourteen were of glaucoma. One hundred operations were recorded as follows:

Cyclodialysis (Heine)	4
Iridectomy (Von Graefe)	37
Irido-sclerectomy (Lagrange)	18
Sclerotomy, posterior	16
Trephining, corneoscleral (Elliott)	25

Though the Elliott trephining operation appears to be declining in popularity at the Wills Hospital, such is not the case in some other cities, particularly in the larger New York clinics, for a recent survey of their work indicates that the popularity of this measure is well maintained as well as that of the Lagrange operation.

During the past year increasing attention has been given to the Lagrange operation, and two modifications of the procedure have been introduced in the Wills Hospital. In December, 1929, one of the surgeons, Doctor Baer, began to practice a method recommended to him by Doctor deSchweinitz, and has had marked success with it. He operates as follows:

"As first done, the conjunctival flap is laid down from above to the limbal margin, exactly as is done in the Elliott operation, except that a splitting of the cornea is not included. A keratome incision is then made and a broad iridectomy performed. Following this, the anterior lip of the scleral wound is cut away horizontally, about 1 millimeter of the scleral tissue being removed. Owing to the shallowness of the anterior chamber as so frequently encountered in glaucoma, I later gave up using the keratome and made the incision with a Graefe knife, finding that a more peripheral incision could be made in this way."

Doctor Griscom, another surgeon in the Hospital, without being aware of Doctors deSchweinitz's and Baer's methods, made a somewhat similar modification of the Lagrange method. In a written communication to the authors, Doctor Griscom states:

"The operation of Lagrange seemed to have many advantages, but the technical difficulty in making the scleral section discouraged a trial of this procedure. It seemed, however, that if the last part of the incision, in which a scleral flap is cut, could be made first, this step in the operation would be more accurately and safely performed. Accordingly, the following technique was determined upon and the first operation performed on November 13, 1929. A broad conjunctival flap, including the episcleral tissues, beginning eight to ten millimeters from the upper limbus, is dissected down to the corneal margin. While the flap is turned down over the cornea by an assistant, the point of a keratome is entered in the sclera two and one-half millimetres behind the scleral margin of the cornea. As soon as the point penetrates the sclera the conjunctival flap is turned upwards; the keratome is pushed forward on a plane with the posterior surface of the cornea until the assistant looking from below sees the point emerge in the anterior chamber. With the anterior surface of the iris as a guide the keratome is then further introduced into the anterior chamber until the incision in the sclera is about five millimeters wide, following which the instrument is quickly withdrawn. The anterior flap of the scleral section is then seized with an iris-forceps and an elliptical piece of sclera one millimeter wide and three millimeters long excised

with a pair of small curved scissors. This is followed by a broad complete basal iridectomy. The conjunctival flap is replaced and sutured."

TENOTOMY

Although there is no analyzed record of the operations done in the Hospital in early years, tenotomy of the extra-ocular muscles was probably performed early. We have seen that Gibson (p. 5) practiced the procedure, and some of his pupils who were members of the Wills Staff probably did also. Writing of the squint operation in his time, Hall²⁴ stated:

"The operation most commonly done for squint is that known as Von Graefe's, consisting of a very careful division of the tendon, close to its insertion, with the smallest possible amount of laceration of the subconjunctival tissue, and the tendinous processes of the capsule of Tenon. The object in view is the setting back of the insertion of the muscle, and not the crippling of its power. In all cases of squint, before operating, the refraction of the eye is carefully examined, and after operation, appropriate glasses are required to be worn."

Although Weber described an advancement operation with a single stitch in 1871²⁵ the first note of an advancement operation in the reports is in 1890. After that date advancements were practiced with increased frequency. Every year new methods for performing this operation were devised by surgeons of all countries, but none met with universal popularity. Those chiefly employed at the Wills Hospital have been that described by Swanzy in his text-book²⁶ and the resection by Reese²⁷ and in more recent years that of Worth.²⁸ There have also been advocates of the single-stitch operation. Among them, Oliver²⁹ and

²⁴ Hall, A. D.: The Wills Hospital Annual Reports, 1877.

²⁵ "Muskelvorlagerung," *Literatur Verzeitniss*, A. Weber, No. 6, p. 415.

²⁶ Swanzy, H. R.: "Diseases of the Eye," p. 46, 1890.

²⁷ Weeks, J. E.: "A Treatise on Diseases of the Eye," p. 891.

²⁸ "Squint," first American edition, p. 206.

²⁹ "Ophthalmology," p. 219, 1906.

Jackson.³⁰ The tendon-tucking operation³¹ has also had its advocates and has been the operation of choice among some of the surgeons for twenty years or more.

During the 'nineties some of the surgeons, impressed by the theories put forward by Dr. G. T. Stevens, of New York,³² practiced graduated tenotomies without much benefit to their patients and fortunately with but little harm. Stevens was a brilliant man, well versed in muscular conditions and his work along these lines well deserves careful study, for to him more than to any other should be given the credit of calling attention to the importance of latent errors in the musculature. The nomenclature which he introduced met with general favor and to-day is in use all over the world. Stevens' claims regarding the evils to the general system resulting from such deviations were exaggerated and often absurd, and the results of the partial tenotomy operation devised by him for the correction of such errors were practically without effect. Some of the surgeons at the Wills were caught in the wave of popularity which attended Stevens' views and practiced his methods, and in 1890 we find recorded among the list of operations:

Graduated tenotomy of internal recti	2
Graduated tenotomy of external recti	2
Graduated tenotomy of inferior recti	1

Under the diagnosis of muscular affections there are recorded:

Insufficiency of external recti (esophoria)	5
Insufficiency of internal recti (exophoria)	28
Insufficiency of superior or inferior recti (hyperphoria)	5
Insufficiency of superior and internal recti (hyperexophoria)	4

³⁰ Meller's "Ophthalmic Surgery," first American translation, p. 86.

³¹ Todd: *Ophthalmic Record*, p. 73, 1902.

³² Stevens, G. T.: "Functional Nervous Diseases," New York, 1887; "Motor Apparatus of the Eye," Philadelphia, 1906.

In this year there were also two hundred fifty-nine cases of convergent strabismus and thirty-one of divergent strabismus.

While many of Stevens' procedures were valueless, he greatly improved the technique of operations upon the eye muscles, and helped to do away with the evils of free tenotomy, which were all too apparent the latter part of the last century. It was a common experience to see extreme cases of convergent squint which had been converted into equally gross ones of divergence and *vice versa*, by the free tenotomies which the early surgeons practicing ophthalmology had done years before. The first tenotomy in America of the inferior oblique muscle as advocated by Duane was performed in the Wills Hospital.³³ Transplantation of one functioning muscle upon another whose action had been destroyed by various causes was also practiced.

It would be beyond the scope of this work to attempt to catalogue further the operations which have been practiced upon the extra-ocular muscles. It must suffice to state that the Staff has been keen to detect by suitable apparatus all kinds of defects in the musculature and has practiced many different kinds of operations for their relief. Exercises with prisms, amblyoscopes and stereoscopes have all been given trial in muscle cases.

LACRIMAL

Like all hospitals dealing with ophthalmic cases, almost every kind of procedure has been tried to drain the tears from the eyes. Probes, setons, styles have all been essayed. Two of the Staff introduced instruments to stretch the duct, dilators so-called—one by Levis, another by Ziegler, the latter an instrument in keeping with the probes of enormous size advocated by some surgeons in other cities.

³³ Posey, W. C.: *Ophthalmic Record*, p. 346, 1908.

It was not until the publication of Meller's book³⁴ with its accurate description and excellent illustrations of his operation for removal of the sac that a satisfactory method of relieving these annoying cases was found. The removal of the sac by this method has been extensively practiced in the Wills Hospital. The operations devised by Toti and later by West, of establishing a direct connection between the lacrimal sac and the nasal fossa by means of a resection of the frontal process of the superior maxillary bone, dacryocystorrhinostomy, popular among some ophthalmologists and rhinologists, never met with favor in this Institution.

PLASTIC OPERATIONS

The plastic work done at the Wills Hospital was limited largely to that of the lids, to correct deformities resulting from trachoma or in consequence of burns or injuries. Occasionally more extensive involvement of the integument and deeper tissues in the neighborhood of the eye demanded bold and skilful surgery. Harlan excelled in this, his army experience in general surgery standing him in good stead in this class of cases. He devised several flap operations, among them an excellent method for the cure of ectropion by sliding pedicled flaps. Schwenk, who had had the opportunity of assisting Harlan in a number of these operations, corrected such deformities skilfully also.

The sliding pedicled flaps of Dieffenbach or of Wharton Jones were usually employed. Grafting both by Thiersch's and Wolfe's methods was also extensively practiced. The World War greatly increased the number of cases of injury about the eyes with their resultant deformities, and new methods for their relief came into vogue. Except as the result of burns or accident, such cases are rarely met with

³⁴ "Ophthalmic Surgery," first American translation, Joseph Meller, 1908.

in the Wills Hospital. The restoration of the socket, once the bugbear of surgeons, is now much more easily operated upon by the methods of Weeks and Wheeler, of New York, Weeks employing dermic grafts and Wheeler those of thin epiderm.

The Esser "Inlay," devised by Dr. J. E. Esser, of Holland, first published in the *Annals of Surgery*, March, 1917, opened up an entirely new field of great importance. The basic principle of this operation, as in the reconstruction of a new cul-de-sac, is the insertion through an incision in the skin of a mold of "stent" or modeling compound, covered with a very thin epidermal graft with the skin surface next the mold. This, after having remained in its especially prepared pocket, is then cut down upon, by an incision through the inside of the orbit. After removal of the compound through this opening, a new cul-de-sac will be found lined with the epithelium that formerly covered the mold of compound. Gillies' epithelial "overlay"³⁵ is better adapted to cases where there has been extensive loss of tissue and there is not enough skin left to employ the mold, an essential part of such operations.

The "overlay" consists in preparing the area for the thin epidermal graft which is smoothed into position and covered by a layer of modeling compound, being then held in position by a bandage in order to maintain sufficient pressure for a successful "take."

In a later modification called the "Gillies outlay" the conformer mold covered with epithelial graft is sutured into the bed prepared for it, and then after remaining until the graft has "taken," the compound is removed by cutting through the original incision and sutures by means of which it was introduced and held in place.

³⁵ Gillies, H. D.: "Plastic Surgery of the Face," Oxford medical publication.

CHAPTER XIII

REFRACTION. THE DEVELOPMENT OF THE CORRECTION OF AMETROPIA. OPTICAL DEPARTMENT. OPTICIANS

THE appreciation that the correction of errors of ocular refraction was a part of the therapeutics to be applied by the ophthalmic surgeon came into existence through a long and tedious route, with influences from without working stronger than those from within. Benjamin Franklin had devised his own glasses, but had them made in London. George Washington had his refraction estimated and lenses ground by the Philadelphia optician, McAllister, and around the activities of this optical firm revolve the factors that provide the background for the correction of errors of ocular refraction during the early days of the Wills Hospital.

Although the surgeons who had been trained abroad were all familiar with Donders' work and undoubtedly refracted their patients on a scientific basis, Risley records the fact that even as late as 1870, the refraction work in the Hospital was desultory in character, and that it was still the custom to send aphakic cases to McAllister, the optician, to work out a correcting lens for them. The description of the first astigmatic cases in America by Hays in his third American edition of William Lawrence's "Diseases of the Eye" has already been noted.

Some time previously (1841) Hays had observed that the greater the degree of strabismus, the more imperfect was the sight in the affected eye. Unfortunately, the times did not permit or encourage intensive study along these lines or our advances in this field would have been more rapid. One of the greatest factors was lack of adequate equipment. Trial frames and trial cases were unknown. In

fact, it was not until some time in 1860 that Donders¹ devised a case of trial lenses containing cylinders. Over and above all was the reluctance of the surgeons of that day to dabble in a field which was by common consent the province of the itinerant spectacle vender. The term "oculist" was used by opticians quite generally as may be noted in the early numbers of the Philadelphia Directory before the correction of errors of refraction by ophthalmic surgeons in America had attained any degree of prominence. The presbyopic individual was accorded such relief as could be obtained by examining both eyes at the same time by the commonplace trial-and-error method.

In analyzing the reports of the Hospital it is noted that refraction cases came in for attention about 1865 to 1872, corresponding to the times of the affiliation of those outstanding ophthalmologists, Dyer, Goodman, Keyser, McClure, Harlan, Hare, Norris, Thomson and Strawbridge with the Institution. With the application of more intensive methods of examination, the scope of the Hospital's work was enormously enlarged, and its reputation as well as that of its Staff, became greatly enhanced.

S. Weir Mitchell's observations regarding the reflex symptoms induced by latent errors of refraction, about the same time, spurred this younger group of ophthalmologists towards discoveries in the field of ophthalmology that were to prove epoch-making, as well as a more intensive routine study of the eye cases coming under their observation. The relief of untold suffering as well as the release from invalidism and the restoration of a large body of human beings to useful vocations were the natural sequences to this course of events.

Perusal of the ophthalmological literature of the decade 1870 to 1880 shows a wealth of fundamental scientific work by Thomson, Dyer and Risley, which must have had its

¹"Anomalies of Accommodation and Refraction," p. 50, London, 1864.

inspiration in their association with each other and with the service of Wills Hospital. Not the least of their work had to do with the placing of the use of cycloplegics on a firm basis, as well as demonstrating the necessity of post-cycloplegic examinations. In this period the Centennial Exposition was held in Philadelphia, and manufacturing experienced a tremendous increase, although a period of financial depression was also undergone. Such conditions as the latter always involve a readjustment of labor, and the human body is called upon to endure new stresses. While the Hospital records showed a great increase in all kinds of cases due to unemployment and its accompaniments, it showed also an increase in the number of refraction cases. Likewise, it showed that the subjects were for the most part women, particularly those doing seamstress work, mute evidence of the times. So great was this situation as to occasion comment by the Staff in their annual report.

It is not at all inappropriate in this connection to refer to the great influence of Ezra Dyer, one of the most outstanding of the surgeons connected with the Wills Hospital, by reason of his startling pronouncements in the ophthalmic field. He had worked with Donders and Snellen in 1861 and was aware of the suggestion of the former to Snellen in the matter of devising test letters upon a scientific principle. Upon his return to Philadelphia, Dyer had printed a card of test types (in 1862) some months before Snellen, and based on the same principles (see p. 110). It was not his purpose to detract from the work of Snellen, which he admired, and he gave full credit to him for the creation of the type, but it was one of the manifestations of his aggressive character to force a new thought to the front. As a result, Snellen's test type were in use in Philadelphia before being used elsewhere.

Dyer possessed as a background a familiarity with

mathematics which made for a ready understanding of the intricate problems involved in physiological optics and enabled him to devise solutions for the same. Consequently, he was far in advance of his colleagues in this field. The system of ocular gymnastics subsequently to be known as "Dyerism" has been referred to (p. 110). Their vogue was short-lived, however, but the system served the purpose of creating a correct interpretation of the condition previously designated as "morbid sensibility of the retina."

It has been stated that the early refraction cases presenting themselves for consideration at the Wills Hospital were referred to McAllister, the optician, and that one of the reasons was to be found in the inadequate equipment of the Institution for the examination of these cases. The authors are indebted to Dr. Edward Jackson for the following account of the first trial case introduced into the Hospital:

"Charles Herman Thomas was a Resident Physician of Wills Hospital in 1865 and had read Donders' 'Accommodation and Refraction of the Eye,' published the year before. There came, out of clinic hours, a woman to see if anything could be done for her eyes, so that she could use them to earn money to pay the surgeon who had been treating her eyes for her last visit to him.

"She had been a skilled needle-woman, and had saved nearly one hundred dollars, when she found her eyes giving out. They were red, painful and the sight dim, and got worse when she used them in her work. She went to one who was professor of surgery in a medical college, and who taught the diseases and operations of the eyes 'in two lectures' of his course. He looked at her eyes, applied blue stone, and told her when to come again. She paid five dollars a visit. This was repeated until her savings were gone. Then she went once more, to ask if something else could not be done to enable her to earn her living. He said no, there was nothing else to do for them, and she could not pay for the visit.

"She heard of the Wills Hospital and came to see if nothing

could be done to earn that five dollars. Doctor Thomas thought of asthenopia due to hypermetropia, and borrowed a set of trial lenses from McAllister, the optician. He worked out the glasses she needed, and got them for her. She could then go back to work and paid the surgeon who had treated her. Doctor Thomas went before the Committee of the Board of Directors of City Trusts, told the woman's story, and asked that a trial set be purchased for the Hospital. This was promptly done, and was the beginning of the routine work in this department of the Wills Hospital."

Another luminary of this period was Doctor McClure, whose detailed biography is given elsewhere in this book. He was appointed to the Staff in 1872 with Doctors Dyer, Goodman, Keyser, Norris, Thomson, Harlan and Morton, and in view of his elaborate training abroad and with the enterprise and zeal of youth, elected to give lectures on ophthalmology to the host of graduate students that frequented the Wills Hospital (see p. 116). The success that attended these efforts was sufficient to bring about a chain of circumstances that led to the Board of Directors of City Trusts in 1877 placing a partial embargo on teaching in the Hospital, although, as we have shown elsewhere, it had been the established custom of the management and the medical Staff to include teaching in the activities of the Hospital. The effect of this upon Doctor McClure was most unfortunate, and induced his retirement from the public eye, so that his subsequent works were brought to light only through the affection of his junior associates. The intricate problems of astigmatic refraction were solved by this surgeon working single-handed, and not the least of his accomplishments in this regard was the calculation of the ametropic correction of his friend and colleague, Dr. William Thomson. The high compound hyperopic astigmatism with asymmetric axes which he isolated in this instance attests the care and diligence he

could command when the problem was sufficiently intricate and interesting.

It is said that this accomplishment of Doctor McClure's was responsible for attracting Doctor Thomson to the field of ophthalmology. The difficulties attending the calculation of such a formula included the absence of an appropriate trial frame. This Doctor McClure overcame by marking out the axis of the cylinder on paper, fastening the trial lens to it, and then, placing all in a tray, carried it to the shop of J. L. Borsch, the optician. In consultation with the latter, he devised the protractor to be placed in front of the trial frame in order to eliminate the cumbersome method just described. Likewise, he was one of the first to recognize and correct mixed astigmatism with cross cylinders. The early cases of trial lenses available for the use of the ophthalmologist were lacking in fractional numbers below the English equivalent of 2.00 D. To overcome this deficiency Doctor McClure devised a case with the full complement of lenses, although at first in the English or inch notation. With the introduction of the metric system into lens notation by Nachet (1886) of Paris, the thought of Doctor McClure was carried out by the use of eighth diopter lenses below 1.00 D. and one-fourth diopter lenses to 2.00 D. It is but fair to remark that during this same period the ingenuity of other ophthalmic surgeons in the medical centers of America was being displayed in suggestions and devices recommended for the examination of the eyes.

Some time subsequent to the recognition of the practicability of the McClure trial case, the Philadelphia optician, Ivan Fox, devised a trial case with wide cells and with notation on the handles, and containing all the newer thoughts of the Staff of Wills Hospital. Another enterprising optical firm in Philadelphia, namely, Queen and Company, still later made a trial case at the sugges-

tion of Dr. Edward Jackson, embodying many additional advantages. The standard case of trial lenses of the American Optical Company came into existence in 1893.

It is important in analyzing conditions in this period to remember that the developments of that epoch were brought about by the concerted efforts and zeal of this entire group of surgeons and the coöperation of the progressive optical firms of Philadelphia, willing to create or devise mechanically anything that the judgment of the surgeons would deem essential to the better application of their knowledge. It is likewise in order to stress the responsibility of all the surgeons rather than merely a few for the advances in this period. While a vital principle may have been isolated by one, the value of the same might well have been lost without the skill of another or perhaps others in providing a means for its utilization.

It has been noted elsewhere in this work that immediately following the Civil War, those men who had elected to devote their lives to ophthalmology, although reluctant to accept the odium of being known as specialists, began to perform their work with such interest and zeal and infinite care that out of the chaos and indifference that marked the former period arose a branch of medicine distinctly scientific in character. Derby, of Boston,² stressed very early the necessity of greater accuracy in ascertaining and expressing the degree of vision. This was not only a plea for the acceptance of the Snellen type but for the use of a constant degree of illumination, preferably of an artificial character in a fixed position in relation to the test letters, with daylight excluded from the room. How revolutionary this must have been, when vision was taken for the most part with both eyes open and functioning at the same time!

This approach to that essential feature of the work,

² Transactions of the American Ophthalmological Society, 1866.

namely, the vision, later came in for ample appreciation at the hands of Doctor Oliver at the Wills Hospital to the despair of the countless students and assistants who worked with him, day in and day out, recording the visual vagaries of the never-ending stream of cases that were returned to the clinic for serial study.

The meetings of the American Ophthalmological Society served to provide the necessary stimulus for the earnest and youthful workers at the Wills Hospital and to these workers must be given full credit for placing the use of cycloplegics in the examination of the ocular refraction upon the firm and unassailable basis it possesses. All of the members of the Wills Hospital Staff in the decade 1870 to 1880 contributed to this accomplishment, but S. D. Risley was particularly active in this regard.

While Dyer blazed the trail for the Snellen type, and Green of St. Louis elaborated the various dial tests for astigmatism, we find the ophthalmic literature of this period rich with the observations, inventions, and dissertations upon topics connected with ocular refraction by Doctor Thomson, of the Wills Hospital Staff. Doctor Strawbridge, of the same group, recorded an additional method for the determination of astigmatism in 1871.

While the trial frame in those early days demanded such ingenious innovations as devised by Doctor McClure for the recording of the axis of astigmatism, it was not long before the ophthalmic field was overwhelmed, as we have seen, with frames designed to eliminate these shortcomings. Unfortunately, there was no uniformity in the placing of the scale. This led to the American Ophthalmological Society passing a resolution, in 1879, adopting Javal's notation in the prescribing of cylindrical and prismatic glasses, *viz.*, that the zero point be taken at the left of the horizontal meridian (in the position of the glass as when the patient looks through it) and that the

degrees of inclination of the axis of the cylindric glass and the position of the base of the prism be expressed in degrees counting upward around the circle from this zero to 360 degrees.

This is the scale in use to this day, although in 1888, Doctors Harlan and Thomson, acting as a Committee of the College of Physicians for determining the designation of the principal meridians, recommended that the scale begin at the nasal side before each eye, terminating at 180 at the temporal side. This had only a limited acceptance and occasioned some confusion. Even as late as 1899 some of the books upon ophthalmology published in Philadelphia carried this recommendation as orthodox teaching.

Returning for the moment to the further consideration of Doctor McClure's influence, it may not be amiss to state that he was very early committed to the use of cycloplegics in the examination of the fraction, but he also very early made the observation that full correction, especially in hyperopes, was not always worn with comfort, and that it was necessary to make allowance for the exercise of a reasonable amount of the accommodation. Consequently, he urged the making of post-cycloplegic examinations. Those of his colleagues who were in closest touch with him regarded him as by far the best-informed refractionist in the city as well as the best in the practical application of this knowledge.³

The discouragement occasioned by the rebuff at the hands of the Board of Directors of City Trusts prevented Doctor McClure from publishing any of his future valuable observations, but we find his colleague, Doctor Thomson, utilizing the medical publications in no little degree to the great advantage of the ophthalmological profession, and the honor and credit of Philadelphia and

³ Hansell, H. F.: *Transactions of the College of Physicians*, vol. 45, p. 365, 1923.

the Wills Hospital. These papers were uniformly of a highly scientific character and may yet be read with great profit.

Retinoscopy, while introduced by Ferdinand Cuiget in 1873, did not come in for routine application in America until Edward Jackson, of the Wills Hospital Staff, popularized it by his writings in 1885. While there was little evidence of slothfulness in the ophthalmic work in this period, certain it is that the writings of this distinguished surgeon in connection with refraction added an extra impetus to more and more intensive work on the part of the practitioners, and especially the students that crowded the halls of the Hospital.

Jackson's paper, entitled "Measurement of Refraction by the Shadow Test or Retinoscopy,"⁴ set forth an account of the test with the plane mirror, "as applicable to all varieties of ametropia, the determination being made by measuring the variable distance of the surgeon from the patient." The disclosure of this phase of the test provided a new technique for its application and the value of the procedure was rapidly appreciated in all quarters.

The trained mathematical mind of Jackson did not rest with this contribution to ophthalmic optics but continued to serve with the production of countless essays upon a variety of topics in this field, of incomparable value to those students and surgeons whose mathematical concepts lacked the clarity necessary for an appreciation of the problems in this work.

It was about 1887 that Lucien Howe, of Buffalo, N. Y., wrote upon the photography of the interior of the eye, a task assumed by Thomson, of the Wills Hospital, in regard to animals early in the 1860's. A recent atlas published by Arthur J. Bedell, of Albany, N. Y., once an

⁴ *American Journal of the Medical Sciences*, April, 1885.

interne at the Wills Hospital, indicates the progress made in fundus photography.

It is also significant that the term "eyestrain," introduced by an Englishman named Tyrrell, should become a part of the medical vocabulary through the efforts of the group of surgeons connected with Wills Hospital at this period, stimulated in no small part by the contributions of Weir Mitchell. While Mitchell's paper recording the observations in headache and eyestrain bears the date 1874⁵ and his friendship with the active eye surgeons of Philadelphia in that period are well known, it detracts not the least from the former's influence to state that the ophthalmologists were, prior to this time recording observations which were certain to lead to the promulgation of this great truth.

Many references have been made in this section to S. D. Risley, but the genius of Doctor Risley was not confined to surveys and analyses but was also utilized in devising equipment. A trial frame of considerable merit was described by him in 1881, and the optometer which enjoyed such a great vogue in Philadelphia for a number of years is accredited to him. In 1889,⁶ he recommended the "Rotary Prism," using the principles first put in practice by Volkmann and later by Cretes, whereby two prisms of 15 degrees were placed over each other with their bases superimposed and so mounted in an appropriate cell that they be rotated over each other, a scale on the front of the cell being used to express the strength which is indicated by a mark on the outer prism in the different stages of its rotation.

It is of interest to note in passing that during the winter of 1869-1870, Doctor Thomson, then Assistant Surgeon at Wills Hospital, gave a lecture at the Pennsylvania

⁵ *Medical and Surgical Reporter*, 1874.

⁶ *Medical News*, December 21, 1889.

Hospital on "Errors of Refraction" and it was at this lecture, as Doctor Risley subsequently relates, that he for the first time heard the terms myopia, hyperopia and astigmatism, extremely good evidence that they were not very often employed, even in ophthalmic conversation. It was in 1873 that emetropia was accepted as the standard state of refraction by the Philadelphia ophthalmologists.⁷ It is said that Doctor Risley created quite a sensation about this time by the correction of a case of mixed astigmatism, although other surgeons of this period give Doctor McClure credit for priority in this accomplishment. In a reminiscent sketch by Doctor Risley, he states that his interest in this phase of ophthalmology had been stimulated by Doctor Harlan's advice that he read Donders' book on refraction, which he obtained from the Mercantile Library, Philadelphia, and set about diligently to master, with the result that he became one of the foremost exponents of the value of lenses in the relief of symptoms incident to latent errors of refraction.

Very early it had been accepted, as we have shown, that cycloplegia was essential for the accurate determination of the extent of ametropia, but a host of questions arose soon after "refraction" began to become popular regarding the partial or full correction of the defect, the relation of the extra-ocular muscle balance, the value of post-mydratic findings, and the choice of cycloplegic.

According to Risley, myopia was recognized early as a sequel of pathological states of the uveal tract by the Philadelphia school, in consequence of straining of hyperopic eyes or eyes with hyperopic astigmatism. He pointed out that such eyes readily become myopic but only in course of pathological processes. He observed that such processes could be arrested only by early correction of hyperopia and compound hyperopic astigmatism.

⁷ Risley, S. D.: *American Journal of Ophthalmology*, p. 18, 1918.

Writing as late as 1918, this observer, in recording a historical retrospect, states that the outstanding facts brought out by the Philadelphia group of ophthalmologists in this period (1870-1890) were: (1) That the emmetropic eye was to be taken as a standard. (2) The genesis of the myopic eye in congenital anatomic defects in the eyes of children. This developed the need for systematic examinations of children on entering school. (3) Examination and correction of errors of refraction under cycloplegics. (4) The intimate relations between affections of the uveal tract and systemic diseases of the infectious, toxic, and nutritional types which affect the cardiovascular system, kidneys and glandular system.

With the creation of his famous terminology for functional and organic disturbances of the extra-ocular muscles in 1886, Dr. George T. Stevens, of New York City, provided for the ophthalmic surgeons of the country a means of communication regarding disturbances in this field, and a great amount of work was done in Philadelphia in consequence, not only in the operative surgery recommended by him but in the study of physiology as well as pathology of extra-ocular muscle coördination.

While the beginning of the examination of refraction or ametropia cases in the Hospital may be justly assigned to the year 1865, when Dr. C. H. Thomas prevailed upon the Board of Managers to provide a case of trial lenses for the Hospital, the utilization of this equipment was not very great for several years to come.

Thus, in 1872, the number of refraction cases was but 185. In 1877, the report showed 581 cases; in 1885, 2,270; in 1890, 3,853; in 1895, 6,159; in 1900, 5,572; in 1910, 7,718; in 1920, 4,836; in 1930, 10,054 cases were treated—a remarkable growth. The full report for this latter year by Dr. I. S. Tassman, Chief of the Refraction Service which was created in 1924, follows:

REPORT OF THE REFRACTION DEPARTMENT

"In 1930, a total of 10,054 patients were examined for the correction of refractive errors and improvement of vision. This makes a total of over 40,000 cases referred to the department during the five years of its activity. The regular yearly increase in the number of such cases examined has kept steady pace with the increase in the work of the entire hospital, so that during the past year the total number of refraction cases exceeded that of 1929 by slightly less than 1,000, thus facilitating the study and treatment of other diseased conditions in the clinics.

"Despite the large number of patients examined, the organization of the department has been so developed that each patient referred for refraction receives a complete and careful examination and glasses are prescribed only where they are found to be indicated, in an attempt to relieve the symptoms complained of and to improve the visual acuity of the patient. Reexaminations are made before prescribing for a patient whenever and as often as may be found necessary in any case, in order to obtain the best results.

"The cataract and squint cases refracted before leaving the hospital following operation, are examined by the junior house surgeon. Other aphakic and presbyopic patients are refracted by the second junior house surgeon. The third and fourth junior house surgeons refract patients for whom a cycloplegic has been prescribed. The supervised systematic arrangement of the work of the resident physicians in this way, covering the period of the four junior services, has been supplemented by a series of talks on the principles of refraction and elucidation of the numerous practical problems that confront the refractionist.

"All patients below the presbyopic age or in whom the accommodation is found to be active, are examined with the use of either atropine 1 per cent., homatropine 2 per cent. or scopolamine, prescribed at the discretion of the attending surgeon in charge of the case. The most satisfactory results have been obtained in those cases in which atropine has been used. Homatropine also has been found uniformly more satisfactory than scopolamine. During the entire year, none were encountered which showed any ill effects of the drugs used.

The atropine prescribed is instilled, one drop in each eye three times daily, and the patient refracted forty-eight hours later. The homatropine is instilled one drop in each eye about every ten minutes for about six instillations on the same morning of the refraction.

"The routine of the examination of these cases consists of a preliminary retinoscopic examination of each one, which is followed by the trial case test. The retinoscopy is done both with the use of spheres alone or spheres and cylinders. Both methods have been found satisfactory, accurate results being obtained by either method with care and experience. Other methods advanced at various times for the elimination of the use of cycloplegics in refraction have never been found satisfactory for dependable results in any case. Nearly one-third of the total number refracted in this clinic are children of school age and pre-school age, and in these cases, in particular, retinoscopy under a cycloplegic has proven almost indispensable for determining the exact nature and extent of the refractive error present.

"In the trial case examinations, such accessory aids as the Lancaster Astigmatic Dials are used at times and the routine use of Jackson's Cross Cylinders has been found to greatly facilitate the examinations.

"In testing muscle balance for distance, the Stevens phorometer and Wells phorometer are routinely used. The latter has been found to be very satisfactory and requires very little time. In testing muscle balance for near, the Maddox wing test is ordinarily used.

"New Meyrowitz trial frames have recently been obtained and are in routine use, with satisfactory results.

"A report of the result of refraction is made in every case. This is incorporated with the regular clinic record of the patient by a clerical assistant, thus insuring an accurate and continuous record at all times. With the aid of the clerical assistant, the equipment of the department also received the proper care.

"After the glasses are prescribed for a patient, the fitting and adjustments are cared for. The type of lens and other features involved in the filling of the prescription are all carefully considered according to the individual requirements and best interest of the patient, with gratifying results.

"The following summary of the cases referred to this depart-

ment may prove of interest from a statistical standpoint and for comparison of the various types of refractive errors found. The ratios have been fairly uniform during the past five years."

Hypermetropia	1110
Hypermetropia with presbyopia	923
Hyperopic astigmatism simple	342
Hyperopic astigmatism simple with presbyopia	282
Hyperopic astigmatism compound	2513
Hyperopic astigmatism compound with presbyopia	930
Myopia	357
Myopia with presbyopia	167
Myopic astigmatism simple	80
Myopic astigmatism simple with presbyopia	101
Myopic astigmatism compound	610
Myopic astigmatism compound with presbyopia	170
Mixed astigmatism	387
Mixed astigmatism with presbyopia	107
Anisometropia	91
Anisometropia with presbyopia	63
Presbyopia	193
Aphakia	496
Emmetropia	120
Post-mydratic examinations	438
No glasses ordered	574

10 054

OPTICAL DEPARTMENT

Prior to 1898 it had been the custom at the Hospital to have all prescriptions for glasses written by the Staff, and filled by the optician to whom the patient chose to take them. They, in their ignorance, frequently patronized opticians who were not of the best character, who sold them mountings and fittings in styles unnecessarily expensive and gave no reduction in price on account of their customers being objects of charity. There was considerable abuse; several opticians of the cheaper grade, by means of runners stationed near the Hospital, went so far as to entice the unwary and unsophisticated to their shops in quite distant parts of the city. The Board of Directors of City Trusts, having their attention drawn by the Staff to

this abuse, decided to make a change in 1898. They stated in their report:

"The volume of the business of this nature coming from the Hospital, being so great as to make it feasible, if this were concentrated, to obtain very much reduced prices, it was deemed best to so concentrate the business, and save to the patients of the Hospital the difference in cost."

Proposals were accordingly invited and a contract awarded to H. C. Boden and Company. Under this arrangement the patients, after examination of their eyes had been concluded by the doctor making the test, were given prescriptions for glasses and were then referred to the superintendent, who numbered the prescription and sent the patient with it to Boden's store at Thirteenth and Walnut Streets. Boden received the prescription, took the necessary measurements for fittings, *etc.*, and requested the patients to return to the Hospital a few days later for the lenses, which would be ground in the meanwhile. Upon their return to the Hospital whatever adjustments found necessary were made, and the lenses delivered to the patients. It is a matter of historical interest that the man assigned by Boden to fit the glasses was no less a person than the grandson of the pioneer, McAllister.

Proposals were held annually and Boden had the contract until 1902 when it was awarded to J. C. Ferguson, Jr., until 1910, the work being along the lines similar to that described above. In 1910, this method was changed, and again upon the recommendation of the Staff the Committee on the Wills Hospital passed the following amendment to the Rules of the Hospital:

"Prescriptions for Spectacles or Glasses. In all cases where for the proper treatment or relief of a patient it is deemed necessary by the Attending Surgeon in charge of the case for the patient to obtain and use spectacles or eyeglasses, a prescription for such spectacles or eyeglasses shall be entered in a

book provided by the Hospital for that purpose, and a copy of such prescription shall be made upon a form provided by the Hospital, and shall be handed by the Surgeon or his Assistant to the patient; upon this form shall be printed the names and addresses of opticians who have agreed to furnish to the patients of the Hospital, at moderate prices, such glasses as may have been prescribed by the members of its Surgical Staff. The names of these opticians shall be printed periodically in varying order, so that each name in due course shall appear first upon the list; patients are to be free to make their own selection of opticians, and are not to be influenced therein by persons associated in any capacity with the Hospital."

In view of the number of changes occurring in the addresses of the opticians, the Committee directed that slips be printed, to be handed to the patient with the prescriptions.

This system was continued until the Fall of 1924, when the Hospital established its own optical department. This has proved a very satisfactory arrangement. The patients have been saved time, annoyance and expense, while the Hospital has gained quite a considerable income by the sale of glasses. In 1926, the Episcopal and Pennsylvania Hospitals adopted the same system in their eye clinics.

SOME EARLY OPTICIANS OF PHILADELPHIA

Closely allied to one another are ophthalmologist and optician, the one dependent along certain lines in large measure upon the other. In no city has the relationship existing between the two been on a more friendly or honorable basis than in Philadelphia. Of the optical houses in this city, by reason of its early foundation and long existence, extending over a hundred years, the house of McAllister, established the latter part of the eighteenth century, is the most notable. Being the only firm of its kind in Philadelphia, the beginning of the nineteenth century, it had no competitors and in consequence all of

the work of the Wills Hospital, after that institution was started, was referred to it.

The founder of this firm was John McAllister, who was born in Scotland in 1753, and came to Philadelphia in 1781. In 1783, he established himself in the sale and repair of whips and canes at the northeast corner of Second and Market Streets. Here he remained until 1796, when

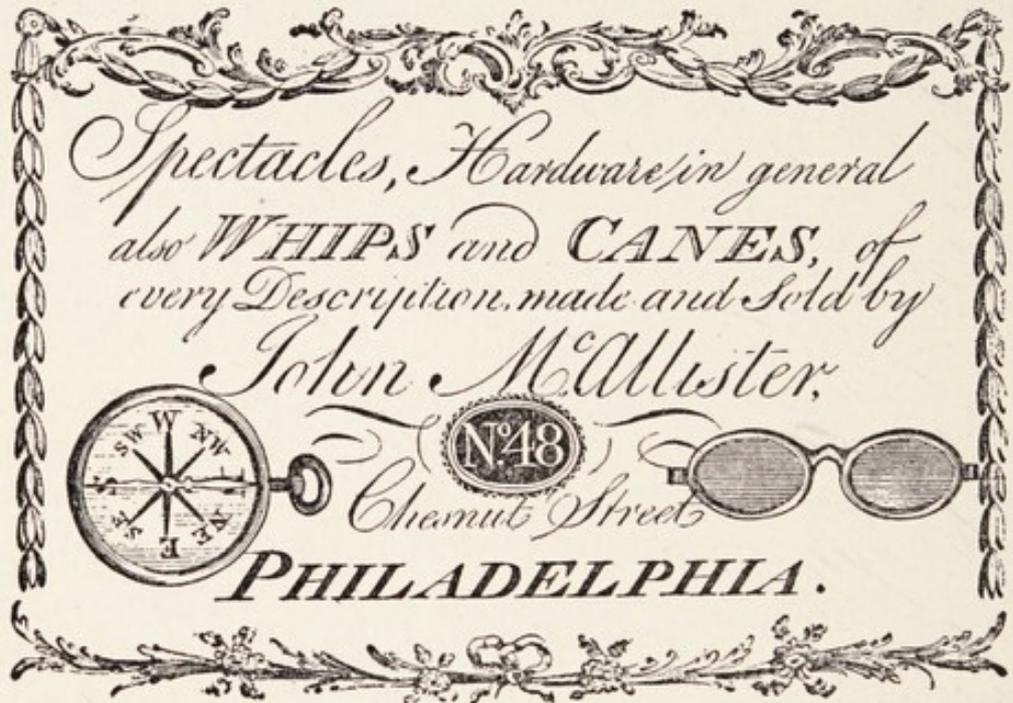


FIG. 18.—First optical business card of John McAllister, Sr., prior to 1800. The plate from which this card was printed was engraved by him.

he moved to 48 Chestnut Street and entered into partnership with James Matthews. The firm continued the whip and cane business (Fig. 18), but, as advertised in 1800: "They mean also to keep a large assortment of spectacles, reading glasses, concave glasses, magnifiers, goggles, *et cetera*, and to put new glasses in old spectacle frames." In an advertisement for July, 1800, it is interesting to note that they had just received and placed on sale a large assortment of spectacles in silver, steel, tortoise shell, *et cetera*; also the suggestion that those patrons at a distance

desirous of having new glasses made up should send a portion or all of the last glasses that had given them good reading vision, from which new ones could be made, rather than to rely upon sending their age, which was not dependable for this purpose.

In 1806, they added a large consignment of Japanned ware (trays, waiters, *etc.*) to their stock as well as telescopes, microscopes, gold breast pins and earrings.

John McAllister was soon a figure of note in the city. In the Federal procession which took place in July, 1788, to celebrate the adoption of the Constitution, he represented the manufacturers in the branch of the business to which he belonged, and led his journeymen in the parade.

John McAllister, Jr., the son of John McAllister, Sr., was born in Philadelphia in 1786, while his father was still residing at the northeast corner of Second and Market Streets. He received a good education, being graduated in Arts from the University of Pennsylvania with honors in 1803. He always manifested great interest in his alma mater and made an eloquent address to the Alumni in 1876, when ninety years of age. In 1804, he entered the counting house of Montgomery and Newbold in Philadelphia, but in 1811, upon the retirement of Matthews from his father's business, he joined his father in partnership under the firm name of John McAllister and Son, Dealers in Optical and Scientific Instruments.

The records of this firm are interesting reading, showing that J. McAllister, Jr., had a deep interest in all kinds of research of a physical nature. Tradition has it that George Washington obtained his glasses of John McAllister, Sr., while among the customers of the son were such notables as Thomas Jefferson (1806), Chief Justice Tilghman (1815), Count Joseph Bonaparte (1818), Henry Clay (1828), President Andrew Jackson (1841), *etc.*

The father dying in 1830, the business was conducted

under the name of John McAllister, Jr., and Company. Five years later, the son retired, handing over his business to his son, William Y. McAllister. The firm name was now changed to McAllister and Company and consisted of the following members: William Y. McAllister, James W. Queen, and Walter B. Dick.

COMMON COUNCIL CHAMBER,

Philadelphia, Dec 23^d 1856

Sir:

I have the honour to inform you that at a Meeting of the
COMMON COUNCIL *held this day, you were elected*
A Manager of the Wills' Hospital
of the City of Philadelphia.

Attest,

Yours, Respectfully,

Wm. D. Miles

CLERK OF COMMON COUNCIL.

John McAllister Jr

FIG. 19.—Certificate of election from Common Council Chamber, December 23rd, 1856.

John McAllister, Jr., was of scholarly habits and very fond of collecting historical data. He was made a member of the Historical Society of Pennsylvania in 1828, and read a number of papers before that body. He was elected Manager of the Wills Hospital in 1848 and acted in that capacity until 1854, when he resigned, but served a second time from 1857 to 1859 (Fig. 19). His interest in optics, as well as his standing in the city, must have made him a most acceptable member of that body.

It is probable in the early years of the life of the Hospital that all patients needing glasses were sent to McAl-

lister for them, the surgeons relying upon him to test the eyes of the patients as well as to grind the lenses. Note has already been made of his detecting and correcting the first case of astigmatism in America, and of Hays' consulting him when he corrected an astigmatic case of his own (see p. 51).

It was he who gave the present system of numbering houses in Philadelphia, according to the number of the streets and which has been copied in Washington and elsewhere. He died in 1877 at the advanced age of ninety-one years.

The business was conducted at 48 Chestnut Street for thirty years, when removal was made to 728 Chestnut Street. The firm partnership was dissolved in this year, and its name changed to McAllister and Brother. This partnership was also dissolved and in 1865 William Y. McAllister continued the business alone until 1882, when he retired, his sons William M. and J. C. McAllister succeeding him. A third son, F. W. McAllister, had started an optical house in Baltimore some years prior to his father's retirement. This business is still being carried on, by his son—an optometrist—a great-great-grandson of John McAllister.

In 1883, the firm name was changed to William M. and J. C. McAllister and business was continued at 728 Chestnut Street. In 1884, a split took place between the two brothers and William M. McAllister took his share of the business to 720 Chestnut Street, while J. C. McAllister moved to 1226 Chestnut Street and claimed the direct succession from John McAllister, established in 1783. In 1880, J. C. McAllister moved to 1721 Chestnut Street and continued there until 1928, when he went out of business.

In 1888, W. M. McAllister had joined with Christopher Huber and W. Reed Williams under the firm name of The McAllister Optical Company at 705 Chestnut Street. This association was dissolved after a few years, the busi-

ness being carried on by Christopher Huber alone. The McAllister Optical Co., Ltd., is the only firm doing business under the McAllister name at the present time, their store, under the management of Henry Huber—a son of Christopher—being at 132 Market Street.

The firm name with its different variations from 1783 to 1928 is as follows:

John McAllister, Sr.	1783-1811
McAllister and Matthews	1798-1811
John McAllister and Son	1811-1830
John McAllister, Jr., and Co.	1830-1836
McAllister (W. Y.) and Co.	1836-1865
McAllister, W. Y. (alone)	1865-1882
McAllister and Bro. (W. M. and J. C.)	1882-1883
McAllister Optical Co.....	1888-
McAllister Optical Co., Ltd.....	1930

Joseph Zentmayer, who had learned the trade of optician in his native country, Germany, established himself in Philadelphia in 1853. Zentmayer was not only a skilful optician, but a scientist along other lines. He was among the first, if not the first optician to limit his business to filling spectacles for glasses from ophthalmologists' prescriptions and as early as 1860 ground spherocylindrical lenses.

In 1865, he invented the Zentmayer non-acromatic double meniscus photographic lens, which was considered a discovery of considerable importance. Owing to his qualifications in optics, President Grant appointed him a member of the United States Commission to observe the total solar eclipse visible in Iowa in August, 1869. The Franklin Institute awarded him its own medal, also in 1874 the Elliott Cresson gold medal for the best scientific instruments of the decade. For the sub-stage microscope invented in 1876, by the use of which opaque objects could be viewed with greater ease than by any other instrument, he received a gold medal at the Centennial Exhibition, also one in Paris in 1878.

For the Iowa expedition in 1869, Zentmayer devised and constructed a special photographic lens which replaced eye pieces, also the drop-shoulder attachment for regulating the times of exposure used with the equatorial telescopes employed on that occasion. A lecture on lenses delivered by him at the Franklin Institute was considered a classic and stands as an important addition to the literature of optics.

He was a member of the Franklin Institute, the American Philosophical Society, and the Philadelphia Ophthalmological Society. Zentmayer was a man of high intellectual attainments and deservedly popular, and did much to maintain the level of high efficiency among Philadelphia opticians. Upon his death in 1888, he was succeeded by his son, Frank, who maintained the same high standards as his father. Frank dying in 1928, the business is carried on in the interest of two sisters who survive. Dr. William Zentmayer, a consulting surgeon at the Wills Hospital, is a brother.

The house of Queen and Co. was established in 1853 by James W. Queen, who had previously been a member of the firm of McAllister and Co. Queen was energetic and progressive and is said to have imported the first forms for grinding spectacle lenses that were used in the United States. He made the first kaleidoscope, magic lantern and other optical devices in America. In 1858, Samuel L. Fox was admitted as an equal partner, and the firm established at 924 Chestnut Street. Queen was compelled to retire in 1885 on account of ill health, and the business was conducted by Fox alone until 1891, when the Company was incorporated under the title of Queen and Co. Over-expansion and business depression led to a reorganization of the Company in 1896, with John G. Gray, who had been associated with Queen since 1882, as president and Fox as vice-president. Fox severed his connection with the

Company in 1903 and died in 1912. Gray continued to administer the business for some years but more energetic rivals caused its decline and the firm ceased to exist about 1910.

Another optician was Ivan Fox, a Russian who came to Philadelphia as a young man and served an apprenticeship with Joseph Zentmayer. Fox had received some early training before coming to this country and was an expert worker in brass. His apprenticeship with Zentmayer finished, he established himself, about 1880, in a small shop on Woodland Avenue near the University of Pennsylvania, but soon relinquished this location for a more ambitious one in the basement of a dwelling on the south side of Chestnut Street near Seventeenth. Ambitious, energetic and magnetic, Fox was soon able to move into still more pretentious quarters upon the northwest corner of Seventeenth and Chestnut Streets, and here he remained a number of years under the firm name of Ivan Fox. In 1910, the business was incorporated as the Fox Optical Company.

Many of the improvements in the mountings of spectacles and eye glasses were due to Ivan Fox. He was first president of the Guild of Prescription Opticians of Philadelphia and an ardent supporter of the movement of furnishing glasses only upon oculists' prescriptions. A former assistant is authority for the statement that Fox would melt five hundred dollars worth of twenty-dollar gold pieces and mold the metal in experimental work for mountings. Dissatisfied with domestic steel, he imported steel wire from France for spectacle frames. Although keen to acquire new business, he had not the talent to retain it, and though at one time, perhaps, the most prosperous of Philadelphia opticians, he was compelled in the latter years of his life to work for others in subordinate positions. He died in 1930 at the age of seventy-six years.

Like Ivan Fox a skilled optician, though excelling in the grinding of lenses rather than in their adjustment, was John L. Borsch, a German, born in Munich in 1849. He learned his trade in that city from his father, also an optician, and came to America when he was seventeen years of age. After working a year or more in different cities, he settled in Philadelphia and became associated with Queen and Co. A few years later he opened a shop for himself at 217 South Ninth Street. The business which he established at that time is still in operation in this store, now in its sixty-eighth year. About 1880, Borsch opened another store at 1324 Walnut Street, which became his main establishment and in which he did business until his death in 1921. Mr. Borsch was responsible for many improvements and inventions. Many ophthalmologists, especially those associated with Jefferson Hospital (which was not far from his place of business) brought ideas to him which he helped to develop. His most important invention was the Kryptok bifocal, a popular lens, sold throughout the United States. Borsch's son, Dr. Louis Borsch, a graduate of Jefferson Medical College, formerly of Philadelphia and later of Paris, France, helped his father in the final development of this lens.

Another optician of prominence is Charles F. Wall, who started in the optical business with the firm of R. and J. Beck and later served an apprenticeship with Queen and Co. and John W. Sidle of Lancaster, Pa. He had charge of the optical department of George T. McKelway's drug store for a time and in 1883 was a clerk with Ivan Fox, remaining with that firm until 1887, when he associated John Ochs with him and founded the well-known firm of Wall and Ochs.

John Ochs died in 1896 and Charles Wall continued the business alone until 1903, when he incorporated the firm, taking his brother, William L. Wall, and J. Harry Bowers

into partnership with him. The firm has been very successful, paying special attention to the needs of ophthalmologists, importing the latest forms of ophthalmic apparatus and keeping the profession in full touch with the times in the way of office and hospital optical equipment. Bowers died in 1929 and William Wall in 1930, and the firm was reorganized in 1931, Charles F. Wall continuing as president, his son C. R. Wall as vice-president and Frank E. Bowers as secretary and treasurer.

Like Charles Wall, H. C. Boden and William S. Yarnall obtained their early training with Queen and Co. Boden started business in 1887 at the southwest corner of Thirteenth and Walnut Streets and upon his death in 1892, he was succeeded by his widow. Yarnall, who had been a clerk in this establishment, then went into business for himself at 1406 Chestnut Street, removing in 1898 to 118 South Fifteenth Street, and nineteen years later to 128 South Sixteenth Street (Medical Arts Building).

About this time a number of other young men, nearly all of whom had served their apprenticeship under Zentmayer, Queen and Co. or Borsch, started business along the lines of these firms, and, following their methods, have maintained the optical business at a very high standard. Among these were Bonschur and Holmes in 1889 (of this firm, Herman Bonschur had had his early training with Borsch and Arthur Holmes with Meyrowitz of New York); the firm of Ferguson and Weston, established in 1890 by Joseph C. Ferguson, Jr., and Daniel E. Weston, both of whom had been trained by Queen and Co.; the partnership was dissolved in 1898, both members of the firm going into business on their own account the same year.

P. E. Limeburner, whose firm was started in 1892, had served his apprenticeship with Queen and Co., and Joseph Haines, who succeeded Limeburner, had been trained by

him. Frank Muller went into business for himself in 1894, after a thorough training by Ivan Fox. In the same year, the firm of Reimold and Meister was founded by William F. Reimold, who had had his training with Queen and Co. and Zentmayer, and Charles Meister, who had also been with Queen and Co. After Reimold's death the firm (Reimold and Meister) was continued under the name of Charles Meister Sons. In 1900 was established the firm of Lander, Cleary and Company by Thomas E. Lander and John W. Cleary, both of whom had been trained by Borsch.

In the early 'nineties two wholesale optical houses were established in Philadelphia: The D. V. Brown Company at 740 Sansom Street and the firm of McIntyre, Magee and Brown, now at the southeast corner of Ninth and Sansom Streets. D. V. Brown had been an employee of the American Optical Company, and upon coming to Philadelphia in 1881 was made foreman of Queen and Co. He remained with this firm until 1892, when he went into business for himself, and continued at the same address until his death in 1915. The McIntyre, Magee and Brown firm was established in 1894 by George W. Magee, Edgar A. Brown, A. Reed McIntyre and Harry C. Ulmer. McIntyre and Magee had been trained by Queen and Co.; Brown by the American Optical Company. Ulmer withdrew from the firm in 1895 and Brown died in 1917. The present firm was incorporated in 1907 under the present name.

In addition to the firms mentioned above, in 1910 when the Wills Hospital Committee made a change in the method of conducting its optical department, the names of the following were printed on slips which were handed to patients for their guidance, at the same time with their prescription for glasses (see p. 254). All of these firms promised to supply the patients of the Wills Hospital with

glasses at moderate prices. As we shall see, this arrangement was terminated in 1924. Their names were as follows:

Street, Linder and Propert	Twentieth and Chestnut Streets
Shimwell and Logan	1935 Chestnut Street
Bender, Off and Franks	1827 Chestnut Street
Weber Sons	119 South Eighteenth Street
Welsh and Davis	120 South Eighteenth Street
Keene Company	1713 Walnut Street
Adams and Bates	111 South Seventeenth Street
Mullen and Wolf	Broad Street Station Bridge
W. Edgar Keith	1911 Walnut Street
Scott and Thomas	1926 Chestnut Street
R. L. B. Fraser	119 South Seventeenth Street
Walter J. O'Neill	19 South Eighteenth Street

In 1921, a number of the leading opticians of Philadelphia, to offset the danger and harm arising from the examination of eyes, and the prescribing of glasses by those who lacked sufficient training, formed the Guild of Prescription Opticians. This organization was so successful that a National Guild was organized along the same lines (1926). These organizations have done much to maintain a high standing of ethics among the members and have elevated generally the optical business throughout our country.

THE literature devoted to ophthalmology during the past one hundred years has been enormous. Treatise has succeeded treatise, and journal after journal has appeared in nearly all the countries of the world, and in many languages. The first journal to be published devoted largely to ophthalmology was *Journal für Chirurgie und Augenheilkunde*, which was published in Germany in 1820 by Carl Ferdinand von Graefe and Philip von Walther. This journal ceased to be published in 1840. The *Annales d'Oculistique*, on the other hand, which was edited by Cunier, of Brussels, in 1838, is still in existence—the oldest eye journal in the world.

The first American publication, the *American Journal of Ophthalmology*, appeared in 1854 under the editorship of Julius Hornberger, of St. Louis, who retired after a few years, Dr. Adolph Alt of the same city assuming the editorship. As we have seen (p. 130), the *Archives of Ophthalmology* (Knapp's) appeared in 1869. In the 'nineties a number of other journals had their birth; in 1891, the *Ophthalmic Record*, founded and edited by Dr. G. C. Savage; in 1897, Doctors C. A. Wood and T. R. Woodruff of Chicago assumed the editorship. *The Annals of Ophthalmology* appeared in 1892, issued under the editorial supervision first of Dr. G. P. Parker, later under that of Drs. C. A. Wood and H. V. Würdeman, J. M. Ball and later of W. T. Shoemaker and C. M. Parker. In 1904, *Ophthalmology* appeared under the editorship of Dr. H. V. Würdeman. Dr. Edward Jackson, of Denver, Colorado, long associated in journalistic enterprises in our country, amalgamated a number of these journals, and in 1918

founded the *American Journal of Ophthalmology*, the names of the journals which were amalgamated being as follows:

American Journal of Ophthalmology
Annals of Ophthalmology
Ophthalmic Record
Annales de Oftalmologia
Ophthalmic Record
Ophthalmic Year Book

Upon the death of Herman Knapp in 1900, the *Archives of Ophthalmology* was continued by his son, Arnold Knapp. This important journal was taken over by the American Medical Association in 1928, and published by that organization, Arnold Knapp continuing as chief editor. Drs. William Zentmayer and Francis Heed Adler, of the Wills Hospital Staff, are associate editors.

Numerous papers by members of the Wills Hospital Staff, based upon the work of the Hospital and the experience gained there, have appeared at various times in these journals. It seems strange that all of the journals mentioned above, with the exception of Knapp's *Archives*, should have been published in the West. There is no city in our country which can compare with Philadelphia in the number of text-books upon ophthalmology, published by Philadelphia ophthalmologists since Littell's initial volume in 1838, but no attempt was ever made in this city to publish a journal devoted to ophthalmology. The ophthalmologists of Philadelphia have seemed content to be frequent contributors to the journals mentioned above, and have also written many papers and reviews upon ophthalmology for journals devoted to general medicine, notably for the *American Journal of the Medical Sciences*.

In 1870, there had appeared in Germany a system of ophthalmology known as *Das Handbuch der Gesamten*

Augenheilkunde, edited by Alfred Graefe, a cousin of Albrecht von Graefe's and Theodore Saemisch.

This was the first work of its kind upon ophthalmology and included in its pages practically all that was known of that science. While the majority of chapters were written by Germans and Austrians, a number were by ophthalmologists from other parts of Europe. This colossal work exercised a profound influence upon ophthalmology the world over, and was of the greatest aid to those interested in the subject.

The year before the publication of this work, in 1869, another colossal work had appeared which contained an index and review of all the important papers upon ophthalmic subjects. This was issued annually by Professor Nagel of Tübingen and later by Professor Michel of Berlin, under the title of *Nagel's Jahresbericht*. The last volume of this important work was discontinued in 1914, the condensed literature appearing thereafter in the *Zentralblatt für die Gesamten Ophthalmologie*. Although of value only to those who read German, it places at the command of the reader the entire annual literature of ophthalmology.

When, in 1904, Dr. Edward Jackson, of Denver, Colorado, a former surgeon of the Wills Hospital, issued the *Ophthalmic Year Book*, which covered much the same ground as the German digest but in English, a great boon was conferred upon English-speaking ophthalmologists. From vols. 17 to 22 the reviews were issued in quarterly parts and published under the name of "Ophthalmic Literature," in the *American Journal of Ophthalmology*. In 1923, the original form of an annual volume was resumed and continued until 1927, when, as we have just seen the Year Book, with other American journals, merged to form the *American Journal of Ophthalmology*. Although the digest of the literature is contained in the

American Journal of Ophthalmology, lack of a separate annual Year Book is a distinct loss and it is hoped that a way may be found to continue it in its original form.

Prior to the appearance of Jackson's Year Book, an annual review of ophthalmology had been made by Dr. C. A. Oliver in association first with Dr. Thomson S. Westcott, later with Drs. William Zentmayer and W. C. Posey, all associated with the Wills Hospital. This review was part of a general résumé of medical literature contained in the comprehensive *Annual of the Medical Sciences*, edited by Dr. C. M. Sajous. Abstracts of the more important articles published in the ophthalmic journals throughout the world were carefully prepared and conscientiously edited. They were continued for some years.

Mention must also be made of the *American Year Book of Medicine and Surgery*, which had an ophthalmological department edited by Drs. Howard F. Hansell and Wendell Reber at first, and later by Drs. Walter L. Pyle and Samuel Horton Brown.

The following is a list of books written by members of the Wills Hospital Staff from its founding to the present day. No attempt has been made to include the various monographs and reviews written by the members of the Staff as that would assemble too voluminous a list; the books alone with the names of the publishers have been recorded.

BOOKS WRITTEN BY MEMBERS OF THE STAFF

Littell, Squier: "A Manual of Diseases of the Eye," published by John S. Littell, Philadelphia, 1837. Second edition, 1846.

Edited American edition of Walton's "Ophthalmic Surgery," 1853. Published by Lindsay and Blakiston, Philadelphia.

Hays, Isaac: American edition of "Treatise on Diseases of the Eye," by W. Lawrence, F.R.S., published by Lea and

Blanchard, Philadelphia, 1843. Also third American edition of same work with numerous additions and illustrations.

American edition of "Principles and Practice of Ophthalmic Surgery," by Wharton Jones, in 1847. Published by Lea and Blanchard, Philadelphia.

Chapter on "Diseases of the Eye" in Dewees' "Practice of Medicine," in 1843. Published by Lea and Blanchard.

Neill, John: "An Analytical Compendium of the Various Branches of the Medical Sciences," in collaboration with Frances Gurney Smith in 1848-1852. Published by Lea and Blanchard, Philadelphia.

Sargent, Fitzwilliam: Edited "The Principles and Practice of Modern Surgery," by Robert Druitt, in 1848. Published by Lea and Blanchard, Philadelphia.

Manual on "Bandaging and Other Operations of Minor Surgery," in 1848. Six editions published by Lea and Blanchard, Philadelphia.

Third American edition from the second Edinburgh edition of "The Practice of Surgery," by James Miller, in 1853. Published by Lea and Blanchard, Philadelphia.

Hewson, Addinell: Edited "Aural Surgery," by Sir William Wilde, in 1853. Published by Lea and Blanchard, Philadelphia.

American edition of Mackenzie's "Diseases of the Eye," in 1855. Published by Longman, Brown, Green and Longman, London, and Lea and Blanchard, Philadelphia.

Hunt, William: "A History of Surgery in the Pennsylvania Hospital," with Dr. T. G. Morton, in 1880. Published by J. B. Lippincott and Co., Philadelphia.

Morton, Thomas G.: "History of the Pennsylvania Hospital," in collaboration with Dr. Frank Woodbury. Copyrighted by the contributors of the Pennsylvania Hospital and printed by the Times Printing House, Philadelphia, 1895. "A History of Surgery in the Pennsylvania Hospital," with Dr. William Hunt, in 1880. Published by J. B. Lippincott and Co., Philadelphia.

Agnew, D. Hayes: "Practical Anatomy," in 1856. Published by J. B. Lippincott and Co., Philadelphia.

"Principles and Practice of Surgery," containing an unexcelled chapter on "Ophthalmology" written by the

author of the entire work. Published by J. B. Lippincott and Co., Philadelphia, 1878-1883.

Harlan, George C.: "Eyesight and How to Care For It." Published by Lindsay and Blakiston, Philadelphia, 1879.

Norris, William F.: "A Textbook of Ophthalmology," with C. A. Oliver, in 1893. Published by Lea Brothers, Philadelphia.

"A System of Diseases of the Eye," in four vols., with C. A. Oliver, in 1897. Published by J. B. Lippincott and Co., Philadelphia.

Thomson, William: American edition of "Diseases of the Eye," by Edward Nettleship, with chapter on "Color Blindness," in 1897. Published by Lea Brothers, Philadelphia.

Chapter on "Diseases of the Eye," in S. D. Gross's "Surgery." Published by Lea Brothers, Philadelphia (about 1881).

Schell, H. S.: "A Manual of Ophthalmic Practice," in 1881. Published by D. G. Brinton, Philadelphia.

Oliver, C. A.: "A Textbook of Ophthalmology," with William F. Norris, in 1893. Published by Lea Brothers, Philadelphia.

"A System of Diseases of the Eye," with William F. Norris, in 1897. Published by J. B. Lippincott and Co., Philadelphia.

"Description of Some of the Most Important Methods Employed for the Recognition of Peripheral and Central Nerve Diseases," in 1895. University of Pennsylvania Press.

English edition of Ohlemann's "Ocular Therapeutics," in 1899. Published by P. Blakiston's Son and Co., Philadelphia.

English edition of Baudry's "Injuries of the Eye in Their Medico-Legal Aspect," in 1900. Published by F. A. Davis Co., Philadelphia.

English edition of Donders' "Essay on the Nature and Consequences of Anomalies of Refraction," 1899. Published by P. Blakiston's Son and Co., Philadelphia.

Chapter on "Paracentesis, Keratotomy, Conjunctivoplasty, and Some Operations on the Cornea," in Casey A. Wood's

"System of Ophthalmic Operations," 1911, published by the Cleveland Press of Chicago, Illinois.

Risley, S. D.: Chapter on "School Hygiene," in Norris and Oliver's "System of Diseases of the Eye." Published by J. B. Lippincott and Co., Philadelphia.

Jackson, Edward: "A Manual of the Diagnosis and Treatment of Diseases of the Eye," in 1900. Published by W. B. Saunders Company, Philadelphia and London. Second edition 1907.

"Skiascopy and Its Practical Application," in 1895. Fourth edition in 1905 published by the Herrick Book and Stationary Company of Denver, Colorado.

"Essentials of Diseases of the Eye, Nose and Throat," with E. B. Gleason, in 1890. Published by W. B. Saunders Co., Philadelphia.

"Essentials of Refraction and Diseases of the Eye with a Consideration of Ocular Injuries and the Ocular Symptoms of General Diseases," in 1890. Published by W. B. Saunders Co., Philadelphia. Third edition in 1901.

Special Chapters in Other Books:

"Optical Therapeutics, Normal and Abnormal Refraction; Presbyopia; Principles Involved in Fitting Glasses," in "A System of Practical Therapeutics," by H. A. Hare, in 1892. Published by Lea Brothers, Philadelphia.

"The Dioptrics of the Eye," in "A System of Diseases of the Eye," by Norris and Oliver, in 1897. Published by J. B. Lippincott Co., Philadelphia.

"Skiascopy, The Shadow Test, Retinoscopy," in "A System of Diseases of the Eye," by Norris and Oliver, in 1897. Published by J. B. Lippincott Co., Philadelphia. Similar chapter in "A Textbook on Diseases of the Eye," by George E. deSchweinitz. Published by W. B. Saunders Co., Philadelphia.

"Skiascopy," in *American Encyclopedia of Ophthalmology*, edited by Casey A. Wood. Published by Cleveland Press, Chicago.

"Ophthalmology," in *Progressive Medicine*, edited by H. A. Hare, from 1899-1918. Published by Lea and Febiger, Philadelphia.

"Methods of Determining Refraction of the Eye; Ophthalmometry; Ophthalmoscopy, Skiascopy, Optometry,

Use of Mydriatics," in "An American Text-Book of Diseases of the Eye, Ear, Nose and Throat," by deSchweinitz and Randall, in 1899. Published by W. B. Saunders Co., Philadelphia.

"Medico-legal Aspects of Vision and Audition," in "A Text-book on Legal Medicine," by Peterson and Haines, in 1903. Published by W. B. Saunders Co., Philadelphia.

"Operations on the Extrinsic or Orbital Muscles," in "A System of Ophthalmic Operations," by Casey A. Wood, in 1911. Published by the Cleveland Press, Chicago.

"Etiology and Classification of Glaucoma," a Symposium edited by Nance and Peck, in 1914. Published by the Chicago Medical Book Company.

Editor:

Ophthalmic Year Book, in 1904.

Ophthalmic Year Book, with collaborators, from 1905 to 1922.

Ophthalmic Literature, from 1911 to 1917.

American Journal of Ophthalmology, in 1918.

Posey, William Campbell: Revised and edited sixth American edition from sixth English edition of "Diseases of the Eye," by Edward Nettleship, F.R.C.S., in 1900. Published by Lea Bros., Philadelphia.

"A Treatise on Diseases of the Eye, Nose, Throat and Ear," with Jonathan Wright, M.D., in 1903. Published by Lea Brothers, Philadelphia.

"The Eye and the Nervous System," with William G. Spiller, M.D., in 1906. Published by J. B. Lippincott Co., Philadelphia.

"Hygiene of the Eye," in 1918. Published by J. B. Lippincott Co., Philadelphia.

Sweet, Wm. M.: "A Textbook of Diseases of the Eye," in collaboration with H. F. Hansell. Published by P. Blakiston's Son and Co., Philadelphia, 1903.

Edited second edition of "Ophthalmic Surgery," by Joseph Meller, in 1912. Published by P. Blakiston's Son and Co., Philadelphia.

PUBLISHERS ASSOCIATED WITH THE WILLS HOSPITAL STAFF

It will have been remarked that all the books written by the Wills Staff, from Littell's work in 1838 to that by

Posey in 1918, were published by Philadelphia publishing houses, and that is quite what might be expected, for no other city in America can equal Philadelphia in the printing of books devoted to medical subjects.

The oldest of these, Lea and Febiger, was founded by Matthew Carey, in 1785, who established a newspaper in Philadelphia in that year. He began to publish books a few years later, and when in 1817 Carey associated with him his son, Henry C. Carey, and four years later his son-in-law, Isaac Lea, the house had already attained the position of the leading one in the publishing trade in the United States. Matthew Carey retired in 1824 and the firm of Carey and Lea was established. In 1833, William A. Blanchard was admitted to the firm, and its name changed to Carey, Lea and Blanchard. Three years later H. C. Carey retired and the firm was designated as Lea and Blanchard until 1851.

From a very early period this firm had included the science of medicine within the sphere of its activities, and had issued a number of prominent professional works. In 1820, it founded the *Journal of the Medical and Physical Sciences*, a quarterly periodical, first edited by Drs. Edgar N. Chapman, Dewees Goodman and Isaac Hays. In 1827, the journal became known as the *American Journal of the Medical Sciences*, and was edited exclusively by Doctor Chapman (see p. 47). The publication of the journal led to intimate relationship with the medical men of the time, and the publication of their works by Lea and Blanchard. In 1851, Isaac Lea retired in favor of his son, Henry C. Lea, and the name of the firm was changed to Blanchard and Lea and continued until the retirement of Mr. Blanchard in 1865.

His son Henry succeeded Mr. Blanchard, and the firm again became Lea and Blanchard, but only for a few months, as, the younger Blanchard retiring, the business

was carried on by Mr. Lea until 1880. In this year, Isaac Lea became a special partner, and his son, Charles M. Lea, in association with Henry M. Barnes and Charles C. Febiger, carried on the business under the firm name of Henry C. Lea's Son and Company.

Upon the retirement of Henry C. Lea in 1885, Arthur H. Lea was admitted to the firm and the firm of Lea Brothers was established. Upon Mr. Arthur Lea's retirement, the business was continued by Messrs. Van Antwerp, Lea and Christopher Febiger, both descendants of the founder.

Another long-established firm is that of J. B. Lippincott and Co. This house dates back to 1792, when Jacob Johnson established a shop on High (now Market) Street. Johnson's store developed into Gress, Elliott and Company, one of the largest book jobbers in America. In 1850, the firm of J. B. Lippincott and Co., which had been established by J. B. Lippincott in 1836, bought out Gress, Elliott and Company. The firm was housed after 1865 on Market near Seventh Streets. A branch office was established in London in 1875 and is still in operation.

The firm does one of the most important publishing businesses in America. The medical department was started in 1850 with the acquisition of the United States Dispensary and has published many text-books, *etc.*, since that time. The *International Clinics* is circulated by this firm. The firm was made a stock company in 1885 and adopted its present name, J. B. Lippincott Co. The founder died in 1886 and was succeeded as president by his son, Craig, who, on his death in 1911, was followed by his brother, J. Bertram Lippincott. The latter retired in 1926 after fifty years of service, his son Joseph W. Lippincott, the present head, succeeding. The building on Market Street having been destroyed by fire in 1897, a

new building was erected on east Washington Square, the present home of the company.

Another firm which has published many volumes upon ophthalmic subjects is that of P. Blakiston and Co., Inc. This firm was founded in 1843, the original name being Lindsay and Blakiston. Mr. Robert Lindsay was a book-binder and Mr. Presley Blakiston had been associated with the book business for a number of years. The firm was at first located at the northwest corner of Fourth and Chestnut Streets, but in 1851 moved to 25 South Sixth Street, where it continued to publish books in various departments of science and literature. In 1880-1881, Mr. Lindsay retired and Mr. Blakiston continued the business at 1012 Walnut Street, where the present company continues.

It is interesting to report that the firm has been in existence for eighty-eight years and the present head is but the second generation, the business being carried on by Mr. Presley Blakiston's son, Kenneth.

The firm has published many books on medical subjects and for many years conducted a retail department. Here were often seen prominent members of the medical profession talking over new books.

A fourth firm is that of W. B. Saunders Company, founded by W. B. Saunders in 1888. At first it was conducted as a second-hand book store at 33 South Tenth Street, but removal was soon made to 913 Walnut Street where Mr. Saunders published the first book bearing the Saunders' imprint—the initial volume of the "blue series" of Saunders' Question Compends. Since that date the business of the firm has been limited to the publication of medical works, largely medical text-books, which have been freely advertised.

In 1893, removal was made to 925 Walnut Street, where the firm remained until 1912, when it removed into the

present building in west Washington Square. A London office was opened in 1900.

Mr. Saunders died in 1905 and the business was carried on by his widow, who later established a stock company, of which she, F. B. Saunders, is president; W. D. Watson and R. W. Greene, vice-presidents; secretary, J. LeRoy Smith; treasurer, W. L. Saunders, 2nd.

CHAPTER XV

PERIOD FROM 1900 TO 1930. SOCIETIES FOR THE PREVENTION OF BLINDNESS. FIFTH GROUP OF ATTENDING SURGEONS. CONSULT- ING SURGEONS

FUCH's essay on "The Causes and Prevention of Blindness," which won for him a prize at the Fourth International Congress of Hygiene in Paris, in 1882, awakened considerable interest throughout the scientific world in the problem of how best to reduce the number of blind, and in the early part of this century a number of societies with this end in view were formed in this country.

State societies came into existence notably in New York, Illinois and Pennsylvania. In the latter a Commission on Conservation of Vision was formed in 1911, under the auspices of the State Medical Society, and consisted of the following members:

Samuel G. Dixon, M.D., Honorary Chairman, Harrisburg
William C. Posey, M.D., Chairman, Philadelphia
Thomas B. Holloway, Secretary, Philadelphia
Clarence P. Franklin, M.D., Philadelphia
Edward B. Heckel, M.D., Pittsburgh
William Zentmayer, M.D., Philadelphia
Edward Stieren, M.D., Pittsburgh
Wendell Reber, M.D., Philadelphia
William W. Blair, M.D., Pittsburgh
Lewis H. Taylor, M.D., Wilkes-Barre
Clarence M. Harris, M.D., Johnstown

Added to this number were the heads of various manufacturing organizations employing large numbers of men handling machinery with eye hazards, and various public utility companies throughout Pennsylvania engaged in illumination problems. Doctor Dixon, State Health Officer, as Honorary Chairman, coöperated in his official ca-

capacity. This commission was very active for four or five years in securing proper legislation for ophthalmic interests and in obtaining proper treatment for babies with ophthalmia neonatorum and their mothers who required indoor hospital care. Due to the initiative of this commission various devices to protect the eyes of workmen were installed at a number of large plants, notably in that of the Carnegie Steel Company of Pittsburgh.

Ophthalmologists in other states, notably Dr. Park Lewis, of Buffalo, N. Y., Hiram Woods, of Maryland, and William H. Wilder, of Chicago, Ill., were alive to the importance of the conservation movement, and brought it to the attention of the Section on Ophthalmology of the American Medical Association, in consequence of which in 1913 the Council on Health and Public Instruction of the American Medical Association appointed a Committee on Conservation, of which Dr. Frank Allport, of Chicago, was chairman. This committee was very active for a time and issued numerous non-technical articles for the public press, also a series of short pamphlets on eye topics by well-known ophthalmologists. Lecture campaigns were started in many states, illustrated by stereopticon slides explaining eye diseases. Special emphasis was laid upon the dangers of ophthalmia neonatorum and the benefit to be derived from Crede's method of treatment. The use of goggles to prevent eye injuries in shops was insisted upon, also the systematic examination of school children's eyes.

All this was done to acquaint the public with visual problems and excite their interest in the subject. Like that in Pennsylvania, being conducted by busy practitioners, this movement, which had accomplished a great deal in the four or five years of its existence, was permitted to die out. Such is the fate of all similar movements conducted by practicing medical men, all of whom lack the time

necessitated by such important undertakings. However, "Conservation of Vision" was in the air and in 1915 the National Committee for the Prevention of Blindness was started in New York and is still in existence under the title of the National Society for the Prevention of Blindness. Though incorporated in 1915, the organization really had its beginning in 1908 as the New York State Committee for the Prevention of Blindness.

Though distinctly a lay organization, the National Society has always had a number of ophthalmologists upon its directorate, outlining the policy of the society and aiding in carrying on its work. The society coöperates with the Section on Ophthalmology of the American Medical Association, with the American Ophthalmological Society and with leading national health and social organizations. Its headquarters are in New York, and its present membership of more than twenty-five thousand is scattered over the United States. An official group of workers travel over the country organizing "sight-saving classes" and coöperating with other organizations in campaigns against the spread of trachoma and looking to the prevention of ophthalmia neonatorum, by Crede's method.

It has issued many pamphlets upon subjects pertinent to the scope of its work and is ever seeking to extend its usefulness. It is planning to introduce social service more widely into eye clinics and to aid in the organization of societies for the prevention of blindness in states which have been backward in instituting this movement. In conjunction with the Red Cross Society of Paris, the National Society has also been helpful in the founding of an International Society for the Prevention of Blindness, looking to the lessening of the number of the blind throughout the world.

A few years after the beginning of the century, fresh impetus was given the practice of ophthalmology by the

introduction of new instruments, making possible greater precision in diagnosis. In 1902, Allvar Gullstrand, of Sweden, had invented the slit lamp, by means of which one is enabled to study directly in minute detail processes whose nature had hitherto been inferred only, though it was not until Vogt's brilliant researches that the instrument became popularized. Schiøtz's (1905) tonometer and the invention of many improved forms of perimeters and scotometers added greatly to the accuracy of field taking, that important means of diagnosis, especially in chronic glaucoma and intracranial lesions. New methods of operating in glaucoma gave hope of saving many eyes hitherto doomed by that disease, while the acquiring by the Hospital of better apparatus for the detection and removal of foreign bodies from the eyeball enabled the surgeons to deal with such cases much more satisfactorily than in the past.

In 1909, the position of First Clinical Assistant to the Wills Hospital was created in order to retain the services of experienced men in the discharge of the minor, but no less important duties in connection with the clinics. In the subsequent year, upon the recommendation of the Board of Attending Surgeons, the Board of Directors of City Trusts created the positions of Second as well as First Clinical Assistants, thus giving recognition and official title to professional assistants in the various clinics. In 1919, the distinction between the First and Second Assistants was abolished, and each Attending Surgeon given the right to nominate one or more clinical assistants. In 1915 the position of Clinical Clerk was created but abolished in 1919.

A FIFTH GROUP OF ATTENDING SURGEONS

There remains another group of attending surgeons still to be recorded, beginning with the appointment of

Doctor Pontius, made an Attending Surgeon in 1907 and including that of Doctor Appleman, the last appointee in 1924. With the exception of Doctor Sweet, now deceased, and Doctor Holloway, who resigned in 1924, upon the occasion of his election as professor of ophthalmology in the University of Pennsylvania, all are still serving the Hospital. Their official appointments are as follows:

PAUL J. PONTIUS

Resident Physician, 1891-92

Assistant Surgeon, 1901-1907

Attending Surgeon, 1907

WILLIAM MERRICK SWEET

Attending Surgeon, 1911-1919

Consulting Surgeon, 1919-1926

William Merrick Sweet was appointed Surgeon at the Wills Hospital in 1911 and served in that capacity until his resignation in 1919, when he was made a consultant. Born in Philadelphia in 1860 and educated in the public schools of that city, he was unable for a time to follow his ambition to study medicine on account of financial reasons. Meanwhile, he became connected with a manufacturing establishment and there acquired knowledge which was to be of great service to him later in his career in X-ray work. He also took up newspaper work for a time and thus became acquainted with the intricacies of the printing art. This also stood him in good stead in his long editorship of the *Transactions of the American Ophthalmological Society*. Thus the financial limitations which he doubtless thought were hampering his career actually proved to be assets of great value to him.

He entered the Jefferson Medical College in 1884 and was graduated in 1886, becoming an interne in its hospital immediately afterwards. Upon the completion of this term

of service he joined the clinic for diseases of the eye at the Jefferson Hospital and in 1925 became professor of ophthalmology in his alma mater. He was also a professor of ophthalmology in the Philadelphia Polyclinic and College for Graduates in Medicine (now the Graduate School of Medicine of the University of Pennsylvania).

Doctor Sweet was made an Attending Surgeon at the Wills Hospital in 1911 and served in that capacity until 1919, when he resigned and was made a consultant. His interest in X-ray work and his skill with the magnet made his service of great value.

He was made Roentgenologist to the Hospital in 1914, the first to fill that position, and having the department well organized resigned as its head in 1918 on account of pressure of other work.

While he was an able clinician and teacher, it was his X-ray work that gave him a national reputation, his method of localizing foreign bodies in the eye being generally adopted throughout the United States. His magnet technique was distinctly original and the portable hand magnet which he devised enjoyed great popularity.

Conjointly with Dr. Howard Hansell, his colleague at the Jefferson Hospital, he published a text-book of "Diseases of the Eye," and edited in 1912 the second American edition of "Ophthalmic Surgery," by Josef Meller, of Vienna. His other contributions to ophthalmic literature had mostly to do with foreign bodies and their localization, although not exclusively so.

His membership in the American Ophthalmological Society, which began in 1900, was of great service to the society, Doctor Sweet being elected its secretary and treasurer in 1908 and serving in that capacity for ten years. The publication of its *Transactions* was his especial care, and to this task he devoted himself with ardor and skill. He was made vice-president of the society in 1920

and its president in 1921. Most of his papers were read at the annual meetings of this society or at the meetings of the Section on Ophthalmology of the College of Physicians. He was an honorary member of the American Roentgen-Ray Society.

His practice was large and absorbing, and taking no heed of his health, which was wretched for a number of years before his death, he finally succumbed to an attack of pneumonia in 1926.

BURTON CHANCE

Resident Physician, 1894-1895

Assistant Surgeon, 1899-1916

Attending Surgeon, 1916

J. MILTON GRISCOM

Resident Physician, 1907-1908

Assistant Surgeon, 1908-1917

Attending Surgeon, 1917

FRANK C. PARKER

Resident Physician, 1900-1901

Assistant Surgeon, 1905-1918

Attending Surgeon, 1919

THOMAS B. HOLLOWAY

Attending Surgeon, 1919-1924

B. F. BAER, JR.

Attending Surgeon, 1924

THOMAS O'BRIEN

Attending Surgeon, 1924

LEIGHTON F. APPLEMAN

Attending Surgeon, 1924

During the Congress of American Surgeons, which met in Philadelphia in 1911, the members of the Staff held

daily clinics and operated on a large number of cases before Sections of the Congress particularly interested in eye surgery. Many of the visitors expressed themselves as much gratified by what they saw, and seemed impressed by the wealth of clinical material and the excellence of the operative technique.

Of great moment for the teaching of graduates of medicine was the merger effected in 1916 between the University of Pennsylvania and the Medico-Chirurgical College and Hospital. In 1918, the Philadelphia Polyclinic and School for Graduates in Medicine also became part of the university and its Graduate School of Medicine thus formed by the triple amalgamation. The ophthalmological department of the Graduate School is conducted by a large and competent staff, instruction being given in the old Polyclinic Hospital buildings, also in the new and commodious building adjoining. Much of the teaching is extramural, a large part of it being carried on in the Wills Hospital by Attending and Assistant Surgeons of the Hospital, who are members of the faculty of the Graduate School. The course in ophthalmology extends over a year, and, the class being limited in number, is considered to be the most comprehensive and thorough in this country.

Graduate teaching in ophthalmology has improved elsewhere also, notably in England, where excellent courses are held during the summer months in Oxford University. More recently, Moorfields Hospital has organized two comprehensive courses during the year, which extend over a period of five months. During the past few years graduate courses in ophthalmology and oto-laryngology have been given in the summer in our own country; that of the Colorado Congress, formed largely through the initiative of Dr. Edward Jackson, being the best type.

The number of Attending Surgeons remained at four



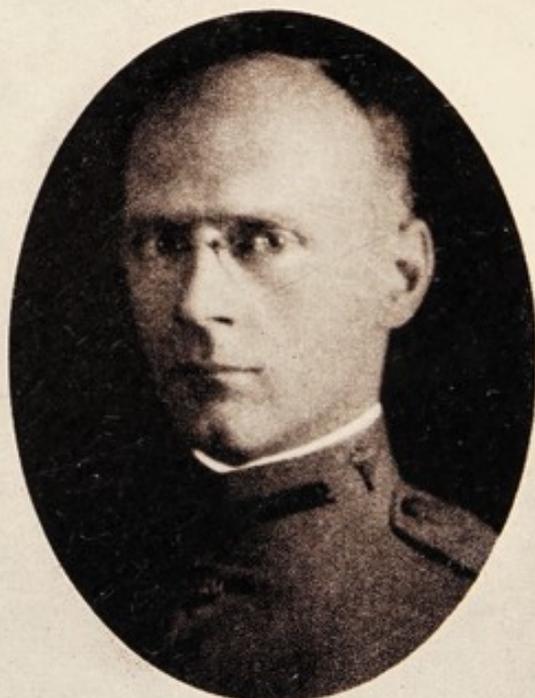
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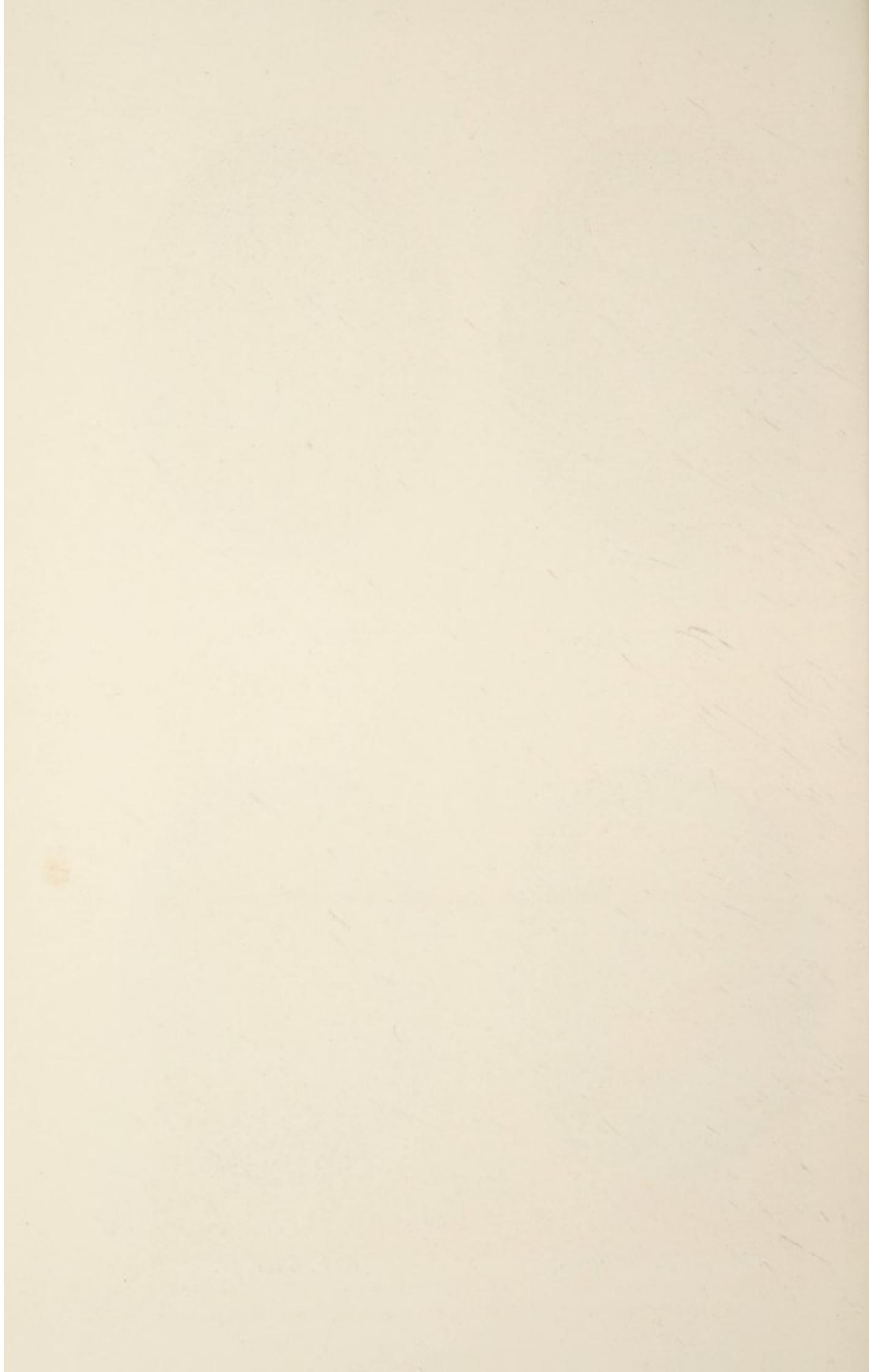
Frank C. Parker



Thomas B. Holloway



B. F. Baer, Jr.





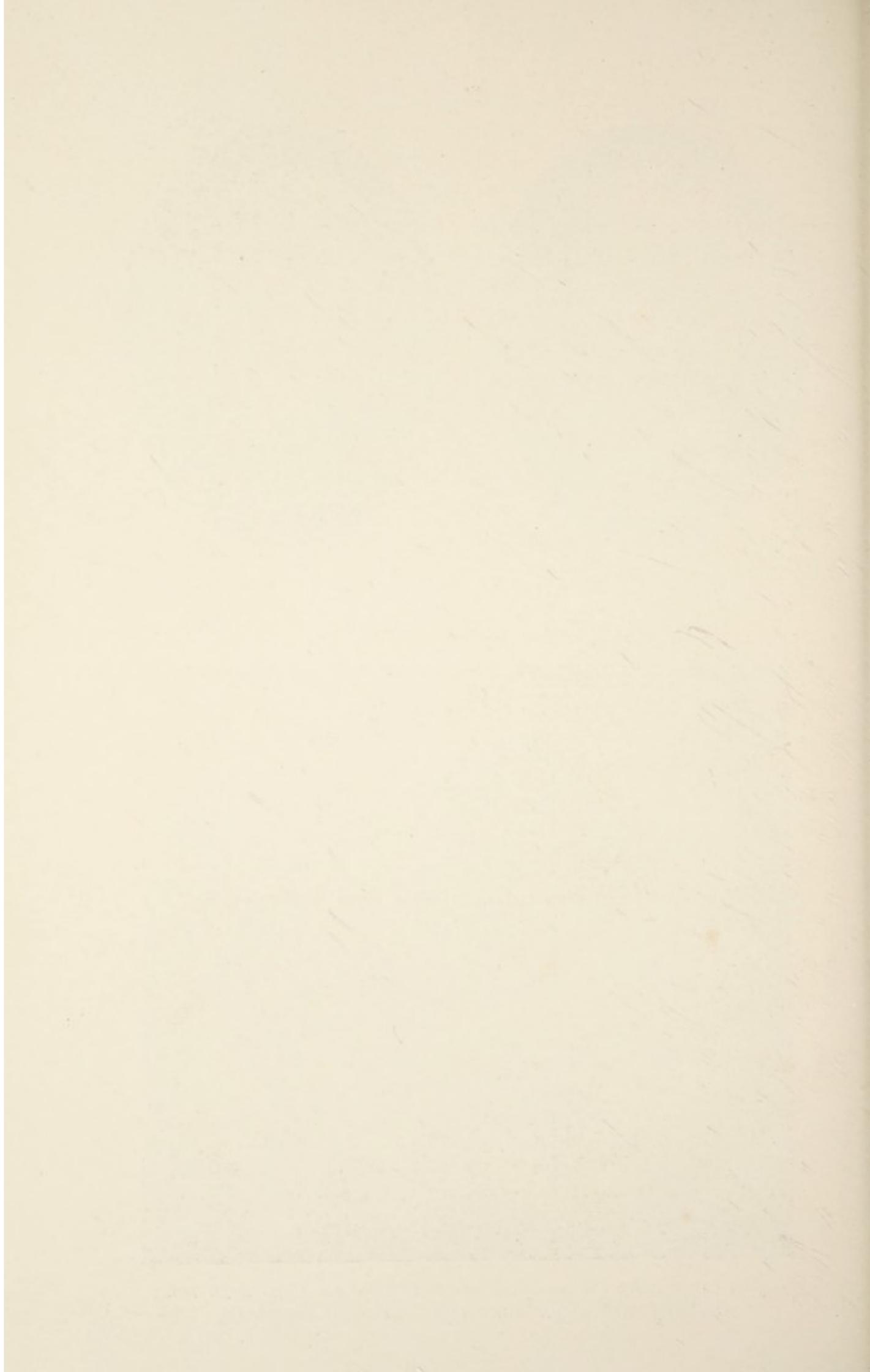
Thomas O'Brien



Leighton F. Appleman



Logan circle; the Parkway; Wills Hospital in 1930 with renovated front, at extreme right, back of fountain.



until 1872, when it was increased to ten. In 1873, the Board fixed the number at eight; in 1885 at six; and in 1890 it was increased again to ten. In 1914, only nine attending surgeons were appointed, making a vacancy which was continued until 1916, when a resignation further reduced the attending Staff to eight.

In 1924, the Board fixed sixty-five years the retiring age for Attending Surgeons, and in 1925 adopted a resolution that vacancies either by death or resignation should not be filled until after the number is reduced to six. A resignation in 1929 which was not filled in accordance with the above resolution brought the number to seven, which it now is.

In 1918, Doctor Parker succeeded Doctor Sweet as Roentgenologist, and the pioneer work of the latter continued by Doctor Parker in a manner agreeable alike to both workers and the reputation of the Hospital.

The Board, in 1923, inaugurated a new era by the appointment of the present Superintendent, Mr. Stephen Wierzbicki, to that position, thereby bringing to the Hospital the benefits of the valuable training which he had received in the United States Naval Hospitals. The State appropriation was reduced in this year to \$43,000 and the Hospital bed capacity being limited to one hundred twelve, the resourcefulness of the new Superintendent was taxed to carry on adequately the work of the Hospital.

The Congress of American Surgeons met again in 1925, and many ophthalmologists from all over the United States and Canada availed themselves of the opportunity to observe the practices of the Hospital. A few months after the Congress, Dr. L. Koeppe, of Heidelberg, an expert in the use of the slit lamp, conducted a course demonstrating the use of that instrument.

In this year the operative work of the Hospital had so increased that the services of a fourth Resident Physician were necessitated.

The problem of what to do with house cases that developed attacks of acute illness, or suffered from accident while in the Hospital, was solved in 1926 by accepting an offer of the Jefferson Hospital to care for them.

A set of radios presented by a friend of the Institution in the same year speeded the hours for many a patient, who, deprived of the use of his eyes, found the days long and irksome.

In 1927, the Wills Hospital Society was organized, holding its first meeting May 14. This Society is a social organization, formed to maintain friendly relations between the ex-residents and to renew their interest in the affairs of the Hospital. It is not to be confused with the Wills Hospital Clinical Society, already referred to.

An important event of 1927 was the creation by the Board of Directors of City Trusts of the position of Consulting Executive Surgeon to the Hospital, and the securing of Dr. George E. deSchweinitz to fill this position. This gave the Committee on the Wills Hospital the opportunity of consulting in an official capacity with this distinguished ophthalmologist, and to avail themselves of his great knowledge of hospital affairs. His judgment and advice have already been of great service and have aided materially in promoting the developments which have occurred during the past few years.

In this year the Superintendent in his report to the Board pointed out: "The constant growth of the work of the Hospital makes the inadequacy of the present quarters only the more apparent. While many improvements have been made in late years, and the Hospital buildings are in excellent condition, they are poorly adapted to modern

hospital methods, and the lack of modern facilities, such as elevators, is keenly felt. With the addition of several new departments, every inch of space is being utilized to the best advantage, but we have reached our limit of expansion in the present building."

The number of Resident Surgeons in 1928 was increased from four to five, and the term of service lengthened from sixteen to seventeen and one-half months. Monthly clinical conferences were inaugurated by the Staff, and, being participated in by the entire medical personnel of the Hospital, have proved of the greatest service in interesting the Junior Staff in the diagnosis and treatment of complicated cases.

In 1929, the Hospital obtained 115 milligrams of radium. This has proved a valuable acquisition to the equipment, enabling many conditions to be treated in the Hospital which would otherwise have required patients to go elsewhere.

Also, in that year, there was undertaken a revision in the Hospital's classification of eye diseases, by a committee from the Staff with the coöperation of the Consulting Executive Surgeon. A system of classes with key letters has been adopted provisionally.

After a long and distinguished service—an Assistant Surgeon since 1890 and on the Major Staff since 1901—Doctor Zentmayer retired in 1928, and was made a Consulting Surgeon to the Hospital. It had been the custom since the foundation of the Hospital to reward a member of the Staff upon retirement for long and meritorious service by bestowing upon him the title of Emeritus. After 1892, this title was superseded by that of Consulting Surgeon, all surgeons whom the Board of Directors of City Trusts wished to honor and reward being so designated. This maintains closer contact between them.

CONSULTING SURGEONS

(in Earlier Years Known as Emeritus Surgeons)

Squire Littell	1864
D. Hayes Agnew	1868
Thomas G. Morton	1874
R. J. Levis	1874
George Strawbridge	1890
A. Douglas Hall	1893
George C. Harlan	1901
William F. Norris	1901
William Thomson	1877
W. W. McClure	1907
Samuel W. Risley	1917
William Campbell Posey	1919
William M. Sweet	1919
P. N. K. Schwenk	1924
McCluney Radcliffe	1924
William Zentmayer	1928

CHAPTER XVI

PERIOD FROM 1900 TO 1930,
CONTINUED. ASSOCIATED CLIN-
ICS. NUMBER OF PATIENTS SINCE
1834. CHANGE IN LOCATION.
FINANCES. STAFF SINCE 1834

DURING the past decade, due to the foresight and initiative of the present Wills Hospital Committee, consisting of:

Murtha P. Quinn, Chairman	Albert M. Greenfield
Francis Shunk Brown	Ernest T. Trigg
Hobart A. Hare	President City Council—
Owen J. Roberts	Edwin R. Cox

and the faithful carrying out of their plans by the Superintendent, Mr. Wierzbicki, very important changes have occurred at the Hospital.

In his report for 1928 the Superintendent drew attention to the great increase in the percentage of cases admitted to the house over that of former years. This he attributed largely to the reduction in the average stay of patients in the Hospital: from 23 days in 1923 to 14 days in 1928, in 1929 to 12.72 days and in 1930 to 12.06 days, made possible by the increase in bed capacity, accomplished by curtailing accommodations heretofore given contagious cases, there having been for some years previous a marked decrease in application for admission from that class of patients. Credit should also be given the newly created Associated Clinical Departments about to be described in bringing this about, by reason of the prompt treatment given patients needing the particular kind of medication the several departments afforded.

The appointment of a number of part-time clerks, one for each clinic, greatly improved the administrative routine of the Hospital, the records being much better

kept, more accurate and neater. The clinical work being dispatched by their aid much more quickly, the surgeons and their assistants are enabled to give much more time to the actual medical conduct of the clinics. In 1930, a moving picture and projector was devised by Dr. F. C. Parker, one of the Attending Surgeons, and was installed in the Hospital for recording as well as demonstrating surgical technique.

The growth of the work of the Hospital during the past few years was most satisfactory, all the departments functioning in perfect harmony and the number of new cases having increased from a total of 12,986 in 1921 to that of 24,940 in 1930.

Reference has already been made to the Department of Refraction reorganized in 1924 (see page 241) and an idea given of the scope of its work by the publication of its report for the year 1930. In 1927 the X-ray Department was more thoroughly equipped, making it possible to get prompt and satisfactory reports not only in the localization of foreign bodies in the eyeball, but also of cranial, sinus and dental conditions.

The advance in medical knowledge in recent years having made manifest the part played by general systemic disorders and certain types of focal infection in the causation of many ocular conditions, an increasing number of patients every year were being referred by the Staff to other institutions for diagnosis and treatment. This was found to be a great disadvantage to the patients, often time-consuming and causing serious delay in treatment. To obviate this the Committee on the Wills Hospital in 1926 created a number of new departments—"associated clinics," so called—and placed them in charge of competent physicians, specialists in the various lines of medical activities in which they were engaged. These clinics have proved of great value in aiding and in expediting the

cure of patients as well as in shortening their stay in the Hospital. The Hospital has been made practically complete in itself, fully prepared to meet any emergency arising in the diagnosis or treatment of diseases of the eye.

ASSOCIATED CLINICS

The first of the "associated clinics," to be established was that of the Dental Department, in 1926; another, termed the Department of Physiological Optics, was created in the same year.

The Department of Physiological Optics is the first of its kind in connection with an eye institution, and its work along lines of application of new ophthalmic instruments and methods, as well as in the study and treatment of special cases and in scientific research, has proved of the greatest value. A Department for the Ear, Nose and Throat as well as one for Dermatology and Syphilography were established in this year also, and the following year a Neurological Department was added and in 1929 one on Internal Medicine.

The following abstracts taken from the annual reports from the directors of the various departments give a good idea of their projects and accomplishments.

DEPARTMENT OF PHYSIOLOGICAL OPTICS

The Laboratory of Physiological Optics was instituted for the purpose of having a department where clinical cases could be carefully and leisurely studied, and where certain research in optics could be carried on. In addition to other apparatus there has been constructed a large tangent screen subtending an angle of 50° for a distance of one meter. The material of which it was made is cork linoleum painted to match the rest of the room. With this material the fields may be plotted either with chalk or with pins. The markings are inconspicuously done in radiating meridians of 10° and in circles separated by 5° for a distance of one meter. The same screen is used for different distances since, for practical purposes, it

is considered accurate enough to increase the value of the tangent as the distance of the patient from the screen is decreased. For example, what is an angular distance of 5° at one meter is taken as 10° at one-half meter. The whole is fairly evenly illuminated by two daylight lamps, the constancy being controlled by a rheostat and checked with a photometer. This same arrangement is used for illuminating visual acuity and other test objects. For field study, there are, in addition to the large tangent screen, a Ferree-Rand perimeter, a Peter campimeter and a stereoscope.

The laboratory is at present equipped with apparatus for the study and treatment of muscular and refractive anomalies, a Zeiss-Nordenson camera for fundus photography, a camera for stereoscopic photography of the anterior segment of the eye, three slit-lamps and corneal microscopes, and an arc lamp for phototherapy.

Investigation and routine studies in physiologic optics, perimetry, biomicroscopy and light sense are carried on by the assistants in the laboratory.

Alfred Cowan, M.D.,
Director Physiological Optics.

DENTAL DEPARTMENT

During the year 1930, many such cases as iritis, inflammations of the uveal tract, optic neuritis, and others were found to be associated with dental infection. Added stress is being made for the removal of all teeth which might act as a focus of infection in clearing up ocular conditions. Pulpless teeth which are even slightly suspicious of apical infection are removed. This of course accounts for the greater number of extractions performed than any other type of work. It can readily be seen and understood that due to the great number of patients referred to the dental department, it is impossible to accomplish much other than the removal of foci of infection. It would, however, be a step forward if we were able to give each patient who comes either to the clinic or is admitted to the wards, a thorough prophylaxis. This thought is prompted by the conviction that as much infection lurks under the free margin of the gingiva as at the apices of the infected teeth. Up to the present time, it has been physically impossible to perform this for each patient referred to the

Dental Department, but it is hoped that some plan will be worked out, in the near future, that will enable us to carry out the thorough mouth-hygiene program for our patients, especially those for operation.

Appended hereto are the statistics of the various operations performed, both in the clinic and the wards, during the year 1930:

Total number of patients treated	661
Extractions	1240
Pyorrhea treatments	25
Prophylactic treatments	68
Temporary fillings	9
Treatments for Vincent's infection	8
Operations for cyst-impacted teeth	4

Gustav C. Tassman, D.D.S.,
Dental Surgeon.

DEPARTMENT OF DERMATOLOGY AND SYPHILOGRAPHY

Employment is made of all of the following drugs: neoarsphenamine, sulpharsphenamine (intramuscularly and intravenously), tryparsamide, mercury (by different routes of administration), iodides (orally and intravenously), bismuth (intravenously and intramuscularly), bismarsen (arsensical bismuth preparation), foreign therapy, intraspinal therapy. Means to increase the general state of health of the patient are important adjuncts to antisyphilitic treatment.

Potassium iodide is routinely administered to all patients. Sodium iodide is administered intravenously to some patients with interstitial keratitis and to some patients with neurosyphilis, notably those with ocular motor paralysis which does not really disappear following other treatment. Mercury is chiefly employed in those patients who are intolerant to the arsenicals. Bismuth is highly regarded as an active and relatively non-toxic spirocheticidal drug. It is frequently employed in all of the groups discussed, most often intramuscularly, and in some patients, in addition, intravenously. An intravenous injection of ten milligrams of colloidal bismuth appears to be as effective clinically as many times that amount of neoarsphenamine. Bismuth, intramuscularly and intravenously, is particularly favored in the treatment of interstitial keratitis. Intramuscularly it is frequently the choice of method in treat-

ment of patients over middle age who are poor therapeutic risks to the arsenicals and to mercury.

Neoursphenamine is employed in relatively small doses, 0.3 grams to 0.6 grams. Sulpharsphenamine and tryparsamide are administered to patients with neurosyphilis. Patients with optic atrophy are treated with a combination of antisyphilitic drugs as intensively as their tolerance and physical condition will permit. Also, fever therapy and intraspinal therapy (Swift-Ellis) are employed.

Our studies of the response of interstitial keratitis to antisyphilitic treatment, to be later published, show that involvement of the other eye while the patient is under treatment is not a biologic occurrence, as has been thought by some, but intimately concerns the lack of sufficiently intensive treatment.

Our studies show that treatment solely by mercury is not sufficient to prevent involvement of the other eye or to prevent recurrence in the involved eye. By employing a formula of treatment which is not intensive enough to be hazardous to the patient's health, involvement of the other eye has been reduced to about 6 per cent. and by continued treatment recurrence of the involved eye has been prevented.

Results in the treatment of optic atrophy have been very discouraging. With the majority of patients, at the time of their first visit to the clinic, their vision is so impaired that the prognosis under the most intensive treatment is bad. Moreover, most of the patients are above middle age and have physical hazards to intensive treatment.

The effectiveness of antisyphilitic treatment in optic atrophy intimately concerns how early the patient is treated. The history of patients with optic atrophy is appalling regarding the valuable loss of time in being treated by various cults and other circumstances which delay their arrival at proper sources for diagnosis and proper treatment. Propaganda comparable to that being conducted in cancer, directed toward educating patients toward having a proper examination made at the earliest possible time of dimness of vision, is much needed in order to reduce the incidence of blindness.

Incapacitation through blindness incident to optic atrophy is of tremendous social-economic importance. The patients whose case-records are shown in the foregoing were wage-earners and are now public charges. In addition to the tragic

effect on the patient and his family, the expense to the municipality, the loss of the patient to industry is considerable. Pollock has estimated the economic loss in New York State during 1929 on account of syphilis through incapacitation to be approximately \$16,000,000.

A photographic album of the various ocular lesions of the eye that are possible to photograph is being made. A cross-index of ocular lesions of syphilis is being maintained. The latter will be of considerable value in a statistical study of ocular syphilis. It is hoped that former members of the Staff of the Hospital will avail themselves of the use of this material if occasion arises.

In addition to the routine work of the clinic, studies are being made for future publication of the following conditions: The rôle of trauma in interstitial keratitis; Clotton's joints in patients with interstitial keratitis; the treatment of interstitial keratitis; deformities of the jaw in patients with interstitial keratitis; syphilitic involvement of the pancreas in patients with interstitial keratitis. As part of the studies of the deformities of the jaw in patients with congenital syphilis, the services of an orthodontist will be available, who will make plaster casts of representative types of teeth and jaws in patients with congenital syphilis.

The needs of the clinic concern more space; more available time of the resident physicians; a longer stay in the Hospital of patients with interstitial keratitis; the services of a clerk who could compile statistics from records, make tables, charts, *etc.*, and a social service worker.

Number of New Patients Treated in Clinic During the Year 1930:

Syphilitic patients	225
Skin diseases	40

J. V. Klauder, M.D.
Dermatologist and Syphilologist.

THE DEPARTMENT OF OTO-LARYNGOLOGY

The third year of the Department of Oto-laryngology has come to a close showing an increase over last year in the number of patients examined and treated and in the number of operations performed.

Practically all of the conditions for which the patients were

treated or operated upon were of a nature as might bear a direct etiological relationship to diseases of the eye or the orbital contents.

A photographic album is being made of cases presenting ocular deformities due to infected sinuses, particularly the ethmoids and frontals; also a cross index is being maintained of the various eye lesions and their direct relationship to focal infection arising in infected tonsils, teeth and sinuses. This will be of considerable value in compiling data for statistical study.

It would be interesting and of great value to establish a better follow-up system through the aid of a welfare or social worker. Patients could then be induced to report to the clinic for subsequent treatment or operation, thereby permitting of a careful check-up, the progress noted of the condition for which the ophthalmologist referred the case and for which the operation was performed.

The needs of the clinic, due to the increase in the number of patients treated and operated upon, are several. A larger dispensary with improved equipment is fast becoming a necessity, and two operating rooms apart from the general dispensary. Operating room number 1 for all work done with local anesthesia such as tonsillectomies, submucous resections, turbinectomies, *etc.* Operating room number 2 for major cases, such as radical sinus work, mastoidectomies, *etc.*, requiring the use of general anesthesia.

Following is a classified list of the operations:

Adenectomies	30
Ethmoidectomies	1
Maxillotomy	1
Needle punctures of maxillary sinuses	217
Plastic on Naris	1
Radical operations on maxillary sinuses	
(Caldwell-Luc)	2
Sphenoidectomies	4
Submucous resections	47
Tonsillectomies	207
Turbinectomies	11

521

William Francis Whelan, M.D.,
Oto-laryngologist.

THE DEPARTMENT OF INTERNAL MEDICINE

The cases referred for medical opinion are chiefly that large group that has occupied the focal point of medical attention for many years, namely, the hypertensive and renal diseases. Though our knowledge has increased greatly due to recent developments in chemical and physiochemical methods of investigation, yet there are many problems to be answered. It is planned to undertake the study of some of these problems. With the abundance of material, the splendid coöperation of the Staff and the various departments, fruitful additions to the knowledge of arteriosclerosis and the degenerative diseases await our efforts.

SUMMARY

Arteriosclerosis	124
Arthritis, chronic	5
Bronchitis, chronic	16
Cardiovascular diseases	104
Diabetes	23
Goiter	4
Hypertension	133
Lues	12
Nephritis, chronic	61
Pulmonary tuberculosis	4
Diagnosis not determined	11
Examinations normal	10
Total	<hr/> 507

Hugh McCauley Miller, M.D.,
Chief, Department of Internal Medicine.

The physicians in charge of the Associated Clinics and their assistants, with the dates of their appointments, are as follows:

Dr. Alfred Cowan,	Director Physiological Optics, 1928.
Dr. Leo F. McAndrews,	Assistant Department Physiological Optics, 1930.
Dr. Frank E. Locey,	Oto-laryngologist, 1928; resigned, 1929.
Dr. James E. Landis,	Oto-laryngologist, 1929; resigned, 1929.
Dr. William F. Whelan,	Oto-laryngologist, 1929.
Dr. Theodore H. Weisenberg,	Consulting Neurologist, 1929.
Dr. Joseph V. Klauder,	Dermatologist and Syphilologist, 1928.
Dr. Jacques P. Guequierre,	Assistant Dermatologist and Syphilologist, 1928; resigned, 1929.

Dr. H. F. Robertson,	Assistant Dermatologist and Syphilologist, 1929.
Dr. Hugh McCauley Miller,	Chief of Department of Internal Medi- cine, 1929.
Dr. H. B. Fuller,	Assistant Department Internal Medicine, 1930.
Dr. Gustave C. Tassman,	Dental Surgeon, 1928.
Dr. James J. Dempsey,	Assistant Dental Surgeon, 1928.

INSTRUCTION OF RESIDENT SURGEONS

It was found necessary in 1931 to engage the services of another resident, making six in all. With this number in residence, the Hospital should do more than it has in the past to educate and train these young men as eye surgeons. The lectures to them, begun in 1926, should be continued by the Staff and so systematized that each member of the Staff should recognize his responsibilities, and should take part in the teaching program. The practice in the various "associated clinics," which are visited by the residents in rotation, affords splendid opportunities for study, as do also the clinical conferences. By a recent order of the Executive Surgeon the duties of each resident surgeon are now well defined, so that their work should proceed harmoniously and with great profit both to the Hospital and themselves.

SOCIAL SERVICE

Social service, so successfully introduced into the New England Eye and Ear Infirmary three years ago, has received the approval of the Wills Hospital Committee and this year (1931) a Social worker under arrangement with the National Society for the Prevention of Blindness, will begin work in the Hospital. The importance of this step cannot be overestimated as an adjunct to clinical service. Heretofore, the attendance of patients in out-patients' service has been largely a casual affair. Nothing was known of the antecedents of a patient, other than that gained from his own statement or from that of those

accompanying him. Told to return for future treatment or consultation, he did so or not, and if displeased with the treatment he received he often sought another institution. In former years, the Hospital considered it had done its duty by treating the patients as they presented themselves, but without making an effort to assure that the treatment was carried out or for the return of the patient to the clinic. No attempt at a follow-up method was essayed. Social service supplies this lack and may be considered a liaison link between surgeon and patient, and when practiced by those who have been properly trained is of inestimable value.

NUMBER OF PATIENTS TREATED EACH YEAR SINCE 1834

As the accompanying list demonstrates, since the Hospital was opened in 1834 until January 1, 1931, a grand total of 785,243 patients have been treated, of which number 56,188 were house cases and 729,055 out-patients. The latter number should be larger as no figures are available for the out-patient service during the first twelve years. The report for 1879, however, gives the total patients treated up to that time as 77,691, which is 16,000 more than indicated by the figures upon which the above statement is based.

<i>Year</i>	<i>House</i>	<i>Clinic</i>	<i>Total</i>	<i>Year</i>	<i>House</i>	<i>Clinic</i>	<i>Total</i>
1834.....	49	.....	.....	1848.....	191	249	440
1835.....	49	.....	.....	1849.....	196	345	541
1836.....	51	.....	.....	1850.....	197	437	634
1837.....	68	.....	.....	1851.....	191	688	859
1838.....	77	.....	.....	1852.....	207	920	1,127
1839.....	86	.....	.....	1853.....	170	1,300	1,470
1840.....	106	.....	.....	1854.....	196	1,250	1,446
1841.....	108	"many"	.....	1855.....	165	1,112	1,277
1842.....	100	.....	.....	1856.....	221	1,242	1,463
1843.....	114	.....	.....	1857.....	182	1,133	1,315
1844.....	123	"large"	.....	1858.....	190	1,140	1,330
1845.....	149	.....	.....	1859.....	173	1,396	1,569
1846.....	163	92	255	1860.....	191	1,445	1,636
1847.....	181	235	381	1861.....	213	1,681	1,894

<i>Year</i>	<i>House</i>	<i>Clinic</i>	<i>Total</i>	<i>Year</i>	<i>House</i>	<i>Clinic</i>	<i>Total</i>
1862.....	268	1,681	1,949	1897.....	598	12,985	13,583
1863.....	259	1,466	1,725	1898.....	616	12,587	13,203
1864.....	275	1,415	1,690	1899.....	646	13,103	13,749
1865.....	224	1,343	1,567	1900.....	735	13,004	13,739
1866.....	176	1,167	1,343	1901.....	638	13,333	13,971
1867.....	199	1,450	1,649	1902.....	353	14,406	14,759
1868.....	205	2,700	2,905	1903.....	604	14,249	14,853
1869.....	198	3,105	3,303	1904.....	717	13,508	14,225
1870.....	271	2,323	2,594	1905.....	833	14,873	15,706
1871.....	294	2,296	2,590	1906.....	776	15,935	16,711
1872.....	362	2,514	2,872	1907.....	790	17,623	18,423
1873.....	318	3,186	3,504	1908.....	892	17,135	18,027
1874.....	346	3,463	3,809	1909.....	910	17,561	18,471
1875.....	338	3,544	3,882	1910.....	937	16,651	17,588
1876.....	458	3,436	3,894	1911.....	981	15,279	16,260
1877.....	512	4,082	4,594	1912.....	1,070	14,614	15,684
1878.....	552	3,894	4,446	1913.....	934	15,394	16,328
1879.....	583	4,112	4,695	1914.....	1,068	13,840	14,908
1880.....	530	4,076	4,606	1915.....	1,080	13,319	14,399
1881.....	535	4,933	5,468	1916.....	1,108	15,301	16,409
1882.....	514	5,449	5,963	1917.....	1,133	15,583	16,716
1883.....	564	5,706	6,270	1918.....	953	14,602	15,555
1884.....	526	6,255	6,781	1919.....	1,145	14,063	15,208
1885.....	467	6,613	7,080	1920.....	1,055	13,712	14,767
1886.....	457	6,795	7,252	1921.....	1,018	11,968	12,986
1887.....	599	8,138	8,737	1922.....	1,126	12,673	13,799
1888.....	542	8,877	9,419	1923.....	1,045	12,490	13,535
1889.....	471	9,633	10,104	1924.....	1,201	12,631	13,832
1890.....	480	10,623	11,103	1925.....	1,545	15,267	16,912
1891.....	668	11,612	12,280	1926.....	1,566	16,637	18,203
1892.....	760	11,733	12,493	1927.....	1,569	17,595	19,164
1893.....	774	11,999	12,773	1928.....	1,833	19,288	21,121
1894.....	820	11,794	12,614	1929.....	2,151	21,888	24,039
1895.....	790	12,062	12,852	1930.....	2,413	24,940	27,313
1896.....	707	12,928	13,635				

Although James Wills stipulated in his bequest that citizens of Philadelphia should be given priority in treatment and accommodation and this request is strictly adhered to, patients came from nearly every county in Pennsylvania and from many states; in 1930, for example, from twenty states other than Pennsylvania.

A study of the accompanying figures is interesting. In 1930, including 4,171 cases of foreign bodies in the cornea and in the conjunctival cul-de-sac, which were

treated by the resident surgeons, there was a total of 24,940 cases treated in the Out-patient Department and in the House. Their places of residence were as follows:

RESIDENCE OF PATIENTS

Philadelphia	19,503
Other parts of Pennsylvania	1,657
Elsewhere	1,367

NATIVITY

Africa	3	Latvia	11
Albania	10	Mexico	100
Arabia	1	Newfoundland	13
Armenia	20	Norway	12
Austria	253	Palestine	6
Belgium	3	Panama	1
Bohemia	1	Persia	2
Canada	44	Philippine Islands	2
China	6	Porto Rico	5
Cuba	3	Poland	340
Czecho-Slovakia	34	Portugal	3
Denmark	10	Roumania	115
Egypt	2	Russia	1,875
England	298	Serbia	1
Finland	4	Scotland	160
France	33	South America	14
Germany	432	Spain	17
Greece	36	Sweden	27
Hawaii	1	Switzerland	24
Holland	11	Syria	22
Hungary	116	Turkey	12
India	3	United States	19,203
Ireland	683	Wales	29
Italy	896	West Indies	33
Japan	3		

Total24,940

Representatives of the following counties of Pennsylvania were patients at the Hospital during 1930:

	HOUSE	CLINIC	TOTAL
Adams County	1	1	2
Allegheny County	2	5	7
Armstrong County	4	0	4
Beaver County	3	0	3
Bedford County	9	0	9
Berks County	25	16	41
Blair County	57	49	106
Bradford County	4	5	9
Bucks County	38	112	150

	HOUSE	CLINIC	TOTAL
Butler County	0	1	1
Cambria County	11	6	17
Cameron County	3	0	3
Carbon County	24	8	32
Center County	13	11	24
Chester County	40	70	110
Clearfield County	13	0	13
Clinton County	4	3	7
Columbia County	17	0	17
Crawford County	3	0	3
Cumberland County	15	11	26
Dauphin County	35	48	83
Delaware County	97	776	873
Elk County	0	2	2
Erie County	4	0	4
Fayette County	0	1	1
Franklin County	16	0	16
Fulton County	4	0	4
Huntingdon County	11	4	15
Indiana County	5	0	5
Jefferson County	0	1	1
Juniata County	1	1	2
Lackawanna County	60	12	72
Lancaster County	45	11	56
Lawrence County	0	1	1
Lebanon County	16	0	16
Lehigh County	28	30	58
Luzerne County	143	34	177
Lycoming County	19	1	20
McKean County	1	0	1
Mercer County	1	0	1
Mifflin County	11	0	11
Monroe County	5	3	8
Montgomery County	62	317	379
Montour County	1	1	2
Northampton County	51	25	76
Northumberland County	37	15	52
Perry County	2	1	3
Philadelphia County	951	19,503	20,454
Potter County	1	3	4
Schuylkill County	107	55	162
Somerset County	1	0	1
Susquehanna County	0	2	2
Tioga County	3	1	4
Union County	6	1	7
Wayne County	1	1	2
Westmoreland County	2	2	4
Wyoming County	4	1	5
York County	19	9	28
Total from Pennsylvania	2,036	21,160	23,196

The following numbers were patients from states other than Pennsylvania:

	HOUSE	CLINIC	TOTAL
California	1	0	1
Connecticut	1	2	3
Delaware	65	88	153
District of Columbia	1	4	5
Florida	2	1	3
Georgia	1	2	3
Illinois	1	2	3
Maryland	12	13	25
Massachusetts	0	5	5
Michigan	2	2	4
Missouri	0	2	2
New Jersey	265	1,219	1,484
New York	9	15	24
North Carolina	2	2	4
Ohio	3	3	6
Oklahoma	0	1	1
Rhode Island	1	0	1
Virginia	0	1	1
West Virginia	10	5	15
Wisconsin	1	0	1
Total	377	1,358	1,744

CHANGE IN LOCATION

For a number of years past it had become increasingly evident that the old hospital building was no longer adequate. Most of it was one hundred years old and repairs were frequent and costly. Though well adapted to hospital purposes in many respects the buildings were lacking in many of the essentials of hospital construction. New buildings were necessitated, but where was the money to build them to come from?

In this dilemma the Board of Directors of City Trusts determined to sell the present site, hoping to gain sufficient funds from the transaction to enable them not only to acquire a site elsewhere, but to erect suitable buildings with whatever money might remain from the purchase. The Parkway had greatly increased the value of the present property and it was the hope of the Board that

this step should be taken. Accordingly, in June, 1930, the entire property was sold, the purchaser being Mr. Cyrus H. K. Curtis and the amount paid \$1,100,000. It was understood that Mr. Curtis's purpose in acquiring the property was to erect a building upon the site which would be devoted to musical purposes.

As the building to be erected by the munificence of Mr. Curtis will offer musical education and pleasure to many in years to come, it would be a selfish person, indeed, who would have placed any obstacle in the way of his plans for the enrichment of the city. Yet, all of those who have had interest in and affection for the Hospital, after long years of association, must witness its departure from its old site with regret, mitigated only by the thought of the splendid edifice which will arise there after the Wills Hospital has gone elsewhere.

In no other section of the city have one hundred years brought such changes as in the region of the Wills Hospital. While in other parts, business houses have displaced the stately residences of the past and in others, demolished houses and vacant lots offend the eye, from the windows of the Hospital the beautiful scene presented by Logan Circle and the Parkway never fails to give delight. Surely, the wisdom of the first Board of Managers in their choice of location of the Hospital is manifest.

After much deliberation and careful consideration of the future expansion and growth of the city and the probable increasing demands which would be made upon the Hospital, the Board of Directors of City Trusts in March, 1931, acquired sufficient ground at the North-west corner of Sixteenth and Spring Garden Streets, upon which to erect a new hospital building, at a cost of \$290,000.00.

Though lacking the picturesque situation of the present hospital the new site bids fair to equal in popularity that

of the old. But a few city squares distant from Logan Circle, it is equally convenient to both patients and Staff, while, situated upon Spring Garden Street already one of the most important thoroughfares of the city and but two city blocks distant from Broad Street, the city's chief boulevard, the new lot occupies a strategical position accessible alike to both north and south traffic as well as to that from the east and the west.

The lot, 197 feet x 170 feet, is amply large whereon to erect a commodious building and bordered on three sides by streets—Spring Garden Street upon the south, Sixteenth Street upon the east and Brandywine Street upon the north—the site is protected from future encroachment, and the hospital building assured sufficient light and air for all time.

The choice of location indicates that the present Managers of James Wills' estate have been equally sagacious as those of a century ago.

THE WILLS HOSPITAL OF THE FUTURE

With the rounding out of its first centenary, the Hospital begins its second in a new location with a new and fully equipped physical plant and with a staff of surgeons alert and for the most part young enough to utilize fully the opportunities presented under such auspicious surroundings. It is obvious, however, that there must be some striking changes in order that the Institution keep pace with the changing times. Always in the forefront of progress, as this History has shown, it is of significance that the removal of the Hospital occurs at this time and that the new epoch, rich in possibilities, should begin in new surroundings. Good clinical work has always been done in the Wills Hospital and thousands of patients have obtained untold benefit from the treatment they have here received, but the eye hospital of the future must do more

than treat diseases of the eye—it should be an institution to determine the nature of such morbid processes as well and look to their prevention. The Wills Hospital should have a research department and take its place with similar departments in other ophthalmic centers in such investigations.

Those who have read this book must have gained from its story a knowledge of the financial restrictions of the Hospital and how the Management has planned month by month and year by year to spend the money at its command to the best advantage. But the Management cannot do more with the funds at their command. The interest from the legacy which James Wills gave a century ago is barely sufficient, with the appropriation from the State Legislature, to carry on the ordinary work of the Hospital, and if the Wills Hospital is to do this necessary research work, it must have help from outside sources.

The need of outside help has been felt by ophthalmic hospitals in other cities and has been met by the generous endowment of such institutions in Boston, Baltimore, St. Louis and Iowa City. Of these, the most richly endowed is the William Holland Wilmer Foundation in Baltimore, with a total investment of \$3,700,000.

The Wilmer Institute was made possible by the coöperation of the William Holland Wilmer Institute, the Rockefeller Foundation and Johns Hopkins University and is the first institute in America devoted solely to ophthalmology.

Another foundation is in Boston, the Howe Laboratory of Ophthalmology, established by the gift of the late Dr. Lucien Howe, of Buffalo, an eminent ophthalmologist of that city, supplemented by gifts from the General Education Board and the Corporation of Harvard University. An income of \$27,000 a year is available for the purposes for which the Laboratory was created.

A third is the McMillan Hospital and the Oscar Johnson Institute of Washington University, in St. Louis. This foundation was established by a bequest of \$1,200,000 to Washington University by the late Mrs. William McMillan, of St. Louis, and by the grant of a similar fund by the General Education Board. Other gifts brought the McMillan Foundation to \$1,500,000. The Johnson Fund totals \$650,000 and was given for research and teaching in ophthalmology and otology in Washington University. In addition to the building and its endowment, the eye department has a permanent endowment of \$600,000, which gives an income of \$30,000 a year. The eye department also has special gifts for research which aggregate \$60,000 a year. This gives the Department of Ophthalmology a budget of \$90,000 for administration, teaching and research.

A fourth center for ophthalmic teaching and research is that recently established in the University of Iowa. It is not, however, a foundation but designated as the Department of Ophthalmology of that university. The department is not endowed but supported by State funds, with occasional gifts from other sources; \$40,000 can be devoted to ophthalmology annually.

What a future for ophthalmology; what a boon to humanity such foundations offer! What a chance America now has to add to the world's knowledge of the science! What if, through their benefactions, a Von Graefe should emerge!

Is it too much for the Staff of the Wills Hospital to ask that it be given an opportunity to show what it can do, if the Hospital were properly endowed? James Wills endowed it with his entire fortune; will not some other

In May 1931, Mr. Edward S. Harkness of New York, presented \$5,000,000 to Columbia University for erecting, equipping, and endowing an Eye Hospital in connection with the Medical School of that institution.

philanthropist supplement his gift? It would be a fitting testimonial to the work of those who have labored in the Hospital, during the past hundred years, Management and Staff alike.

For the Staff, the past hundred years have been largely years of service to the patients coming from far and wide, and to the students and practitioners who have been freely taught. But this is not enough. The Staff, with these years of clinical service to its credit, should be enabled to do its share in research also, and take its part in the discovery of the causes and prevention of blindness.

Shall Philadelphia, with its glorious medical history, with its most enviable scholastic background and with a hitherto unequalled record in the development of ophthalmology in America, be permitted to drop behind other cities as an ophthalmic center?

Just as those affiliated with the Wills Hospital in the past showed themselves equal to the increasing demands made upon it, so do we anticipate the creation of a new Wills Hospital and the endowment by some benefactor of an associated Ophthalmic Institute, amply provided with funds and equipment for research in ophthalmology and treatment of eye diseases, which will emulate the philanthropy of James Wills and shed luster upon the glorious heritage provided by the Management and Staff of this institution.

THE NEW WILLS HOSPITAL

By Stephen Wierzbicki

With the sale of the property consummated, it became necessary to find a suitable site. Great care was exercised in the selection of a new location and finally the property at the northwest corner of Sixteenth and Spring Garden Streets was purchased at a price of \$292,000. This

property has a frontage of 198.4 feet on Spring Garden Street and a depth of 171 feet. The site is considered extremely favorable on account of its excellent communication facilities. Its location is practically down town, three blocks north and two blocks east from the old site. There are car-lines on Spring Garden Street, running east and west, a car-line going north on Sixteenth, and two on Seventeenth Street going south. The distance from the bus lines and subway on Broad Street is only two blocks.

Mr. John T. Windrim, one of the best-known Philadelphia architects, was selected to prepare plans for the new Wills Hospital.

The Hospital proper will consist of a building 157 feet by 157 feet. The building is to be of Georgia-Colonial architecture, of red brick with limestone trimming.

In the planning of the new institution, much thought has been given to the special character of our work. With ophthalmology as the special feature, allowance has been made for proper facilities for the associated clinics, in line with the late policy of the institution to make it self-contained. A new departure has been also incorporated, a limited number of private wards and rooms. While the character of the institution will remain charitable in the main, it has been recognized that the ever-increasing difficulty of securing a sufficient competent medical staff lay primarily in the fact that they had to obtain associations with other hospitals to take care of their private patients. This involved loss of time and a great physical strain on the individual. With accommodations available for their private cases, it is hoped to enlarge the Staff and to offer them facilities for their special work not usually found in a general hospital.

The hospital building will consist of a basement, six

floors and a roof apartment for the superintendent. The arrangement of the floors with the activities on each are as follows:

The basement floor will contain the power plant, laundry, kitchen, dining rooms for residents, nurses and employees, pharmacy and storerooms. Oil is to be the fuel used in the power plant. The kitchen will be equipped with electric ranges and steam cooking apparatus. On this floor are also located rest rooms for the help. An electric sidewalk elevator is provided for delivery of stores and equipment. In connection with the laundry there is a sorting room to which soiled linen comes down a linen chute, a linen and mattress sterilizer and a sewing and linen storage room. Here is also located the electric refrigeration plant servicing food refrigerators and supply of cold water throughout the hospital. A special box is provided for ice storage.

The first floor is the eye-clinic floor and contains the administrative offices. Three large eye clinics are provided, 75 feet by 30 feet. Each clinic is subdivided into the clinic room proper 50 feet by 30 feet with a seating capacity of 125 patients, a dark room 15 feet by 30 feet, and a special examining room 10 feet by 30 feet. This last room is provided with facilities for special examinations with slit lamp, perimeter, *etc.*, and for purposes of student instruction. A large room 40 feet by 30 feet is provided for clinical meetings, showing of moving pictures, and other professional activities of the staff. Besides the clinics there is a small operating suite for minor operative work, removal of foreign bodies and such operative work as may be required by the clinics and not of a character requiring the use of the regular operative suite. Adjacent to this is a room for taking of tensions, specimens for the laboratory, blood-pressure, *etc.* An im-

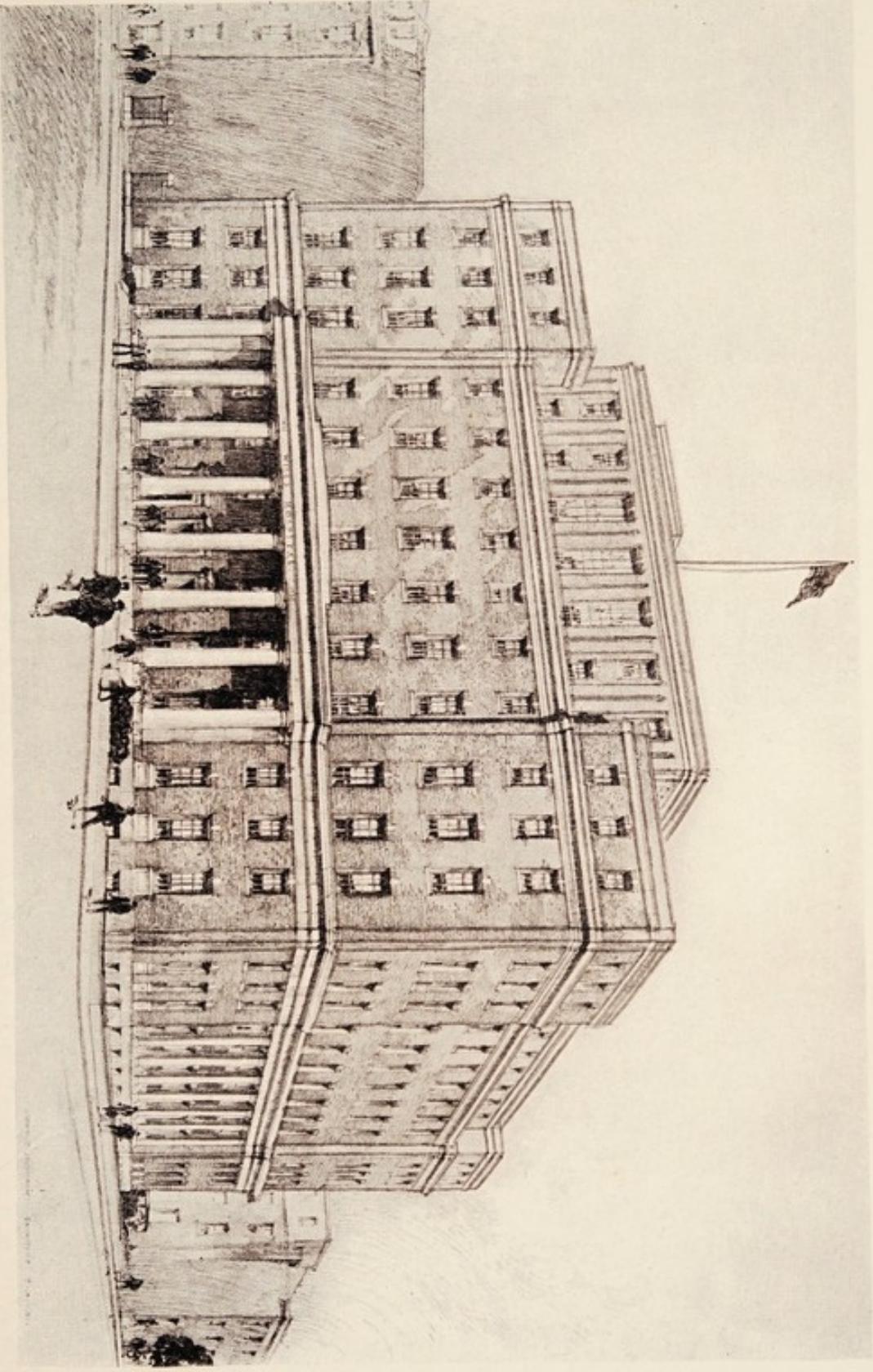
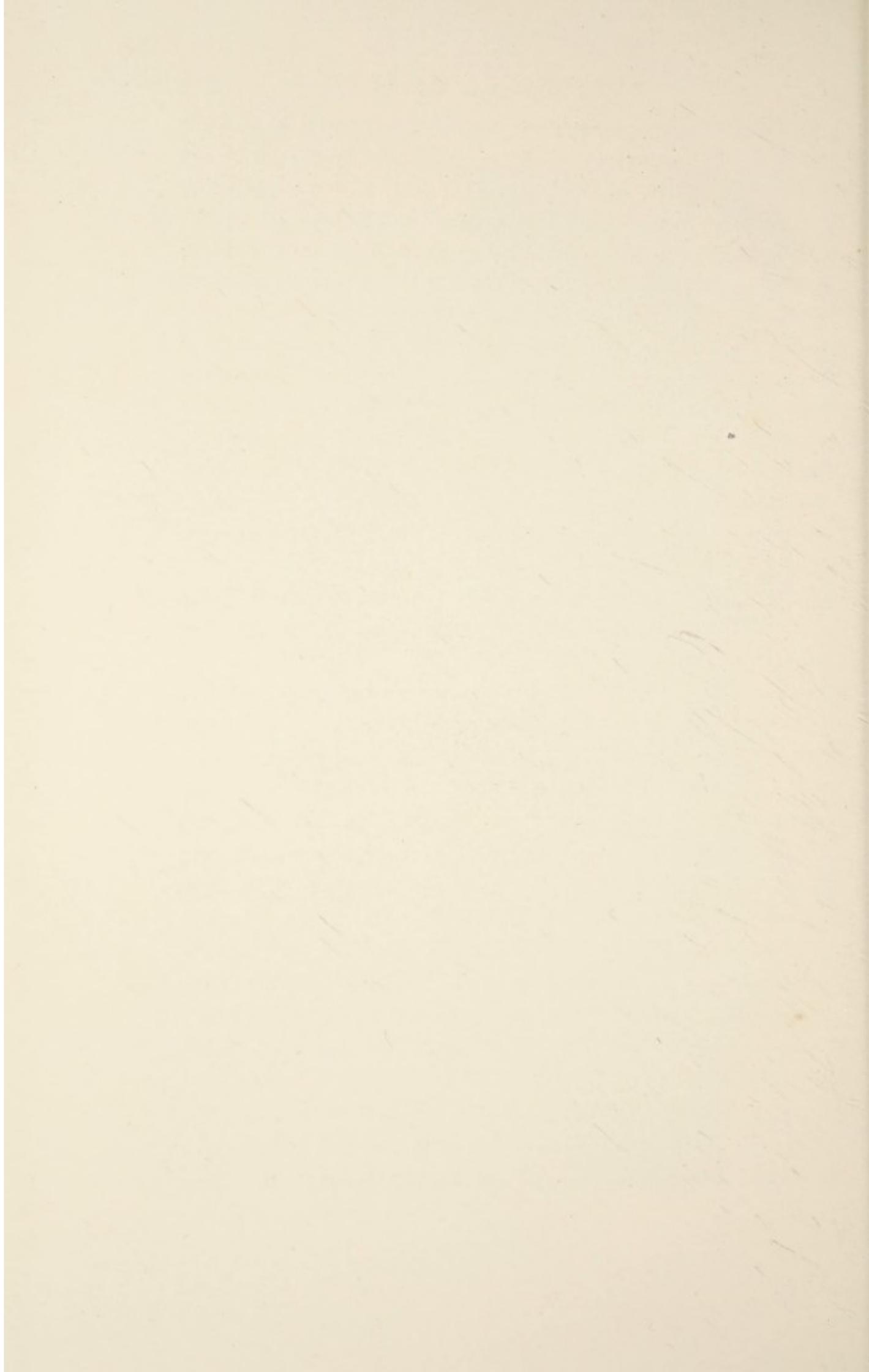


FIG. 20.—*New Wills Hospital at 16th and Spring Garden Streets.*



portant feature of this floor is also the refraction department. This occupies a space 40 feet by 30 feet. The refraction department proper consists of six alleys divided by eight-foot partitions, each 24 feet by 5 feet. At the end of the alley is a test cabinet electrically controlled by the refractionist. Five cards are available, each one of which can be dialed by the operator and brought into the compartment lighted by six daylight bulbs. Provision is made for retinoscopy in each alley. The rest of the space is utilized for the keeping of records and as waiting room for patients. Adjoining this is the optical department where patients are measured for their glasses and where they are fitted.

On this floor are also the usual administrative offices, the superintendent's office, the social service department, admission of patients, the cashier, information desk, telephone exchange, staff locker room, waiting room for private patients.

All of these activities are grouped around a large lobby, entrance to which is obtained from the street by three doors and which is capable of seating easily three hundred people.

From this floor a wide stairway leads to the next, the mezzanine floor. Here we find the front, facing Spring Garden Street, occupied by the residents' quarters. Provision has been made for seven. Adjoining their rooms there is a library and recreation room. The rest of this floor is devoted to the associated clinics and other auxiliary activities. Here we find the ear, nose and throat department with an operating suite of its own. The dental department with two operating units. The skin, medical and neurological clinic, this clinic subdivided into examining and treatment cubicles, has also a sound-proof room for heart and lung examinations. In addition to these

clinics there is located on this floor the laboratory, the X-ray and radium and physiological optics departments. The laboratory occupies a space of about 40 feet by 30 feet and contains an office and the laboratory proper divided into a chemical, pathological and bacteriological department.

In the X-ray department provision has been made for all types of X-ray work and radium treatments. In connection with the X-ray department is a photographic room to take care of all photography. The physiological optics department is divided into three spaces, the first assigned to slit-lamp work, divided into five booths, the second a light-proof room, the third for perimetry and other special tests. On this floor is also located a fourteen-bed ward to take care of all ear, nose and throat cases and such patients as may have to be hospitalized and belong to the clinics on this floor. Most of these patients are cases that ordinarily would stay only over night or a day or two at the most.

Up to this floor the building is erected in a square, with the next floor it assumes the U shape with the basis of the U facing south. The third floor is devoted to two large wards for inflammatory eye conditions, an isolation and a children's ward. The two large wards, one for men, the other for women, have a bed capacity of twenty-six beds per ward with an additional three in a small ward. All wards have been planned with the object of making them self-sufficient. In consequence each has adjoining the nurses' counter a utility room with a scrub-up sink, a slop sink, an ordinary sink with drain board, electric instrument sterilizer, a solution-warming cabinet, and storage cabinets for medicines and supplies. The isolation ward provides five beds for men and five for women, all these are in cubicles. The children's ward has accom-

modations for fourteen patients in cubicles. Adjoining this ward is a playroom for the children. On this floor is also the head nurse's office and a floor pantry.

The next floor is devoted to cataract cases and has two large wards each with a capacity of twenty-nine patients. On this floor is located the main operating suite. This consists of one large operating room divided into two spaces by a partition and a smaller operating room. Between these two is located the scrub-up room. Across the hall is the surgeons' locker room with toilet and shower, and the same accommodations for the operating room nursing personnel. Adjacent is the sterilizing and dressing preparation room.

In connection with each of the four large wards there is a recreation room for the patients.

The next floor is the private ward and room floor. Forty-one beds are provided. Each ward or room has its toilet and washbasins, a few rooms are provided with baths. While the capacity is rated at forty-one beds, single rooms are large enough to accommodate two beds so that a greater number of patients can be accommodated if necessity arose. This floor has its own operating suite, complete with sterilizing apparatus and all the other utilities.

The sixth floor is assigned to the nursing personnel. Provision is made for thirty nurses. There is a large recreation room, a reception room, a large porch, a small laundry and sewing room and kitchenette. Each room is provided with running water and the head nurse's and supervisors' rooms with baths. For the other nurses two large common bathrooms with showers and tubs are provided.

The next floor has a penthouse apartment for the superintendent.

Other features worth mentioning in the building are

the following: Two elevators, self-leveling type, each large enough to accommodate a bed and attendants, concealed radiation throughout, protection of all walls in wards, bath and utility rooms and halls with glazed brick and tile. A special type of metal window, cleanable from the inside and allowing no direct draft, also lockable to prevent delirious patients from escaping. Inside window screens of a type that may be rolled up like a shade. Special type of shade for dark rooms excluding light. Air conditioning of main operating rooms.

The building plans call for a modern type of hospital, providing comfort but no luxury for staff and patients, with facilities for teaching and demonstration, with large clinics and ample bed provision, with all modern aids to ophthalmology in the way of arrangements and equipment, and suitable accommodations for all the auxiliary branches.

With a bed capacity of 200 for patients, that may be increased without crowding to 250, the new Wills Hospital will easily become the largest eye institution devoted to ophthalmology alone. Its great growth in late years and development into an institution of great charitable value and teaching along practical lines will receive additional impetus with ample facilities and room for increase. It may well go along its honorable path as established in the past to still greater achievements.

FINANCIAL STATEMENT

Receipts—1832 to 1930

Estate of James Wills	\$399,478.24 ¹
Legacies, previous to 1870	17,600.78
Legacies, 1870 to 1930	299,458.38
Donations, increases in investments, <i>etc.</i>	49,102.35
	<hr/>
	\$765,639.75

¹ Includes \$200,000 assessed value of hospital grounds and buildings in 1930.

Old records are indefinite and it is difficult to determine whether some receipts were legacies or donations, and just which were added to Capital. The names of the benefactors of the Hospital who donated amounts of \$1,000.00 or more to it are as follows:

DATE	AMOUNT
1843, 1844, 1845, 1851....	P. A. Blenon .....\$1,700.00
1854.....	M. McGrath 1,900.00
1857, 1871, 1874, 1876....	William M. Weiss 6,851.90
1862.....	John Wright 8,889.84
1874, 1876.....	Jesse George 3,500.00
1875.....	Isaiah V. Williamson 9,902.66
1886.....	William and Nancy Ashmead 5,000.00
1886.....	Mary A. Bunting 5,000.00
1886.....	John F. Smith 1,000.00
1887.....	Joseph Kinike 1,905.00
1888.....	Joseph E. Temple 9,682.83
1888, 1889.....	Hannah C. Flickwir 4,916.67
1888.....	Harriet Erwin 1,000.00
1889.....	Mary M. and Jane A. Colhoun..... 9,823.70
1890.....	Jane A. Colhoun .....28,429.38
1890.....	J. H. Parker .....19,752.08
1891.....	Mary M. and Jane A. Colhoun..... 9,823.70
1891-1917.....	George S. Pepper .....16,525.00
1891.....	Therese Ch. Kinike..... 1,954.15
1892.....	Emily T. Eckert 5,000.00
1892.....	Alfred Bamber 5,000.00
1893.....	William C. Jeanes .....25,000.00
1896.....	William R. Lejee 2,000.00
1897.....	W. O. B. Merrill 3,000.00
1901.....	James T. Burke 1,000.00
1902.....	Harriet S. Benson 5,000.00
1903.....	George W. Farr, Jr. 5,000.00
1904.....	Louisa I. Cromwell 2,375.00
1904-1928.....	Lewis Elkin .....64,796.89
1905.....	Clarence B. Moore 2,279.05
1905.....	George W. Gross 2,437.42
1908, 1909, 1911.....	James H. Windrim 5,411.27
1910.....	Lizzie E. Chidester 3,000.00
1910.....	William P. Henszey .....10,000.00
1912.....	George Platt 8,000.00
1912.....	Anna B. Henszey 5,000.00
1913.....	Dr. Charles A. Oliver 1,300.70
1914.....	Mary Grant Smith 1,000.00
1916, 1920.....	Jane S. Echternach 2,069.09
1918.....	Nathaniel P. Hood 7,312.25
1921.....	John N. Dryburgh 3,794.11

DATE	AMOUNT
1926, 1928.....Annie M. Neuber.....	\$7,678.41
1927.....Edwin Scott Wills	16,000.00
1927.....Mary Cunningham	1,000.00
1929.....Carbon P. Dubbs	1,000.00
1930.....Edward T. Dobbins (not yet rec'd)	100,000.00
1931.....Mary Craig	1,150.71

In 1891, a graceful act of fitting remembrance was the placing of marble tablets in the corridors, bearing the names of all donors since the foundation of the Hospital. Additional names have been added in succeeding years, bringing the list up to date. These tablets will find appropriate places in the new hospital building.

STATE APPROPRIATIONS

Year Maintenance Improvements

1885-1887	\$20,000		
1887-1889	15,000		
1889-1891			
1891-1893	10,000	\$10,000	
1893-1895	10,000	10,000	
1895-1897			
1897-1899			
1899-1901			
1901-1903			
1903-1905	20,000	10,000	Completion and equipment of a contagious ward for female patients.
1905-1907	20,000	20,000	Contagious ward.
1907-1909	30,000	30,000	Rebuilding the chemical buildings and operating rooms; reconstructing general wards and isolation rooms; completing and equipping contagious wards and establishing and equipping X-ray and Pathological Laboratories.
1909-1911	20,000	45,000	Enlarging and improving administration building.
1911-1913	25,000		
1913-1915	30,000		
1915-1917	45,000		
1917-1919	45,000		
1919-1921	60,000		
1921-1923	54,000		
1923-1925	43,000		
1925-1927	60,000		
1927-1929	60,000		
1929-1931	65,000		

THE STAFF FROM 1834 to 1931

*Attending Surgeons**Assistant Surgeons**Resident Surgeons**Attending Surgeons*

Isaac Parrish	1834, February 3-1852, July 31	Died
Squier Littell	1834, February 3-1864, January 4	Resigned
Isaac Hays	1834, February 3-1854, September 4	Resigned
George Fox	1834, February 3-1849, April 2	Resigned
John Neill	1849, May 7-1852, June 7	Died
Edward Hartshorne	1852, June 7-1859, August 1	Resigned
F. W. Sargent	1852, September 7-1857, May 4	Resigned
Addinell Hewson	1854, October 2-1861, February 4	Resigned
William Hunt	1857, June 1-1864, January 4	Resigned
Thomas G. Morton	1859, October 3-1874, April 8	Resigned
George C. Harlan	1861, March 4-1864, January 4	Resigned
A. Douglass Hall	1864, January 4-1872, January	Resigned
Richard J. Levis	1864, January 4-1872, January	Resigned
D. Hayes Agnew	1868, January 4-1868, September 7	Resigned
George C. Harlan	1868, September 7-1901, May 6	Resigned
Ezra Dyer	1872, April 1-1873, November 10	Resigned
H. Ernest Goodman	1872, April 1-1896, February 3	Died
Peter D. Keyster	1872, April 1-1897, March 9	Died
William F. Norris	1872, April 1-1907, December 9	Resigned
William W. McClure	1872, April 1-1901, October 7	Resigned
William Thomson	1872, April 1-1877, June 13	Resigned
A. Douglass Hall	1872, July 10-1893, December 11	Resigned
Richard J. Levis	1872, July 10-1874, June 8	Resigned
George Strawbridge	1873, November 12-1890, Sept. 20	Resigned
Henry S. Schell	1877, June 28-1890, January 16	Resigned
Frank Fisher	1890, October 10-1916, June 30	Resigned
Charles A. Oliver	1890, October 19-1911, April 8	Died
Samuel D. Risley	1890, October 10-1917, July 11	Resigned
Edward Jackson	1890, October 10-1898, May 7	Resigned
Conrad Berens	1893, December 13-1914, January 20	Resigned
William Thomson	1896, February 14-1902, January 9	
John W. Croskey	1897, April 12-1900, December	Resigned
P. N. K. Schwenk	1898, May 11-1924, April 1	Resigned
McCluney Radcliffe	1901, January 9-1924, June 1	Resigned
S. Lewis Ziegler	1901, May 10-1916, June 30	Resigned
William Zentmayer	1901, October 9-1928, July 1	Resigned
Wm. Campbell Posey	1902, June 11-1919, February 5	Resigned
Paul J. Pontius	1907, December 13-	
William M. Sweet	1911, May 10-1919, June 23	Resigned
Burton Chance	1916, October 6-	
J. Milton Griscom	1917, July 11-	
Frank C. Parker	1919, March 12	
Thomas E. Holloway	1919, June 23-1924, July 1	Resigned

B. F. Baer, Jr.	1924, March 5-
Thomas O'Brien	1924, May 7-
Leighton F. Appleman	1924, July 1-

Assistant Surgeons

Harrison Allen	1868-1872	John R. Forst	1905-1915
William W. McClure	1868-1872	J. Norman Risley	1904-1915
Edward Livezey	1868-1872	Frank C. Parker	1905-1918
William Thomson	1868-1872	Henry Picard	1906-1916
H. Ernest Goodman	1869-1872	J. Milton Griscom	1908-1917
Conrad Berens	1890-1893	Clarence S. Eldridge	1908-1910
George T. Lewis	1890-1892	Walter Lowa	1910-1925
P. N. K. Schwenk	1890-1898		
T. B. Schneideman	1891-1898	Charles R. Heed	1911-1915
S. Lewis Ziegler	1890-1896	P. L. Balentine	1915-1917
C. J. Seltzer	1890-1893	James Hunter, Jr.	1915-1919
William Zentmayer	1890-1901	J. Milton Griscom	1916-1917
Thompson S. Westcott	1891-1893	Louis Lehrfeld	1918-
G. Oram Ring	1891-1892	Edward B. Miller	1918-1919
M. W. Zimmerman	1892-1893	Leighton Appleman	1919-1924
J. T. Carpenter, Jr.	1892-1898	George H. Denney	1919-1926
J. W. Croskey	1893-1897	John A. Colgan	1918-1922
William C. Posey	1893-1902	De Lorme T. Fordyce	1919-1928
Joseph A. Cramp	1892-1900	Thomas O'Brien	1920-1924
Francis Rudderow	1894-1898	William McCombs	1922-1924
S. P. Eagleton	1895-1898	Thomas J. Clemens	1922-
Archibald G. Thomson	1896-1905	Alfred Cowan	1924-1925
William H. L. Hale	1897-1906	J. Waller Deichler	1924-1926
Walter L. Pyle	1898-1905	Pierce DeLong	1924-
McCluney Radcliffe	1898-1901	Warren S. Reese	1924-
John T. Krall	1898-1907	R. T. M. Donnelly	1925-
James Thorington	1898-1900	John P. O'Brien	1925-1926
T. E. Conard	1899-1899	Aaron Barlow	1925-
Burton Chance	1899-1916	John C. Siggins	1925-
John W. Pancoast	1901-1902	Willard G. Mengel	1925-
William J. Hain	1900-1904	Francis H. Adler	1925
William L. Zuill	1900-1903	Isaac S. Tassman	1925-1930
J. Hiland Dewey	1901-1915	Max Gabrio	1927-
Paul J. Pontius	1901-1907	James S. Shipman	1930
Charles J. Jones	1902-1911	S. Creadick Rhoads	1930
George Robinson, Jr.	1903-1910	Charles A. Rankin	1930-
George S. Crampton	1915-1919	E. Pierce Shope	1931-
Ernest B. Mongel	1915-1917		

RESIDENT SURGEONS

Designated at first as Medical Resident, the title has changed later to that of Resident Surgeon. There was only one Resident Surgeon until 1892, when the number

was increased to two; this was increased to three in 1914, to four in 1924, to five in 1928 and to six in 1931, the present number.

The term of service was one year until 1867 when it was made six months; in 1870 it was again made one year; in 1915 it was made eighteen months, in 1924 sixteen months, and in 1928, seventeen and one-half months.

Chronologically Arranged

1839	John Neill	1872	Henry D. Zendt
1841	Samuel Hollingsworth	1872	E. Y. Burroughs
1842	George N. Burwell	1873	J. A. Lippincott
1843	William Spear	1874	A. Stockham
1843	John Curwen	1875	N. F. Kirkbride
1844	Robert P. Harris	1875	Frank Fisher
1845	Robert Newton	1876	W. M. Mastyn
1846	Daniel G. Heylman	1876	George W. Ziegler
1847	William R. Bullock	1877	W. C. Henderson
1847	Alfred M. Slocum	1878	Francis P. Perkins
1848	Irene D. Young	1879	J. J. Owens
1849	Henry D. Graham	1880	Frederick H. Carrier
1850	Archibald F. McIntyre	1881	B. L. Milliken
1851	James S. Green	1882	George R. Rohrer
1852	Theophilus Parvin	1883	Charles W. Kollock
1853	Norval W. Littell	1884	George T. Lewis
1854	John C. Homan	1885	C. A. Woodnut
1855	John S. Kitchen	1885	Henry Sykes
1855	W. T. Davidson	1886	W. F. Robeson
1856	Isaac N. Kerlin	1887	S. Lewis Ziegler
1856	Thomas G. Morton	1889	Joseph Otto
1857	George C. Harlan	1890	M. W. Zimmerman
1858	Edward Livezey	1891	Paul J. Pontius
1859	Charles C. Lee	1892	Edward C. Ellett
1860	Charles E. Hackley	1892	Walter R. Parker
1861	William Savery	1893	Paul Guilford
1862	Joseph Richardson	1893	A. S. Wilson
1862	Thomas Wistar	1894	Glendon E. Curry
1863	Charles T. Palmer	1894	Burton Chance
1865	Charles H. Thomas	1895	J. Floyd Murdoch
1866	W. W. McClure	1895	D. L. Esterly
1867	John C. Campbell	1896	James C. Bloomfield
1867	Elliott Richardson	1896	Edward R. Roderick
1868	Marshall Paul, Jr.	1897	C. J. Kistler
1868	Roberts	1897	Edmund T. Shortlidge
1869	James C. Wilson	1898	F. A. Ford
1869	Morris Longstreth	1898	Albert C. Snell
1870	William C. Cox	1899	Charles Lukens
1871	N. G. Maccomber	1899	Walter Bair Weidler

1900	Clarence Van Epps	1918	J. L. M. Halstead
1900	Frank C. Parker	1918	R. S. Pendexter
1901	Harold G. Goldberg	1918	O. H. Yereman
1901	John Newhall Kirk	1919	Ernest L. Posey
1902	W. L. Carroll	1919	Orla J. Park
1902	Homer J. Rhode	1920	Lee W. Hughes
1902	Arthur J. Bedell	1920	Joseph E. Beideman
1903	John R. Taylor	1921	Cecil S. O'Brien
1904	Robert I. Bullard	1921	Cecil P. Clark
1904	James A. Kearney	1922	Charles A. Young
1905	Oren M. Deems	1922	Ivan J. Koenig
1905	G. William Schlindwein	1923	Franklin S. Smith
1906	J. Clyde Markel	1923	Walter H. Fink
1906	S. Brown Hays	1924	Ray Carl Young
1907	G. A. Briggs	1924	Thurber LeWin
1907	J. Milton Griscom	1924	John S. Plumer
1908	Carl Boardman	1924	Heyward James Blackmon
1908	Charles W. Jennings	1925	Joseph Ernest Raia
1909	Emory Hill	1925	George Joseph Dublin
1909	Frank E. Detling	1926	Wilfred T. Gratton
1910	Nelson M. Weinberger	1926	Leo William Fink
1910	Thomas H. Cates	1926	James S. Shipman
1911	John A. Kenney	1926	Wilfrid E. Muldoon
1911	L. H. Teeter	1927	Walter C. Mott
1912	Ivan Fawcett	1927	Lewis Pellman Glover
1912	F. B. Moore	1927	Maurice Edward Marcove
1912	C. M. Buckner	1928	William J. Burdshaw
1913	William F. Harrigan	1928	Pierre Gautier Jenkins
1913	Samuel Marshall	1928	James H. Delaney
1913	H. C. Schmitz	1929	Noel Thomas Simmonds
1914	Paul H. Kleinhans	1929	Thomas G. McLellan
1914	W. E. Carson	1929	I. Jenkins Mikell
1914	J. W. Thompson	1930	John Burleson Moore
1915	Otis F. Simonds	1930	William Chalmers Ostrom
1915	Harry V. Judge	1930	Raynold N. Berke
1916	Frederick A. Schlanger	1930	Stacy C. Howell
1916	Joseph Vincent Connole	1931	Ethelburt B. Fairbanks
1917	Warren S. Reese	1931	James M. Baird
1917	William F. Holzer	1931	William H. M. Thomson

The Wills Hospital is governed by the
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1931

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Albert M. Greenfield

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 President City Council

SUPERINTENDENT

Stephen Wierzbicki

SURGICAL STAFF—1931

Consulting Executive Surgeon

G. E. deSchweinitz, M.D.

Consulting Surgeons

William Campbell Posey, M.D.
 P. N. K. Schwenk, M.D.
 McCluney Radcliffe, M.D.
 William Zentmayer, M.D.

Paul J. Pontius, M.D., *Attending Surgeon*

Aaron Barlow, M.D. *Assistant Surgeon*
 Max R. Gabrio, M.D. *Assistant Surgeon*

Burton Chance, M.D., *Attending Surgeon*

Louis Lehrfeld, M.D. *Assistant Surgeon*
 John C. Siggins, M.D. *Assistant Surgeon*
 Clara Israeli, M.D. *Clinical Assistant*
 Alexander J. P. Conlen, M.D. *Clinical Assistant*

J. Milton Griscom, M.D., *Attending Surgeon*

Willard G. Mengel, M.D.	<i>Assistant Surgeon</i>
E. Pierce Shope, M.D.	<i>Assistant Surgeon</i>
Louis B. Cohen, M.D.	<i>Clinical Assistant</i>

Frank C. Parker, M.D., *Attending Surgeon*

Thomas J. Clemens, M.D.	<i>Assistant Surgeon</i>
S. Creadick Rhoads, M.D.	<i>Assistant Surgeon</i>

B. F. Baer, Jr., M.D., *Attending Surgeon*

Francis H. Adler, M.D.	<i>Assistant Surgeon</i>
Charles A. Rankin, M.D.	<i>Assistant Surgeon</i>
James S. Shipman, M.D.	<i>Clinical Assistant</i>
J. Thomas Krall, M.D.	<i>Clinical Assistant</i>
George E. Berner, M.D.	<i>Clinical Assistant</i>
Thomas G. McLellan, M.D.	<i>Clinical Assistant</i>

Thomas A. O'Brien, M.D., *Attending Surgeon*

Perce DeLong, M.D.	<i>Assistant Surgeon</i>
Samuel Sleath, M.D.	<i>Clinical Assistant</i>
Carroll R. Mullen, M.D.	<i>Clinical Assistant</i>

Leighton F. Appleman, M.D., *Attending Surgeon*

Warren S. Reese, M.D.	<i>Assistant Surgeon</i>
George J. Dublin, M.D.	<i>Assistant Surgeon</i>
Benjamin Shortkroff, M.D.	<i>Clinical Assistant</i>
Executive Surgeon	J. Milton Griscom, M.D.
Roentgenologist	Bernard P. Widmann, M.D.
Assistant Roentgenologist	Edgar W. Spackman, M.D.
Pathologist	Perce DeLong, M.D.
Chief, Department of Refraction	Isaac S. Tassman, M.D.
Dental Surgeon	Gustav C. Tassman, D.D.S.
Assistant Dental Surgeon	James J. Dempsey, D.D.S.
Oto-laryngologist	William F. Whelan, M.D.
Director Physiological Optics	Alfred Cowan, M.D.
Assistant, Physiological Optics	Leo F. McAndrews, M.D.
Dermatologist and Syphilologist	Joseph V. Klauder, M.D.
Assistant Dermatologist and Syphilologist	Harold F. Robertson, M.D.

Consulting Neurologist	Theo. H. Weisenberg, M.D.
Chief, Department of Internal Medicine	Hugh McCauley Miller, M.D.
Assistant, Department of Internal Medicine	Harry B. Fuller, M.D.

Resident Surgeons

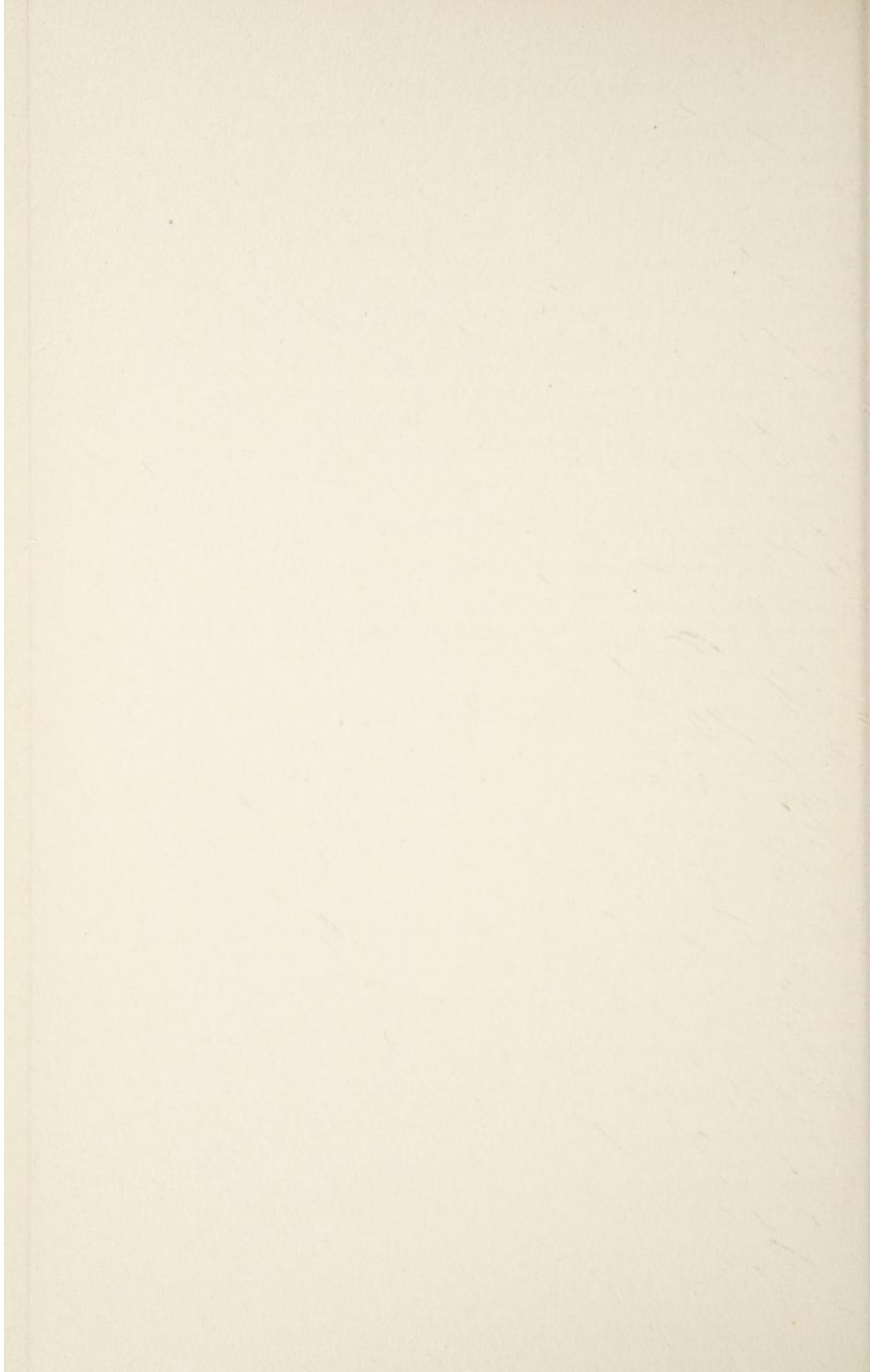
John Burleson Moore, M.D.
William Chalmers Ostrom, M.D.
Raynold N. Berke, M.D.
Stacy C. Howell, M.D.
Ethelburt B. Fairbanks, M.D.
James Mason Baird, M.D.

Head Nurse

Miss Mary C. Schabinger

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President	Paul J. Pontius, M.D.
Secretary	Frank C. Parker, M.D.



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